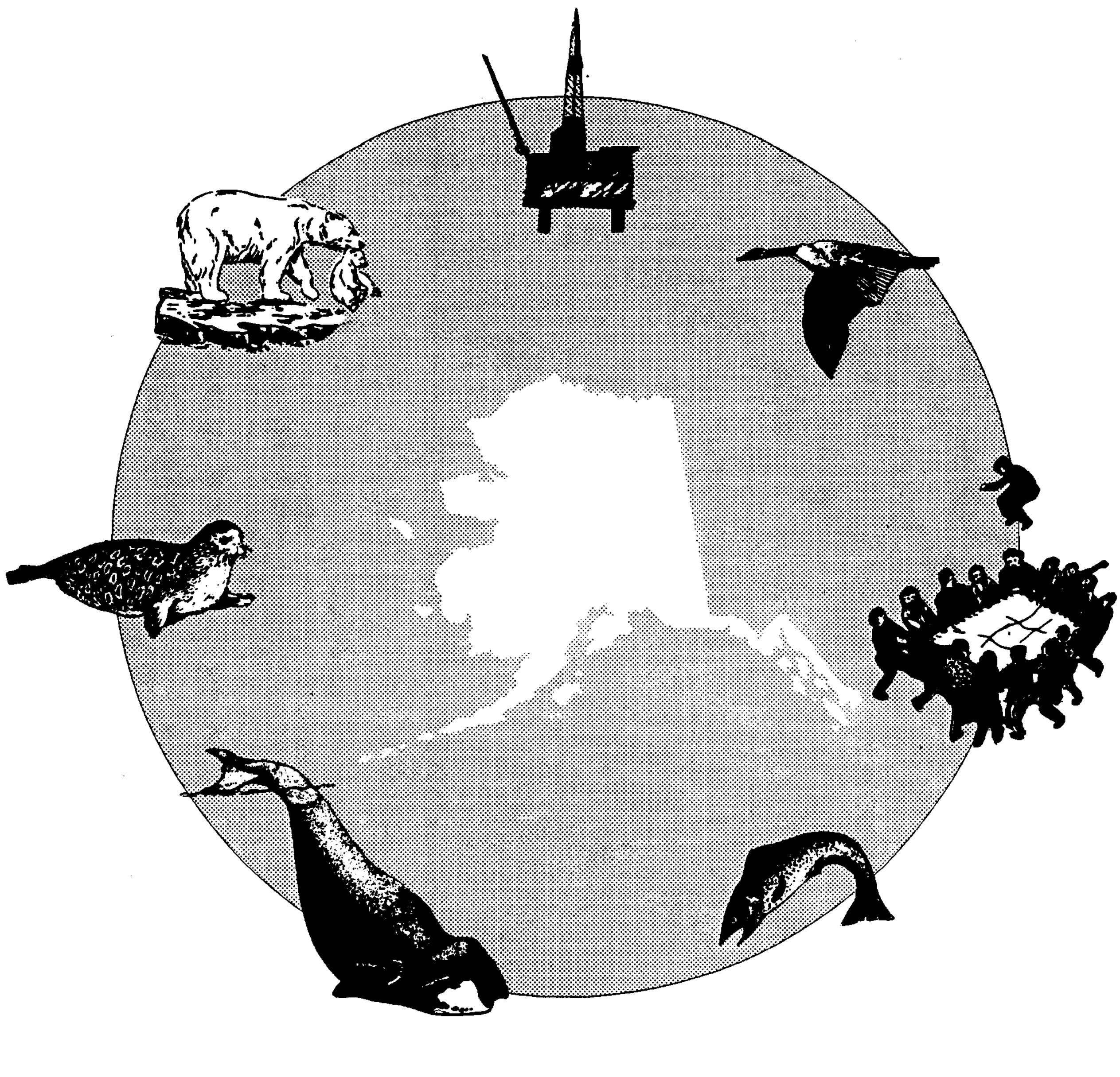
OCS Study
MMS 93-0070

Social Indicators Study of Alaskan Coastal Villages

III. Analysis



MMS U.S. Department of the Interior
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Alaska Outer Continental Shelf Region

OCS Study
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SOCIAL INDICATORS STUDY OF ALASKAN COASTAL VILLAGES

III. ANALYSIS

Submitted to:

Social and Economic Studies Program
Minerals Management Service
Alaska OCS Region
Department of Interior

Submitted by:

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February 1994

Alaska OCS Environmental Studies Program

Social Indicators Study of Alaskan Coastal Villages
III. Analysis

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Prepared by Joseph Jorgensen, the principal investigator and project manager. The author appreciates the efforts of the Minerals Management Service technical editors in Anchorage who helped edit this report.

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PART ONE:
INTRODUCTION AND PROJECT OVERVIEW

CHAPTER 1
INTRODUCTION

I. PROJECT OVERVIEW

In early 1987, our research team embarked on an analysis of contemporary life in 31 Alaskan villages located from Kaktovik on the coast of the Beaufort Sea (Arctic Ocean) to Kodiak City on Kodiak Island south of the Alaska Peninsula.[1] We had been charged by the Minerals Management Service (MMS), U.S. Department of the Interior (USDOI), to develop two sets of indicators from several methodologies and several data sets that would be sensitive to social and economic change and that could be used, from time to time, to monitor conditions among villagers throughout coastal Alaska.

The MMS has its own charge from Congress. The National Environmental Policy Act of 1969 (NEPA) requires that before industrial or other manmade alterations to the environment can occur, the administrative agency responsible for regulating that environment, or the industry that seeks to alter the environment in some way, must make full disclosure of their plans. The agency--and often the petitioner-owner, or successful bidder who wishes to make the change, or the agency itself if it intends to open the property to bids among "developers"[2]--must prepare draft environmental impact statements (EIS's). Those EIS's are previewed in public hearings and agency review. The agency that prepared the draft EIS must respond to criticisms, suggest mitigations if they are deemed necessary, and issue a final EIS before the proposed alteration to the environment can commence. In some rare

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[1] The research design, including demographic information about the 31 villages and the seven regions in which they are located, appears in Social Indicators Study of Alaskan Coastal Villages II. Research Methodology: Design, Sampling, Reliability, and Validity (Jorgensen 1993). Ethnographic and historical information about the study villages and regions appear in Social Indicators Study of Alaskan Coastal Villages I. Key Informant Summaries (Volumes 1 and 2) (HRAF 1992).

[2] It is somewhat awkward to talk about "developers," hence the quotes. Firms that wish to remove trees and install chairlifts, septic systems, reservoirs, snowmaking equipment, parking lots, and a variety of buildings to accommodate patrons are developers, as are firms that drill holes to extract, and build pipelines to transport, oil. The variety of developments is great. All do not necessarily generate income in excess of expenses, such as county, State, and Federal parks and recreational facilities. Parks developments may survive, even grow, without prospects of termination. And some, such as oil operations, are extractive and have short lives, surviving until the finite resource has been extracted. Each is called a "development." What they share in common is an alteration of the environment. For example, 100 vineyards located throughout the watershed of a short-course river in northern California can lead to the removal of sufficient trees and brush along the river's banks, and sufficient silt deposits, to destroy the nesting areas in which anadromous fish species spawn as well as the aquatic insect populations on which fry and smolt rely.

instances, probable consequences to the environment are deemed so hazardous, or will precipitate so many changes that are deemed deleterious and that cannot be mitigated, that the project is not approved. This often precipitates litigation.

Since 1969, MMS has been responsible for leasing tracts of the Outer Continental Shelf (OCS) to bidders who seek to extract oil and gas.[3] In 1971, the Alaska Native Claims Settlement Act (amended in 1988 [PL 100-241]) was passed. The ANCSA, as the act is known, is an enormous social and resource engineering project that, among its most notable features, extinguished all Native claims to resources in Alaska while making possible the extraction of Alaskan oil by private multinational firms. In 1971, then, MMS was "in the business," as MMS leasing personnel are wont to say, of leasing oil tracts on the OCS. They also were required to begin preparing EIS's to assess the probable consequences to the environment from oil-related activities. That is where this study fits in: it is prepared for MMS so that MMS can use it, along with other research for which it has contracted, to prepare state-of-the-art EIS's concerning probable consequences from oil-related activities to villages and villagers. They should assess (1) their public and private economic sectors; (2) the subsistence resources available to residents and the subsistence-related activities in which they engage; (3) household organizations, household finances, employment, political activities, ethical beliefs, personal health, and educations; and (4) their cognitive and affective attitudes about concerns such as traditional customs, the environment, and oil-related activities. This research also is different from the research on which EIS's are based. The MMS wanted a valid set of indicators sensitive to social and economic changes within coastal Alaskan villages.

The rationale behind developing sets of social indicators is that small subsets of those indicators can be used to monitor Alaskan villages and determine whether oil-related activities are affecting them. It is frequently the case that multiple factors, rather than a single factor, account for social change. In order to know whether oil-

[3] Actually, in 1982 MMS was created from portions of two agencies within the USDOI that, until that time, had been responsible for separate domains of oil and gas leasing and oversight--the Bureau of Land Management and the United States Geological Survey.

related factors are responsible for changes wrought in villages, MMS requested that we pay special attention to distinguishing differences, should they exist, between Natives and non-Natives, between villages that had well-developed infrastructures and services and those that did not, and between OCS oil-related activities and other activities that might affect village organizations, village economies, village politics, and life within villages.

The MMS provided us with a questionnaire with which to survey village residents. Questionnaires, because they are forced-choice instruments, are fraught with problems that threaten their validity. In response, we developed a research design that incorporated data from sources other than the questionnaire. The intention was to reduce threats to validity by using several types of data collected in different ways and from different sources than the questionnaire survey.

We developed a protocol--an open-ended device to guide questions--with which to interview villagers, and we also developed a list of questions to ask persons who occupied key positions within the village. Casual observations and chance discussions, too, the stuff of participant-observation methods in ethnographic research, were parts of our multimethod, multidata-set research design. We use casual observations and chance discussion, in conjunction with the information gained from our focused discussions with key persons in villages, to provide ethnographic background and depth to our understanding of the responses from the protocol and questionnaire. We use the objectivity of questionnaire responses to account for the subjectivity of the protocol, and the subjectivity of the protocol to account for the potential triviality (and construct validity problems) of the questionnaire.[4]

As our research progressed over four separate research waves from early 1987 through early 1990, we tested annually to determine whether the questions we were asking provided reliable and valid responses. Responses to the questions were tallied as variables, and the variables were tested to determine whether some or all of them

[4] The differences between questionnaire and protocol, and the way in which each is used to control for the weaknesses of the other, is explained in Social Indicators Study II (Jorgensen 1993).

produced significant differences when we contrasted them by subsamples of the population. All of this is explained in careful detail in Social Indicators Study of Alaskan Coastal Villages II. Research Methodology: Design, Sampling, Reliability, and Validity (Jorgensen 1993), also referred to as Social Indicators Study II (Jorgensen 1993), but it will facilitate our analysis to provide some information about the theoretical contrasts we have tested in order to satisfy MMS's requests. As explained below, these contrasts are *Mixed:Native*, **Native:Non-Native**, *Hub:Periphery*, *Test:Control*, and *Comm Fish:Noncom Fish*.

- *Mixed:Native* Contrast--To determine whether differences at the level of the village obtain between Natives and non-Natives, we created two subsamples from our total sample in which the populations of *Native* villages are more than 75 percent Natives, and those of *Mixed* villages are more than 25 percent non-Natives. The two constitute the *Mixed:Native* contrast.
- **Native:Non-Native** Contrast--For many issues, it was necessary to refine *Mixed:Native* contrasts. In those instances, contrasts between Natives and non-Natives were made, sometimes controlling for village type and sometimes not, depending on the problem. These contrasts usually appear as **Native:Non-Native** in order to distinguish the specific racial/ethnic contrast from the village-type contrasts, e.g., *Mixed:Native*.
- *Hub:Perphery* Contrast--To determine whether infrastructure, private- and public-sector business activities, services, and population size accounted for differences in responses to social and economic changes, we created a second set of subsamples from the total sample. *Hub* villages have considerable infrastructure for business, transportation, and services as well as for public- and private-sector economic activity, and they occupy a central economic place within a geographic area that comprises several periphery villages. *Periphery* villages have limited infrastructure, limited private sectors and public sectors, and small populations within a geographic area whose economy is dominated by a hub. These two comprise the *Hub:Periphery* contrast.

■ *Test:Control* Contrast--To determine whether oil-related activities affect villages, we divided the total sample into a *Test:Control* contrast. *Test* villages are located close to areas in which some or all of the following occur or are expected to occur: oil-lease sales, transportation lanes, potential or proven reserves, pipelines, onshore supply bases, nearshore staging areas, or airports servicing offshore activities.

■ *Comm Fish:Noncom Fish* Contrast--We tested several other theoretical contrasts throughout the course of our research, dropping some and retaining others. We had not anticipated that villages in which the majority of total income derived from commercial fishing would be significantly different from villages in which less than 40 percent of total income derived from commercial fishing. We discovered during the second wave of research--when studying villages in the Bristol Bay and Kodiak regions for the first time--that responses were significantly different on many items from responses we had received from villages located farther north during the first wave of research (the villages of the Yukon-Kuskokwim, Northwestern Alaska [Seward Peninsula], and North Slope [Chukchi and Beaufort Sea coasts]) areas. We also recognized similarities between responses from Kodiak and Bristol Bay residents and those from respondents in the Aleutian-Pribilof Islands area studied during the first research wave. We created a *Comm Fish:Noncom Fish* (*commercial fish/noncommercial fish*) contrast, then, on the basis of the proportion of total income made to the village economy by the commercial-fishing industry. The contrast proved to be important when the Exxon Valdez foundered in March 1989, spilling 11 million gallons of North Slope crude oil into Prince William Sound. As the oil spread by wind and wave action, it moved around the Kenai Peninsula and into the commercial-fishing waters of Kodiak Island fishermen. The spill, of course, also affected fishermen in Prince William Sound, the Alaska Peninsula, and Cook Inlet.

Each of the sets of contrasts provided powerful differences over a range of variables in every one of the topics addressed in our inquiry: public- and private-sector economies, subsistence resources, use of subsistence resources, education, income, household organization, ability to speak Native languages, and so on. The results of the tests of the contrasts appear in Social Indicators Study II (Jorgensen 1993). Two sets of contrasts--*Mixed:Native* and *Hub:Periphery*--yield subsamples that are very similar but not quite identical (four *Hub* villages are not *Mixed*, and two *Mixed* villages are not *Hub*). The similarities in the contrasts with their opposites (*Native* and *Periphery*) are so close as to not require distinctions between the two sets of contrasts in this volume. The *Mixed:Native* contrast is slightly more powerful than the *Hub:Periphery* contrast because all *Mixed* villages have well-developed infrastructures, even if they are secondary transportation hubs or commercial centers, such as Naknek in Bristol Bay and Sand Point in the Aleutians. Because the generalizations drawn from the *Mixed:Native* contrast are not contradicted by *Hub:Periphery* contrasts, the necessity of providing both sets in the following analysis is obviated.[5]

Test:Control villages are a separate issue. Following the Exxon Valdez spill, we learned that no villages whose resource-use areas were affected by an oil spill were *Control* villages. Virtually all villages of Prince William Sound, Cook Inlet, and the south side of the Alaska Peninsula were affected by the spill. *Test:Control* contrasts are analyzed in Social Indicators Study II (Jorgensen 1993), but are not analyzed here. Here we focus our attention on *Mixed:Native*, *Comm Fish:Noncom Fish*, and **Native:Non-Native** contrasts.

The large oil-extraction developments at Prudhoe Bay on the edge of the Beaufort Sea in the Arctic Ocean were made possible by ANCSA. Outcroppings of coal occur along Alaska's north coast, and coal has been collected and used by Natives (whalers) for over a century. Oil, a much more valuable fossil fuel, was discovered on Alaska's north coast in 1948. Firms did not seek to extract oil at that time, presumably because of the arctic coast's rigorous environment, the long distance between Alaska's oil reserves and market areas, and the limited technology

[5] The populations of some *Hub* villages are more than 85 percent Native (Aniak, St. Paul, Kotzebue, Unalakleet) and also fluctuate from *Hub* status to *Periphery* status, depending on transportation services or other features of *hubs* that fluctuate with the economy. Indeed, during the course of our research, Kotzebue changed from a *Mixed* village to a *Native* village as its non-Native population dropped in relation to the Native population. Unalakleet changed from a regional secondary *Hub* to a *Periphery* village, then back to a regional secondary *Hub* (second to Nome in the Bering Straits Region) when it regained the scheduled airline service that it had lost in 1988.

and capital available to extract and transport the oil. In 1968, the large Prudhoe Bay oil field near Kaktovik was discovered. Its reserves were estimated at 10 to 11 billion barrels, an amount deemed sufficient for highly profitable extraction. In the 20 years since the first report of oil on Alaska's coast, considerable advances had been made in extracting oil on stormy seas.

Oil industry lobbyists sought the opening of Alaska's north coast to oil tract leasing. Opening of Federal lands to exploring for and extracting of oil, and to transporting it 900 miles by pipeline from the arctic shores to Prince William Sound, was delayed by Native claims to resources. Natives had been the occupiers of Alaska for at least five millennia. As occupants and users of the land and sea, they had prior rights that were not extinguished by the Treaty of Cession in 1867 when the United States purchased Alaska from Czarist Russia. In some instances, Alaska Natives had sued for the taking of land and resources from them and, following Statehood in 1958, they often resisted Federal and State regulations over the animals they harvested for subsistence.

The ANCSA extinguished aboriginal title to land and to resources. Natives were provided 44 million of Alaska's near 370 million acres. The State received 124 million acres and the power to regulate most naturally occurring resources for the entire State, with the exception of several species of sea mammals. Congress awarded Natives $962 million for the 325 million acres it had appropriated.

Appropriations of Native land and resources by the Federal Government in behalf of special interests and the "public domain" are old hat in Federal-Native affairs, so I will not review Federal-Native American history in that regard, with two exceptions. In 1887, Congress sought the expropriation of Indian land that had been agreed to through treaty and also sought to solve the "Indian problem," which actually was several related problems. One was that Indians occupied lands whose potential riches would benefit special interests and, thereby, the nation; but the riches would not benefit the nation so long as the lands were occupied by Indians. Another was that the maintenance of treaty obligations--more often some of the treaty obligations--to Indians on their vast reservations was expensive. This last was exacerbated by the prejudicial opinions of Congressmen, State and territory governors, and their supporters that Indians were slovenly, lazy, unchaste, and rapacious (McNickle 1975).[6]

Congress' solution in the late 19th century was to pass the General Allotment Act (GAA), also known as Dawes' Severalty Act. The GAA would require Indians to select (or to be awarded if they refused to select) land in severalty, after which all excess land would be deposited in the public domain and made available for homesteaders, for mineral claims, for timber and stone act claims, and the like. The hoary history of the implementation of the GAA is remarkable. On some reservations, land was awarded without selection; on others, the best portions along river courses were denied to Natives. On at least one reservation, a group of dissidents fled to hunt freely, only to learn that there was no place to go but to another reservation to await their return to their original reservation. The procedures by which land was allotted and the amounts allotted varied. Land was not allotted to children or set aside for future generations. Women received allotments on some reservations, but on most they did not. On some reservations, allotments were 40 acres; on a few, they were 80 acres; and on some reservations, satraps who had assisted the Federal Government during the early reservation period were awarded as much as 160 acres.

The ideas behind the allotments were that Indians, upon acquiring private property, would learn the advantages of private ownership. They would learn that to succeed as had the Anglos who had located near them, they would have to invest, to save, to delay gratification, and through hard work to develop their private resources into a successful investment that would take care of the allottee and his family. The reservation and dole, it was averred, caused lazy tribal people to remain lazy and to maintain ties with kinspersons and friends that would only pull all of them down as well as the government that was forced to maintain them.

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[6] See D'Arcy McNickle's They Came Here First (1975 [orig. 1949]:127-275) for the best treatment ever of the debate over the General Allotment Act and Congressional intent in passing this act.

Natives were given the option of breaking their tribal ties sooner rather than later. If allottees would convert their allotments from trust status (in the GAA, the land was held in trust by the Federal Government for 25 years) to fee simple, sell the land, and move to a city, they would be granted citizenship and the right to vote. If they did not convert to fee simple, at the end of 25 years the allotment would be removed from trust and enter state tax rolls.

In 1887, then, the solution to the Indian problem was an adventure in private ownership, with admonitions to observe Protestant Ethic individualism while severing tribal ties. The GAA was a disaster that reduced Indian-owned property from 250 million acres to 40 million acres between 1887 and 1934, caused most of that acreage to be snarled in heirship problems, and required a spate of legislation to correct some problems while creating others in relation to land and reservation issues.

In 1934, the Indian Reorganization Act (IRA), or Wheeler-Howard Act, was Congress' attempt to rectify the problems created by the GAA and subsequent legislation. Whereas legislation had never taken away tribal recognition (by the Federal Government) or reservations (only the land was expropriated), the IRA allowed for tribes to ratify boilerplate constitutions and charters in which tribes became corporations (not shareholder corporations and not solely for profit). The idea was to redress grievances and create solvent agrarian economies in which Indians could maintain their individual households and maintain some tribal traditions. It sought to integrate capitalistic practices and Protestant Ethic actions with the renaissance of the best tribal customs. It also provided the Secretary of the Interior veto authority over any decision made by any constitutional tribal government.

To recreate tribal estates and give tribes a base from which their personal, family, cooperative, and tribal economies would grow and become self-sustaining, subsequent legislation provided funds for tribes with IRA constitutions to purchase some portions of what had been their tribal estates prior to the GAA: land tied up in heirship, land acquired by states through tax delinquency of insolvent Depressionera farmers and ranchers, land from area residents who were financially embarrassed, and so forth. And a small revolving credit fund was made available by which tribes could create business ventures, if they were able to get a loan from the fund. The fund never had more than $30 million, and there were 275 tribes with IRA constitutions through the 1940's and early 1950's. In the 1950's, a sense of Congress followed by a host of specific termination acts returned Congress to a position similar to the philosophy of the GAA.

The IRA program, too, was economic folly, yet it was humane. No financially successful tribal corporations were created by the IRA, allotment heirship problems persisted, and reservation land still was held in trust.

Whether and what Congress learned from its past failures at social, economic, and political engineering is not at issue. The ANCSA created 13 regional for-profit shareholder corporations and more than 200 village for-profit shareholder corporations within Alaska. Each Native person with one-quarter or more Native blood and born prior to December 19, 1971, was eligible to be a shareholder. Each shareholder was awarded 100 shares in the village corporation and 100 shares in the regional corporation to which the village belonged. Of the regional corporations, 12 were awarded land, and the 13th, generally comprising Natives who resided outside Alaska but including those who did not choose to align with a land-based region, was awarded a pro rata share of the $962 million.

The idea behind ANCSA's provisions to extinguish claims to resources, create shareholder corporations, provide those corporations with land bases, provide some funds to capitalize the corporations, and require the corporations to go public in 1991 was that with sufficient capital and sufficient time--and with help through health, education, and other programs--shareholders would act in their own best interests.

At the outset of ANCSA, the Native populations were undertrained and undereducated. Villages were located long distances from markets and were dependent on naturally occurring resources for access to markets. Almost all villages had poorly developed infrastructures and meager political influences. The ANCSA provided meager funds to corporations that were paid out over a decade. The growth and success of Native for-profit corporations was forecast, whereas their foundering should have been anticipated by the planners of Congress' very large social engineering project for Natives in Alaska. Oil companies benefitted, as did the State's public and service sectors.

The ANCSA was 10 years old when I began doing research in Alaska in 1981. Already, Natives throughout the State had begun to focus on the provision that would require regional and village for-profit corporations to go private in 1991. In 1984, an independent commission sponsored by the Inuit Circumpolar Conference investigated Eskimo, Aleut, and Indian conditions; the consequences to their communities and persons from ANCSA; and their attitudes about ANCSA's provisions. Among the many fears expressed, Natives feared that their stock shares would be purchased and that banks would foreclose on debts incurred by regional corporations. They thought that mining and oil industries would cause significant changes to their Native land, rendering their harvests of naturally occurring resources more difficult and their lives more bleak.

The ANCSA was amended in 1988, which alleviated some of the worst fears that Natives had expressed since ANCSA's inception, but not soon enough to avert economic foundering for almost all of the regional and village corporations. By the time we began the Social Indicators research, 7 of the 13 regional corporations were insolvent and 1 had filed for bankruptcy. Through 1984, the 13 regional corporations showed a cumulative negative return of 4 percent on the return of owner's equity, and 11 of those corporations financed one-third of their asset book values by debt capital while relying on local business investment (Robinson, Pretes, and Wuttunee 1988). "This linked the regional corporations to Alaska's economy, which is based on the extraction of naturally occurring resources. . .Alaska's economic history has been defined by booms and busts in the extraction and selling of nonrenewable resources" (Jorgensen 1990:287-288).

The MMS was correct in seeking to disentangle oil-related consequences to villages from changes wrought by other factors. And MMS was correct to seek to know whether Natives and non-Natives alike have been affected by the same factors and whether they have responded in the same way to those factors.

In summary of the presentation of the analyses in this volume, the analysis of Native and non-Native responses in the first two chapters are based on data from the AOSIS questionnaire instrument (AQI). The final chapter is based on the KIP (key informant protocol). Each analysis is informed by our ethnographic observations and from interviews with key persons in each village.

In Chapter 2, we focus on persistence and change among traditional activities and customs of Natives in the ANCSA-oil age, and their similarities and differences with non-Natives. We wish to know in what ways subsistence hunting or fishing activities, say, are influenced by employment, education, ethnicity, social services, and residence in large and complex villages rather than small. We do so through multivariate analyses in which relations can be analyzed in their complexity.

Chapter 3 addresses economic development and social organization and poses two models: (1) the Western model, which, in conjunction with Protestant Ethic ideals, is the basis for ANCSA's massive social engineering project, and (2) a traditional-communitarian model, which characterized village societies prior to ANCSA. In Chapter 3, we assess the consequences of economic factors on village life.

Chapter 4 addresses the questions of traditional customs, economic development, social organization, and political organization in a single integrated analysis.

II. UNDERSTANDING THE ANALYSIS: THE BASICS OF NONMETRIC, MULTIDIMENSIONAL SCALE ANALYSIS

This study relies heavily on a family of multivariate methods that are known as "multidimensional scale analyses" (MDS) but are referred to as "Multidimensional Similarity Structure Analysis" by the principal authors of the methods.[7] Whereas multidimensional scale analysis usually is referred to by the acronym MDS, the

[7] Ingwer Borg and James C. Lingoes (1987) have written a comprehensive and very accessible analysis of multidimensional similarity structure analysis. The interested reader is referred to their appositive Multidimensional Similarity Structure Analysis.

family of analytic procedures of nonmetric, multidimensional, similarity structure analysis employed throughout this volume usually is referred to by the acronym SSA.[8]

If we attribute some simple human properties to SSA, we say that SSA models take a matrix of similarity coefficients[9] among a set of objects and represent the relations among the objects by distances in a multidimensional space. The "objects" are anything we happen to be studying, such as "the number of days in which the respondent visited relatives and friends in the past week," "the number of recent meals in which wild foods were eaten," "annual household income," and "whether the respondent voted in the most recent city council election." So, similarity coefficients, such as the relations between each of the aforementioned, are calculated and ordered into a matrix as in the following bogus example.

	Days Visited	Wild Food Meals	Household Income	Voted Council
Days Visited	1.00	.92	.32	.70
Wild Food Meals		1.00	.39	.72
Household Income			1.00	.37
Voted Council				1.00

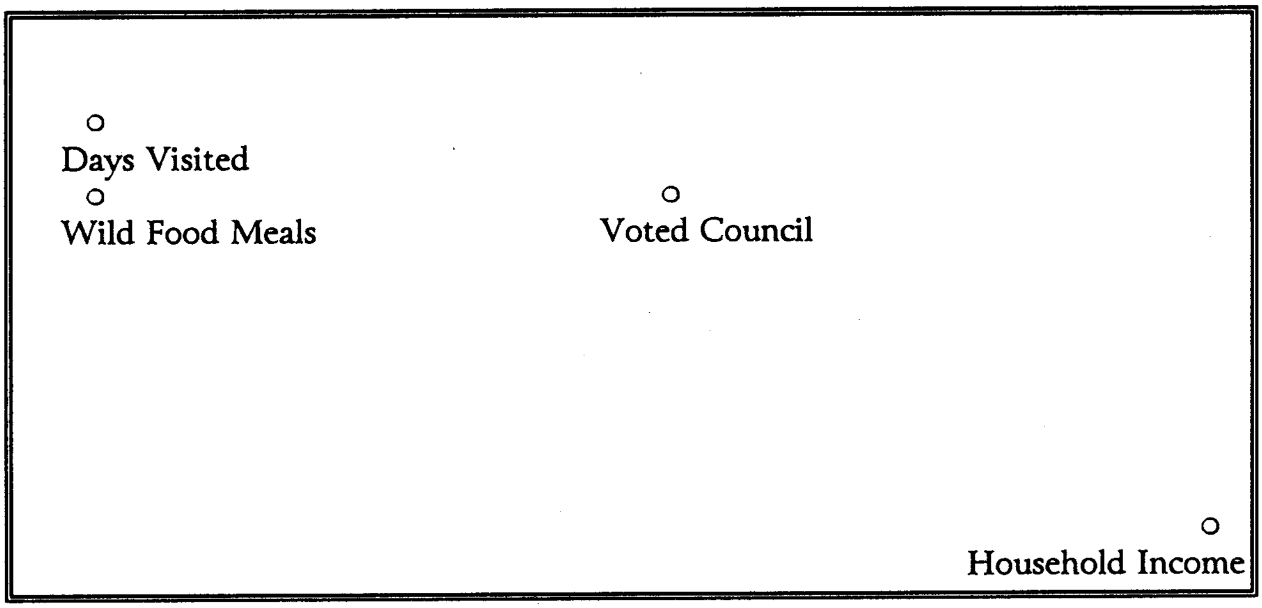
Relations in a matrix are rather easy to comprehend when they comprise a small handful of variables, as in the example above. But if simple scanning of a matrix of scores is your sole analytical device, the difficulty in comprehending relations increases as the number of variables increases. Each variable (object), after all, stands in a particular relation to every other variable, measured by a coefficient of similarity (or correlation, or proportional reduction of error). If there are 20 variables in a matrix, the number of relations you must scan in order to get an impression of the structure of the relations among the data is $20 \times 19 \div 2 = 190$.

[8] It is doubtful that more than a small percentage of readers and potential users of this volume are social scientists. And among that small group, it is doubtful that more than a handful either earned graduate degrees or have learned methods of multivariate analysis, including multidimensional scale analysis.

[9] A matrix of similarity coefficients also can be a "table" of correlation coefficients or a table of proportional reduction of error coefficients.

Most of the matrices in this study contain between 27 and 35 variables, or between 351 and 595 coefficients of relationship. It helps to reduce 595 coefficients to 35 points in a multidimensional space inasmuch as it is rather difficult to comprehend the structure of 595 multivariate relations from a table of coefficients.

The SSA models we use convert the similarity coefficients to distances in space and then map the points, one point representing each object. The higher the positive similarity coefficient between two objects, the closer those two objects are positioned in space. Thus, when observing an SSA solution, the closer two objects are fitted in the configuration, the stronger the relation between those items. An SSA solution in two dimensions (front to back and side to side, rather like a road map) of the four variables in our matrix would look something like the following:



Louis B. Guttman and James C. Lingoes began collaborating in the early 1960's, and I use the Guttman-Lingoes' family of SSA methods throughout this volume (SSA represents items as points in a Euclidian plane, or infinite space.)[10] When the relations between correlations in a matrix are sufficiently precise, we generate a picture of those relations that is much easier to interpret and much quicker to comprehend than is comprehension of the matrix. That is, it is much easier to

[10] The seminal algorithm on which The Guttman-Lingoes' Nonmetric Program Series (Lingoes 1973) is based is Guttman's "A General Technique for Finding the Smallest Coordinate Space for a Configuration of Points" in Psychometrica (1968).

understand a visual mapping of the relations than trying to ferret out those relations by scanning the correlation matrix (the table of coefficients--such as Goodman and Kruskal's gamma (γ) for ordinal data, Guttman's symmetric lambda (λ) for nominal data, or Pearson's *r* for interval data).

The Guttman-Lingoes SSA solutions provide a coefficient of alienation (K) that tells us how much variance in the image diagram is "unexplained." If the SSA solution is perfect, then all of the variance is explained and $K = 0$. The lower K, the more precise the representation of the coefficients.

The following example should facilitate understanding: A25A through A38 are "variable names" for several AOSIS Questionnaire Instrument (AQI) variables. I attach a letter, A-K, to each of these variables so that the reader can discriminate among them when they are fitted in a 3-D solution where each is identified by a single letter: A = A25A, B = A26A, C = A26A2, D = A26B, E = A28, F = A30 , G = A31, H = A32, I = A32B, J = A33, K = A38.

The first step is to create a matrix of gamma (γ) coefficients. Goodman and Kruskal's γ is a proportional reduction of error statistic (PRE) for ordinal data. It may vary from -1.0 to +1.0. When $\gamma = -1.0$, the order of one variable is always the reverse of the order on the other variable (for untied pairs). When $\gamma = 1.0$, order is the same on both variables for untied pairs. Thus, a gamma of -1.0 yields a prediction of perfect reverse order, and a gamma of +1.0 is perfect predictability of the same order.

The matrix of objects comprises variables measuring certain "traditional" activities in which respondents engage, such as whether subsistence (wild) food was a large part of any of the meals the respondent ate yesterday (i.e., the day before the interview was administered) (A28); whether subsistence (wild) food was a large part of any of the meals eaten the day before yesterday (A30); who harvested the food eaten yesterday or the day before yesterday (A31); and in the last 2 days, how many meals the respondent ate with a relative who lives in another household (A32). For example:

MATRIX OF GAMMA COEFFICIENTS

	A25A	A26A	A26A2	A26B	A28
A25A	1.000				
A26A	0.176	1.000			
A26A2	0.319	0.236	1.000		
A26B	0.070	0.432	0.087	1.000	
A28	-0.184	0.063	0.067	0.152	1.000
A30	-0.072	-0.056	-0.118	0.104	0.508
A31	0.183	-0.057	0.065	0.004	-0.026
A32	**-0.246**	-0.038	0.159	**-0.348**	0.354
A32B	0.045	0.006	0.069	0.085	[illegible]
A33	**-0.323**	0.000	**-0.236**	0.096	[illegible]
A38	-0.100	-0.025	0.252	0.253	0.511

	A30	A31	A32	A32B	A33
A30	1.000				
A31	**-0.257**	1.000			
A32	0.442	0.243	1.000		
A32B	[illegible]	-0.083	0.093	1.000	
A33	[illegible]	**-0.340**	0.418	[illegible]	1.000
A38	0.357	-0.016	0.387	-0.010	0.404

	A38
A38	1.000

The strongest (redlined) and next strongest (underlined) positive relations, weak relations and relations near zero, and the strongest negative relations (**bold**) are easy to locate in the matrix, but the structure of the multivariate relations among the objects is not easy to recognize. To demonstrate the structure of the multivariate relations, we fit the 11 variables into a 3-D hyperspace using Guttman-Lingoes' SSA-I method.[11]

The nuts and bolts of the procedure follow: the matrix of γ coefficients is entered into SSA-I, where the coefficients are converted to a matrix of distance scores, thereby breaking any ties. The distance scores are then ranked 1 through N and fitted to the smallest space in which the ranks can be ordered in relation to each other. The coefficient of alienation, K, tells us how much variance is unexplained in the image configuration.

The SSA-I program made 10 passes through the ranked distances seeking to reduce K so as to have the best possible fit in the smallest space; it improved the fit

[11] SSA-I is also known as MINISSA (Lingoes and Roskam 1973).

by about 4.5 percent between the first and last iterations. All but 9 percent of the variance is "explained."

MONOTONIC MULTIDIMENSIONAL SCALING: GUTTMAN-LINGOES' SSA-I MINIMIZING GUTTMAN/LINGOES' COEFFICIENT OF ALIENATION IN 3-D

Iteration	Alienation
0	.135
1	.103
2	.094
3	.092
4	.090
5	.090
6	.090
7	.091
8	.091
9	.091
ALIENATION OF FINAL CONFIGURATION K = .0901	

At the conclusion of the final iteration, SSA-I provides a table of the coordinates for each of the 11 variables. The value for A25A on DIMENSION 1 is -.99, on DIMENSION 2.04, and so forth. When the variables are fitted in the 3-D space, each will be represented as a single point whose coordinates can be confirmed by inspection of the table. The coordinates in 3-D follow.

Variable	Plot	Dimension			Variable	Plot	Dimension		
		1	2	3			1	2	3
A25A	A	-.99	.04	.50	A31	G	-.76	.99	.20
A26A	B	-.83	-.83	.09	A32	H	.38	.83	-.16
A26A2	C	-.74	.10	-.65	A32B	I	.54	-.14	.68
A26B	D	-.16	-.88	-.21	A33	J	.81	-.16	.32
A28	E	.69	-.15	-.12	A38	K	.39	.04	-.82
A30	F	.82	.09	.16					

Most of the SSA solutions in this volume require three dimensions in order to reduce the coefficient of alienation K below 25; and 3-D solutions are somewhat more difficult to interpret than are two-dimensional (2-D) solutions, or they seem so until the neophyte gets the hang of interpreting solutions in 3-D space. The following should help us comprehend a solution in three dimensions: Each 3-D solution will fit the points (I) from side to side, (II) from front to back, and (III) from top to bottom (height) in a Euclidian hyperspace.

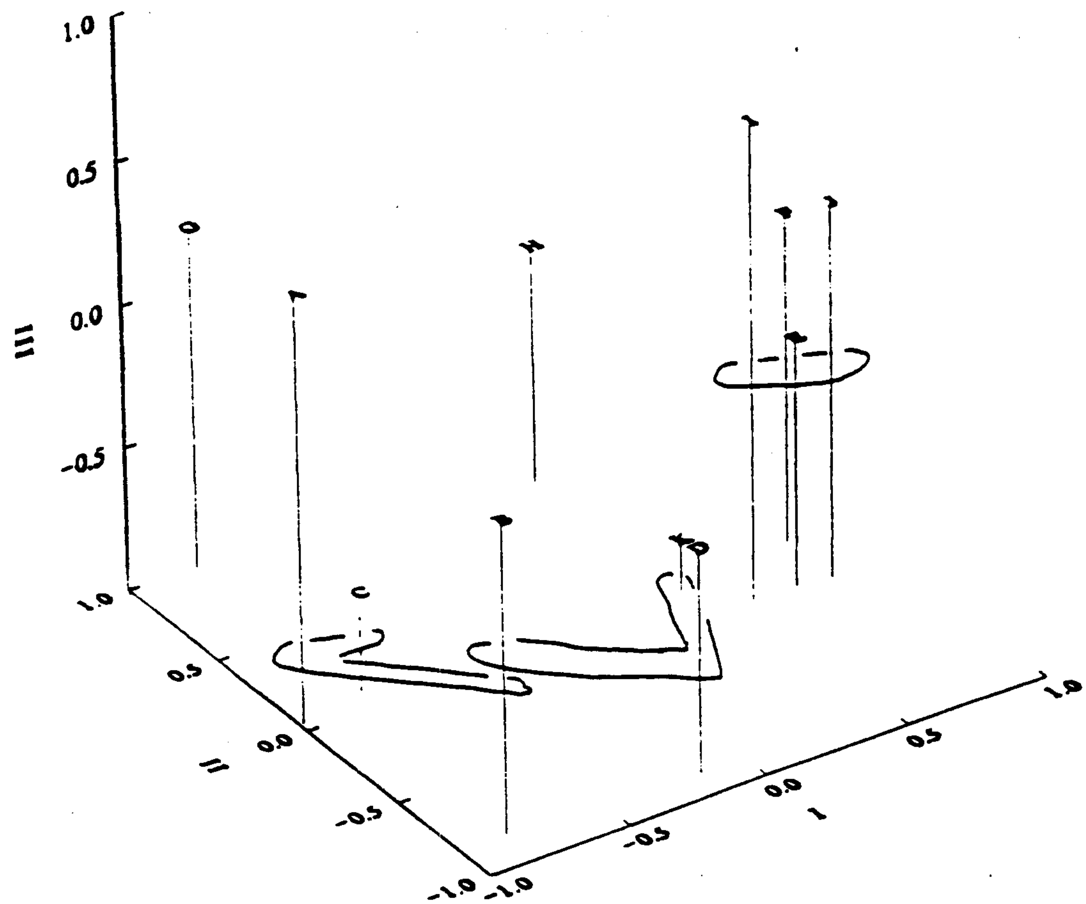
James Lingoes, Louis Guttman, Ingwer Borg, Edward Roskam, and a host of contributors to SSA analysis have created a meta-language for the analysis of spatial manifolds.[12] *Manifolds* are aggregations of points that can be readily discerned in a geometric representation. The simplest are the *simplex* and the *circumplex*. More complex are *radex, ringex, torex, multiplex, spherex, conex, cylindrex, spirex,* and so forth. Many simplex, circumplex, radex, conex, and cylindrex structures are analyzed in the following chapters. I will define a couple of them here and define others as is necessary at various points in the text.

If we look at items A (A25A), B (A26A), and C (A26A2) in the figure below we notice that they form a triangle.[13] Return now to the matrix of gamma coefficients. It is evident that the gamma coefficients among A, B, and C are positive, but not very strong. None of the relations reduces more than 32 percent of prediction error. Yet, in comparison with all other relations between any member of the simplex and other items in the figure, the relations among these three are strong. Because all of the similarities in the matrix are converted to distances, and the distances are then ranked, the objects are filled into the smallest space in the structure where they belong.

The observant reader of the matrix of gamma coefficients (pg. 18) will notice that A26A's [B in the figure] strongest relation is with A26B [D], not with A25A [A] or A26A2 [C]. The question is why isn't [B] fitted closer to [D]? The three reasons

[12] Three important sources are Lingoes, Roskam, and Borg (eds.) (1979); Borg and Lingoes (eds.) (1981); and Borg and Lingoes (1987).

[13] In 2-D solutions, simplexes often appear as C-shaped curves or as horseshoes.



are that (1) A26B's [D] next strongest relation is with A38 [K], (2) [D] has weak relations with [A] and [C], and (3) A26A [B] is negatively related to A38 [K]. On further inspection, we see that [B] is fitted about equidistant between [D] and [C], thus forming *termini* for two simplexes ([ACB] and [BDK]). Here, we begin to see the complexity of multivariate relations. (See the discussion of simplexes in the box below.)

We can also see in the 3-D figure that items [E] A28, [F] A30, [I] A32B, and [J] A33 form a tight region on the center right side of the box. Indeed, they form a circle, referred to in SSA terminology as a *circumplex*. As Lingoes and Borg (1979:138) define a circumplex, it is "a set of points doubly ordered in the real plane which define the corners of a convex, rectilinear polygon such that each point is carried back upon itself when the boundary is traversed in a given direction." The person whose geometry has waned will recognize circles and ellipses (if they are not too flat) as circumplexes.[14]

A simplex also is known as a simple Guttman scale. There are many ways (many algorithms) to order a matrix of correlation coefficients. In general, an ordered matrix places items in close proximity when their correlations are strong and positive and distant when they are strong and negative. Weak correlations are located in between. The highest positive relations tend to occur along the diagonals closest to the line of self-relationship. The following table expresses the same ordered matrix in two ways: the upper portion uses alphabet symbols to designate the relations among correlations from very high (vh) to high (h) to medium (m). The lower portion provides coefficients (relations between two variables) that vary from very high (.75) to medium (.45).

Ordered Matrix of Correlation Coefficients (Hypothetical)

	ITEM A	ITEM B	ITEM C	ITEM D
ITEM A	X	VH	H	M
ITEM B		X	VH	H
ITEM C			X	VH
ITEM D				X

	ITEM A	ITEM B	ITEM C	ITEM D
ITEM A	1.00	.75	.60	.45
ITEM B		1.00	.78	.65
ITEM C			1.00	.88
ITEM D				1.00

In an ordered matrix, a simplex is represented by coefficients within each row and column that increase toward the main diagonal (or decrease if distance coefficients are ordered). In 3-D solutions, simplexes take C, horseshoe, or triangular shapes, often made somewhat more complex by the dimension of height. We pointed out that in 2-D solutions, simplexes normally are represented as C, triangular, or horseshoe shaped. Yet conjoint distances can always be mapped on a straight line (so long as their points lie on a manifold that does not bend back on itself). The shapes of simplexes in 3-D solutions often are represented as stairstepped, each member of the simplex at a lower (or higher) level than the member closest to it.

Circumplexes are interpreted as follows: elements that are neighbors to each other are most similar, whereas those that are diametrically opposite are most

[14] The essential feature of the circumplex is its convexity, namely, if we place a point arbitrarily within its enclosed area, we can draw a straight line from it to every corner of the polygon without intersecting any boundary line (Lingoes and Borg 1979:139). All finite structures of the circumplex type can be isotonically projected onto a circle to satisfy the conditional constraints of the matrix. For the circumplex, the termini are close neighbors that serve to close the circle. Similarity coefficients--such as gammas (γ), that in an ordered matrix decrease away from the main diagonal and then increase again--will fold in the high points on either end.

dissimilar. From the opposite element of each point in the circumplex, the similarity gradient increases in both directions along the manifold. Various sectors of the circumplex often, then, require separate analysis and interpretation.

The *radex* is a rather frequently encountered data structure, although not in the figure above. It often appears as a combination of simplexes and circumplexes that form concentric circles around central elements--or a small circumplex of points. The central points must be substantively meaningful. The radex, we will see, appears frequently in our 3-D solutions, often stacked into cylinders and cones. The radexes, then, are 2-D data structures that get stacked, like pancakes, into *cylindrexes*. They look like upside-down ice cream cones when they are stacked into *conexes*, each radex having a smaller diameter than the radex on which it is stacked.

Radexes must be substantively meaningful, as must the conexes and circumplexes. The circumplex, for example, has three organizing characteristics: (1) a *polarizing* facet that establishes which direction a point lies from its origin, (2) a *modulating* facet that corresponds to the distance of the point from the origin, and (3) an axis along which the radexes are stacked. In order to explain how we determine axes, polarizing facets, and modulating facets, we must begin with an introduction to *facets*.

By facet, we mean a set of elements that belong together. The concept that underlies the similarity among the elements is the facet. The concept, facet, is analogous to the concept "factor" in factorial design (see Borg and Lingoes 1987:82). For example, the AQI and the KIP each are designed to assess several facets of village life and village organization.

The matrix of gamma coefficients above contains many of the items we have classified as traditional activities. By design, we recognize traditional activities and ideas associated with those activities as a facet. Respondents are asked several questions, then, about the traditional activities in which they engage.

We use the prefix A to define the members of the traditional activities set. The members of that set included here (see the matrix of gamma coefficients) are:

- A25A (Since the Exxon Valdez oil spill on 3/24/89, would you say the amount of game there is to harvest has. . .),
- A26A (During the last 5 years, would you say that the amount of game there is to harvest has. . .),
- A26A2 (Since the Exxon Valdez oil spill on 3/24/89, would you say the amount of fish there is to harvest has. . .),
- A26B (During the last 5 years, would you say that the amount of fish there is to harvest has. . .),
- A28 (Was subsistence food a large part of any of the meals you ate yesterday?),
- A30 (How about the day before yesterday? Did you eat any meals in which subsistence food was a large part of the meal?),
- A31 (On either day, was this food harvested by. . .),
- A32 (In the last 2 days, how many meals did you eat with a relative who lives in another household?),
- A32B (Since the Exxon Valdez oil spill on 3/24/89, what percentage of all meat [birds, fish, sea mammals, land mammals, marine invertebrates] and plants that you have eaten was Native [wild, subsistence] food?),
- A33 (What percent of all the meat and fish that you ate in the last year was native [wild, subsistence] food?), and
- A38 (How often do you speak [Native American language] at home?).

It is apparent that two types of questions about "traditional activities" are being asked: one focuses on the empirics of whether and how much the respondent (R) engaged in some activity. The other focuses on the respondent's (R's) knowledge (cognitive opinion) about resources traditionally harvested. The design, then, allows us to ask each respondent a variety of questions. Some measure the "empirical state of" and others measure "knowledge about (or cognitive attitudes of)." Thus, this design feature--which we call "facet X"--is comprised of two elements: $x1$ = empirical state of, and $x2$ = cognitive opinions of.

It is evident that a facet is a set of elements. For analytical purposes, we can reduce the elements of traditional activities to $a1$ = game (A25A, A26A), $a2$ = fish

(A26A2, A26B), $a3$ = meals (A28, A30, A32), $a4$ = wild food extraction (A31), $a5$ = wild food in diet (A32B, A33), and $a6$ = Native language (A38). Each of the elements in this facet can be cross-classified with X ($x1$ and $x2$)[15] so that each is either of the "empirical state of" or of the "knowledge about" type.

Sentence maps allow us to classify the facets in each item in our questionnaire and hence allow us to interpret the SSA configurations we obtain upon correlating responses to those questions. For example, A33 asks what percent of all the meat and fish the respondent ate in the last year was Native (also known as wild or subsistence) food? A simple sentence map is: $x1a5rn$.[16]

This simple sentence map is derived as follows:

-------------------- X ------------------

The amount of wild food $\left\{ \begin{array}{l} x1 = \text{empirical state of} \\ \\ x2 = \text{knowledge of} \end{array} \right\} \Longrightarrow$

-------------------- A ------------------

of his/her traditional activities area $\left\{ \begin{array}{l} a1 = \text{game} \\ a2 = \text{fish} \\ a3 = \text{meals} \\ a4 = \text{wild food extraction} \\ a5 = \text{wild food in diet} \\ a6 = \text{Native language} \end{array} \right\} \Longrightarrow$

-------- R --------

$\left\{ \begin{array}{l} r1 = \text{none} \\ r2 = < 50\% \\ r3 = <75\% \\ r4 = 75\% + \end{array} \right\}$

As a final example, let us inspect the 3-D SSA-I configuration below. We have increased the items fitted in the configuration from 11 to 19. The two simplexes in the lower left quadrant have not been moved, but what was once a circumplex on the center right is now a cylindrex, comprising three stacked radexes. The axis for

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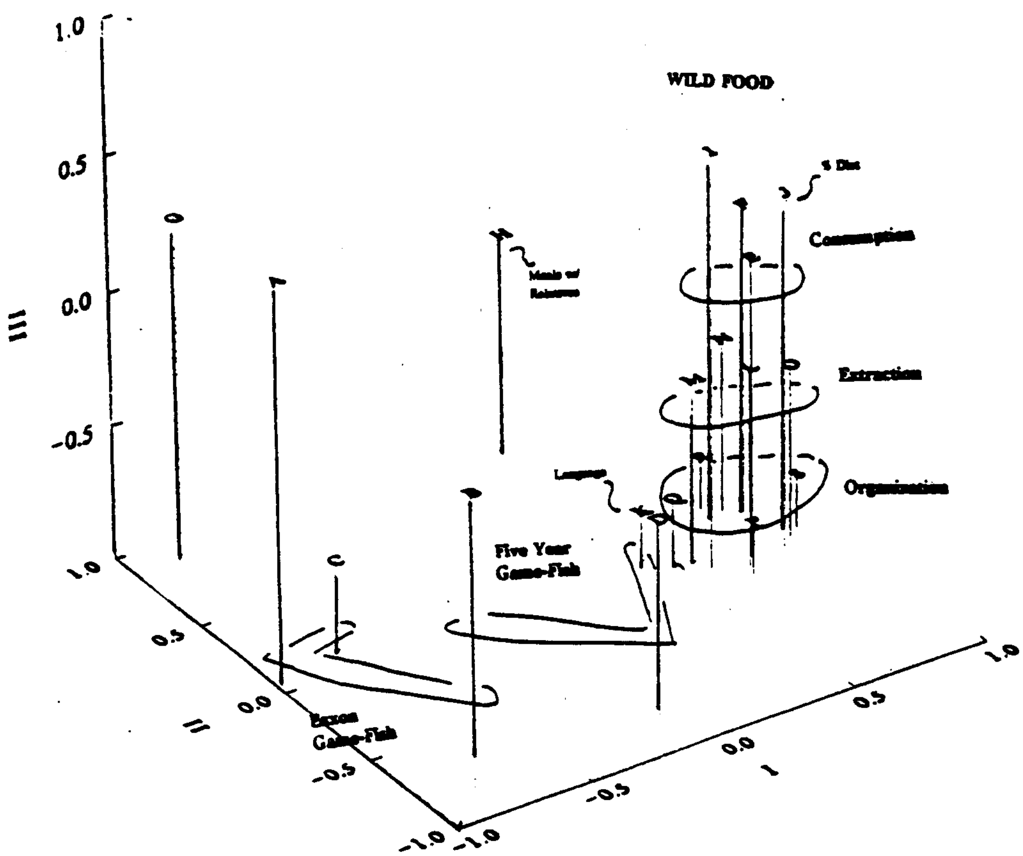
[15] Many of the traditional activities items can be cross-classified by other facets as well, such as Y Activities with Relatives, distinguishing $y1$ relatives and $y2$ nonrelatives.

[16] This item also can be cross-classified on a temporal facet.

the cylindrex is "wild food." The three radexes are organized by the following facets: organization of extraction (how its done and by whom) (bottom), extraction of naturally occurring resources (what is extracted and how much) (middle), and consumption (what is eaten, how often, and how much) (top).



The radex at the bottom of the cylindrex comprises the facet "organization of extraction" and is fitted with Q (extracting, i.e., hunting and fishing and gathering with relatives), P (maintenance of tools and equipment for extracting), S (establishing and maintaining camps for extracting), and R (investment of cash for extracting). The polarizing facet for the lowest radex is the respondent's personal involvement in the activity with the contribution of cash representing an impersonal contribution, working with relatives as copersonal, and the labor involved in maintaining equipment and establishing camp as personal. The *modulating* facet distinguishes the most impersonal from the most personal.

The radex in the middle of the cylindrex fits M (hunting of sea mammals), L (fishing), O (bird hunting and egg collecting), and N (land mammal hunting). The facet is *extraction of naturally occurring resources*. The polarizing facet is *Native*, such that the direction each point lies from the axis is determined by the extent to which the activity is engaged in completely or predominantly by Natives, or equally by non-Natives. Non-Natives hunt land mammals but not sea mammals. Natives are the sole hunters of sea mammals and predominate in the subsistence extraction of birds and fishes. The modulating facet for the middle radex is the frequency with which respondents are engaged in the activities. More Natives fish and hunt birds than hunt sea mammals. But sea mammal hunting is more frequently a task for groups, particularly relatives, than are the other activities. Thus, we see the fit between the lowest and the middle radexes and between copersonal [M and Q], personal [LO and PS], and impersonal activities and activities in which non-Natives engage [N and R].

The radex positioned highest in the cylindrex is organized by the facet "consumption." The polarizing facet is time, from most recent to most distant. The modulating facet is amount: E (wild foods in meals yesterday), J (amount of wild foods in diet last year), F (wild foods in meals the day before yesterday), and I (meat in diet since the Exxon Valdez spill). The closer the item is to the axis, the greater the amount--percentage in diet, number of meals, and so forth. By these measures, E and F (meals yesterday and the day before) are closest to the axis, and I (meat in diet since the oil spill) is most distant.

Assessing the entire cylindrex, it is a configuration of predominantly Native respondents who fish, hunt sea mammals, and hunt birds. It is likely that they maintain equipment and establish camps for extraction, have eaten wild foods recently, and enjoy large percentages of wild foods in their annual diets. The Exxon Valdez spill negatively affected the percentages of wild foods in those diets. The cylindrex suggests that the spill may have affected persons, particularly non-Natives, who pursued land mammals but few other species.

The two simplexes in the left front quadrant (A C B and B D K) fit attitudes about the amounts of fish and of game available for harvests. It is evident that the cognitive opinions about the amounts of fish and of game available since the Exxon Valdez oil spill (A C) differ from the opinions about the amounts of fish and of game available 5 years before present (B D). The measure for "availability of game 5 years ago" (B) in one simplex is linked to Native respondents through "the use of one's Native language at home" (K). It is almost surely linked to non-Native respondents through common attitudes among Natives and non-Natives about the effects of the oil spill on the availability of fish and of game (A C B). We have learned that the hunting of game, here interpreted as land mammals, is the extraction activity most frequently engaged in by non-Natives. The evidence suggests that Natives and non-Natives are in substantial agreement about the availability of fish and of game since the spill but have different understandings about the availability of fish over the longer haul.

The evidence for such an assertion, of course, will require subclassification, that is, controls for ethnicity. Yet there is some evidence for the claims about ethnic differences in the 3-D solution: some is provided by the close fitting of K ("Native language use at home") with the Wild Food cylindrex. Other evidence is the relations among H ("meals eaten with relatives in a home other than the respondent's in the past 2 days"), J ("percent of wild food in the respondent's diet in the past year"), and K ("Native language use at home"). These last three items form a simplex (as a triangle) that a well-trained eye can see and that also can be confirmed by inspection of the matrix of coefficients. The simplex is not outlined because in order to do so the multivariate relations fitted into the cylindrex would have to be invaded.

Multivariate solutions that take visual, geometric forms such as these provided by SSA are sources for hypotheses as well as means to test hypotheses.

PART TWO:
ANALYSIS OF RESPONSES TO THE AOSIS QUESTIONNAIRE

CHAPTER 2
TRADITIONAL ACTIVITIES AND CUSTOMS

I. INTRODUCTION

At the outset of the research, a central issue in the Social Indicators project was defining and measuring "traditional" customs. The persons responsible for developing the original version of the AQI created several questions that they presumed would provide valid measures of long-practiced Native customs pertaining to "subsistence"[17] activities; socializing among relatives and neighbors; and sentiments, essentially attitudes, about elders, naturally occurring resources, community stability, and the like. Most of the variables for which data were collected on traditional activities proved unreliable or invalid (see Social Indicators Study II [Jorgensen 1993]). The items measuring traditional activities that survived our tests represent two dominant features of life in the bush, particularly Native life (Eskimo, Aleut, and Athapaskan): (1) communitarian acts and sentiments--such as through the sharing of resources and meals with relatives, wider networks of kinspersons, and friends beyond one's household or even one's village--and also through maintaining active interests in community affairs, in large part through participation in them, and (2) engaging in hunting, fishing, and other extractive activities--some solo and some with relatives or friends.

II. SUBSISTENCE

By the use of the term "subsistence," there is no intention to imply that contemporary Natives in Alaska enjoy a life in which all their substantial needs (of food, clothing, shelter, transportation, arts, and the like) are satisfied by the extraction and processing of wild, naturally occurring resources. Before the 17th century, residents of what is now interior and coastal Alaska, including the islands

[17] I distinguish subsistence with quotation marks here because of the relatively large amount of attention that the concept, subsistence, has received since 1968 when Richard B. Lee and Irvin DeVore, eds., published Man the Hunter. The notion of a subsistence economy in the late 20th century has many detractors, principally because no group of Native or non-Native residents in North America has avoided integration, at some level, into their regional economies, the national economy, and the world economy. Very frequently that integration has fitted Natives into a periphery of a national economy dominated by the public sector in which their labor-value is low, unemployment and underemployment is high, and resources under their ostensible ownership whose commodity value are high are controlled by non-Native corporations who return a small portion of the surplus value to the Natives. A brief discussion of some of the issues that animate scholars interested in contemporary subsistence economies precedes the analysis of "Traditions" in contemporary Alaska villages.

offshore, were engaged in complex trade networks that connected the Athapaskans in the interior to the Chukchi in Siberia. In the 17th century, the Chukchi and Siberian Eskimos extended the network to include Russian traders at Anadyr and at other places along the Kolyma River and its tributaries. Russian merchants then intercepted the existing network and began transforming some Native goods into commodities, while encouraging the Natives to trade those items that were commodities on the European market. I define commodities as being anything, from mineral rights to a human's productive capacities, that is sold in the marketplace.

Whereas the Natives of western North America's subarctic and arctic regions were fully capable of maintaining their lives solely on the harvests, processing, and byproducts of naturally occurring resources, and on the exchanges of goods from those harvests and manufactures, the interception of old trade networks by European merchants began to integrate distant and unseen Natives into the market. The Natives, who bore the risks of production, received considerably less for those goods than did the Russian merchants for those same goods. As some Natives shifted their harvest schedules to focus more of their time and energy on trapping fur-bearing animals, they may have increased the actual risks of the subsistence life. That is, normal extraction pursuits may have been slighted in favor of the pursuit of peltries during the winter--hunters moving inland in pursuit of foxes, for instance, rather than to the sea in pursuit of seals.

The point is that erstwhile subsistence pursuits became integrated on the distant periphery of a mercantile system that spanned Asia and Europe. In the early 19th century, Russian trading posts were established north of the Alaska Peninsula; in the mid-19th century, Natives began selling their labor as a commodity, as well as baleen, whale oil, and food, to European whaling operations in the Bering Sea and the Arctic Ocean; and in the early 20th century after the collapse of the baleen industry and whaling operations, a rally in the worldwide fur trade drew Natives back into the fur market.

As market changes and surges penetrated what is now Alaska, Natives were affected, but perhaps no effects were greater than those that accompanied the Seward Purchase in 1867. Since that time, but particularly since the 1930's, contacts with church; government; and, on a more limited scale, private-sector businesses have drawn residents of Alaska's villages ever more tightly into the Nation's political economy. Their aboriginal lands have been expropriated for military bases, then returned to them. Their rights to harvest naturally occurring resources, on which their full subsistence economy was once based, have been extinguished. Control over and regulation of those resources have been appropriated by Federal and State governments.

In recognition of the extinguishing of claims to land, the Native villages and the Native regions to which they belong have received public monies from the provisions of ANSCA to conduct their affairs. The public sector has come to play an increasingly important role in the economies of Alaska's villages since 1971.

Non-Natives are not of the place. Most non-Natives are immigrants to Alaska. They locate there for employment, and they stay there for so long as employment is available. Some work in commercial fishing; some in the oil-related industries; and many as entrepreneurs and workers in the businesses and industries generated from the multipliers made possible by oil and, to a much lesser extent, commercial fishing. Since Statehood was awarded in 1958, the principal growth to Alaska's economy has been to through the public sector via education; health; transportation; safety; criminal justice; and all other public agencies within city, borough, State, and Federal governments.

As the public and private sectors of Alaska's economy have grown, especially since the early 1970's, the proportion of non-Natives in Alaska also has grown. And with that growth, non-Natives have asserted their rights to fair access to Alaska's naturally occurring, wild resources, resources that are managed by State and Federal agencies. Contests over "subsistence" rights, that is, rights under State law to harvest fish, birds, and land mammals, have pitted citizens against the Alaska Deparment of Fish and Game, blocks of legislators against blocks of legislators, and State

Government against Federal Government. This hoary and protracted debate has taken place under the banner of "subsistence" and subsistence rights.

In simplest terms, many non-Native Alaskan residents who are users of Alaska's wild, naturally occurring resources want the same access to resources that is provided to Natives and greater access than is provided to non-Native nonresidents. Inasmuch as few, perhaps no, Natives or non-Natives are solely dependent on the harvest of wild, naturally occurring resources, "subsistence" does not mean what it means in relation to 16th century Native economies in what is now Alaska.

In 1990, I wrote:

> The term 'subsistence economics' refers to a specific mode of production. It comprises the organization of labor that is required to extract, process, and store naturally occurring resources; the organization of distribution required to share, gift, or reciprocate those resources; and the patterns of consumption of those resources that can be observed. The natural resources themselves occur and persist without human planning or manipulation. Human activities can, of course, interrupt the growth, even the existence, of these natural resources, but in the absence of man and his activities, they will continue to exist, even if other natural events periodically limit their growth or distribution (Jorgensen 1990:75)

Currently, the large proportion of non-Natives, alone, in many Alaskan villages in our sample--particularly Kodiak City, Dillingham, Unalaska, Sand Point, Bethel, Nome, and Barrow--puts pressure on naturally occurring resources and limits how and in what quantity they can be harvested. But the huge growth of Native populations in the largest villages, through relocation and natural increase, also limits resource extraction. Related to this growth, however, is the technology that can be purchased from public and private sources of income. This technology has altered the organization of extraction while becoming deeply embedded within it. Snowmachines have replaced dog traction; motorboats have replaced kayaks and, for the most part, skin boats. Rifles and guns have replaced many harpoons, nets, snares, and traps. Time allocations for harvests have been changed markedly. Even the organization of labor for extracting many species has changed, as have the kinds and amounts of resources that are harvested.

In our intensive analysis of three villages in the early 1980's--Unalakleet, Gambell, and Wainwright--we learned that modern subsistence economies integrate modern technologies and the sources of income required to maintain them (see Jorgensen and Maxwell [1984], Little and Robbins [1984], and Luton [1985]). We also learned that Native subsistence economies remain quintessentially subsistence economies in their organizations of production: ownership, control, labor, distribution, and consumption. They are directly linked to procuring food and shelter for the maintenance of life itself. It is the social fabric in which the subsistence economy is embedded that is crucial within and among communities.

For the Social Indicators project, we have been charged to determine similarities and differences between Natives and non-Natives caused by oil-related or other factors. The entire question of Tradition is begged by the introduction of persons into Alaska and into our sample who are non-Natives. The traditions of non-Natives are not borne of generations of subsistence economies and the changes that have shaped those economies, but their expectations as enfranchised residents are to have equal access to naturally occurring resources with which to to fill their larders.

We have sought to do this by referring to subsistence as the harvests or uses of wild resources. There was seldom any problem, on the parts of Natives or non-Natives, in understanding what was meant by wild, Native, or subsistence food or resources. The terms were often used interchangeably. By attributing to non-Natives the harvest and use of Native foods, we do not imply that non-Natives are Natives, nor do we suggest that the harvests of subsistence resources, alone, link Natives and non-Natives into the same traditions of a subsistence mode of production.

III. SUBSISTENCE, TRADITIONS, AND THE AOSIS QUESTIONNAIRE INSTRUMENT (AQI)

It is important to distinguish extractive activities, most of which are conducted for subsistence (diet and byproducts) from communitarian customs. Extractive activities need not be conducted by several persons, each with different skills that must be integrated. With few exceptions, most species of sea mammals, land mammals, birds, fishes, eggs, and plants in the arctic and subarctic can be bagged, felled, harvested, snared, netted, or hooked by an extractor working solo. This has been true for at least two millennia. Since the advent of high-powered rifles and shotguns, aluminum skiffs with outboard motors, snowmachines, and all-terrain vehicles, persons working alone can extract as much as did their grandparents two generations earlier, yet in a much shorter time than was required 40 years ago. Extraction per se, then, is not necessarily communitarian, but traditional subsistence economies do not refer solely to extractive pursuits: for example, the sharing of equipment, fuel, and food used for extraction and the distribution of the items extracted can, indeed, be communitarian.

The term subsistence economics, as we have asserted, refers to a specific mode of production (for a much fuller account see Jorgensen [1990:75-202]). It comprises the organization of the ownership, labor, distribution, and patterns of consumption. The measures of subsistence economics and the measures of communitarian customs are weakly developed in AOSIS, but as we shall see, a few measures provide reasonable indicators of traditional customs and the way in which they fit within the structure of village life.

A shortcoming of the original AOSIS questionnaire is that it did not adequately provide for measures of female roles in extraction (harvesting wild plants, cleaning and preparing fish, preparing meats of all kinds, rendering oil, producing byproducts from catches, and the like). Inasmuch as about half of the sample respondents are women, the measures of extractive activities in which women do not engage are underrepresented in the following analysis, as are some activities engaged in by men. For example, most female respondents did not report that they hunted seals or caribou, even if someone in the household hunted for those mammals. Several women reported that they hunted sea mammals or land mammals, if someone in the household was so engaged, even if the women were not. And finally, some women, contrary to practices of a half century ago, hunt sea mammals and land mammals. We will adjust as best we can for these responses below by subclassifying for sex (and age and ethnicity). We cannot, however, adjust for many questions about women's roles in the subsistence economy because questions capable of adequately assessing those roles were not placed in the AOSIS instrument at the outset of the research.

The items used in the multivariate analyses indicate traditional customs in village Alaska. In each variable, the attributes (or ranks or variates) distinguish "Western" or non-Native customs from "Traditional" or Native customs. In general, the variables are structured so that the presumed-Western attributes appear as the first attribute (dichotomous) or in lower ranks (ordinal), and the presumed-Traditional attributes appear as the second attribute or in the higher ranks. For example, the nominal variable A28 asks whether subsistence food was a large part of any of the meals the respondent ate yesterday; 0 = no, 1 = yes. Respondents (R's) understand subsistence food to be meat or plants of any kind procured from naturally occurring resources. If a person answers yes to A28, the response fits one feature of what we presume to be traditional among village dwellers. It is the case, of course, that many non-Natives residing in Alaskan villages also extract and consume subsistence food, much as many non-Natives and some Natives may not extract and consume subsistence food. We, therefore, require several variables measuring features of the subsistence economy and several measuring communitarian customs to determine whether there is a "Traditional" structure and a "Western" structure and, perhaps, something in-between in village life.[18]

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[18] The variables in this analysis are defined in the AOSIS Questionnaire (see Social Indicators Study II [Jorgenson 1993]): **A26A** = whether R's think the amount of game there is to harvest has decreased, stayed the same, or increased during the past 5 years; **A26B** = whether R's think the amount of fish there is to harvest has decreased, stayed the same, or increased during the past 5 years; **A28** = whether subsistence food was a large part of any of the meals R ate yesterday; **A30** = whether subsistence food was a large part of the meals R ate the day before yesterday; **A32** = whether and how many meals R ate in the last 2 days with a relative who lives in another household; **A33** = the percent of all meat and fish R's ate in the past year that was subsistence or Native food; **A38** = the frequency with which R speaks his/her Native language (exclusive of English, Spanish, Norwegian, etc.) at home; **CACT1** = composite score of the number of kinds (species, varieties) of land mammals hunted; **CACT2** = composite score of the number of kinds (species, varieties) of sea mammals hunted; **CACT4** = composite score of the occasions throughout the year when persons established camps to hunt, fish, collect; and **CACT5** = composite score on the kinds of fishing in which persons engaged throughout the year (jigging, hook fishing, trap fishing). The **CMN1-2, 4-5** series provide composite measures of the number of months in which R's engage in land mammal hunting (1), sea mammal hunting (2), camping (4), and fishing (5); the **CREL1-2, 4-5** series provide composite measures of the number of friends and the number and kinds of relatives with whom R's engaged in hunting land mammals (1), hunting sea mammals (2), camping (4), and fishing (5); and the **RDAY1-2, 4-5** series provide composite scores of the number of days in the preceding year in which R's engaged in land mammal hunting (1), sea mammal hunting (2), camping (4), and fishing (5). Also, **D13** = the number of days during the previous week R visited with friends and relatives away from R's home; **D16** = the number of public meetings R attended during the last month; **D19** = whether R voted in the most recent city council election; **D22** = whether R voted in the most recent village corporation election; **D25** = the number of years in which R has resided in the community; E12 = how R feels about the ties he/she has to persons in other communities; and E29 = how R feels about his/her income.

Some of the variables listed in footnote 18 do not appear to be traditional, such as voting in city council and village corporation elections and attending public meetings. We learned from our observations in the villages, however, that village corporations and city councils are regarded as community instruments through which residents control local affairs and bring benefits to their communities. Attendance at public meetings, as well, is thought of as a communal act, not merely a personal one. Traditional people are engaged in community life, so we seek to measure that involvement as a persistence of a traditional practice, although in altered forms from before ANCSA and before Statehood.

Four other measures are not traditional as such, but throughout the four waves of the research they serve to distinguish "Traditional" from "Western" in the post-1971 era.[19] If Natives are employed in Alaskan villages, they tend to have public-sector jobs. Non-Natives are almost always employed: they occupy public-sector jobs in the more northerly regions where private-sector development is very meager, and they enjoy either private or public employment (or self-employment) in the more southerly regions where the private sector is more robust. We measure the kind of employment to determine whether private-sector employment correlates with single person, conjugal pair, and nuclear family household types; smaller household sizes; and higher earned incomes. The first three waves of the current research have demonstrated that high scores on traditional variables have correlated with large, composite households; public-sector employment; or low incomes derived from multiple sources, many of them public transfers of various kinds.

The analysis is developed in several stages. At the outset is a table of summary statistics (Table 1) for most of the variables used in the analysis of traditional customs. Table 1 is arranged by samples, pretest and posttest, and by theoretical contrasts within each of those samples between *Mixed* villages and *Native* villages. The *Native:Mixed* villages have proved to be one of our two most powerful theoretical contrasts (the second is *Comm Fish:NonCom Fish*), as is evident in

[19] **PPEMP** = if a person is employed, is R employed in the public (0) or private (1) sector; **RHHSI** = the size (number of persons) in R's household; **RHHTYPE** = R's household type, from single person living alone through composite households in which three or more generations of relatives, not necessarily linearly related, reside; **D2** = annual household income.

Table 1

CONTRASTS BETWEEN PRETEST AND POSTTEST SAMPLES, AND BETWEEN *MIXED:NATIVE* CONTRASTS WITHIN THOSE SAMPLES, 32 AOSIS VARIABLES MEASURING RESPONDENT CHARACTERISTICS AND TRADITIONAL CUSTOMS, 1987-1988 AND 1989-1990*

	PRE 1987-1988 (*N* = 548) I	**PRE *MIXED* (*N* = 264)**	**PRE *NATIVE* (*N* = 284)**	**POST 1989-1990 (*N* = 308) II**	**POST *MIXED* (*N* = 170)**	**POST *NATIVE* (*N* = 138)**
ETHNICITY						
Native	79%*	59%*	95%	67%	48%*	91%
Non-Native	21%	41%	5%	33%	52%	9%
AGE						
Mean	41.5	39.9*	43	42.4	39.9*	45.5
SEX						
Male	50.5%	44%*	57%	54%	45%*	64%
Female	49.5%	56%	43%	46%	55%	36%
EDUCATION COMPLETED						
Some High School	42%	38%*	47%	46%	43%*	50%
Some College or Beyond	33%	48%	19%	30%	42%	16%
SOURCE OF EMPLOYMENT						
Unemployed/Retired/Other	24%	19%*	29%	28%	25%	32%
Public Sector	37%	35%	39%	39%	42%	35%
Private Sector	39%	46%	32%	33%	34%	32%
EMPLOYMENT						
Md Months Employed	6	8*	3.7	8	9.9*	2.8
Persons Employed ≥4 Months	52%	73%	51%	60%	70%	48%
Persons Employed ≥10 Months	37%	44%	31%	44%	58%	28%
INCOME						
Median	$22,940	$34,185*	$16,000	$27,885	$38,172*	$19,017
Mean	$30,160*	$37,900	$22,980	$33,920	$39,270	$27,030
Income≥$50,000	18%	30%	7%	27%	38%	13%
HOUSEHOLD SIZE						
Mean	2.84	2.64*	3.06	2.8	2.7*	2.9
3 Persons or More	71%	62%	80%	68%	66%	72%
6 Persons or More	23%	16%	30%	20%	13%	29%
HOUSEHOLD TYPE	**PRE I**	**PRE MIX**	**PRE NAT**	**POST II**	**POST MIX**	**POST NAT**
Single-Conjugal-Nuclear	80%*	83%	78%	66%	73%*	57%
Stem-Joint-Denuded-Composite	20%	17%	22%	34%	27%	43%
LENGTH OF RESIDENCE						
≤5 years	17%*	24%*	10%	18%	28%*	5%
>10 years	69%	55%	83%	56%	38%	78%

Table 1 (continued)

	PRE 1987-1988 (*N* = 548) I	PRE *MIXED* (*N* = 264)	PRE *NATIVE* (*N* = 284)	POST 1989-1990 (*N* = 308) II	POST *MIXED* (*N* = 170)	POST *NATIVE* (*N* = 138)
LAND MAMMALS						
% Hunters	34%	33%	35%	42%	37%	47%
Months Hunting	2.4	1.8	2.8	2.5	2.4	2.6
Days Hunting	20.5*	19.2*	21.4	11.5	12.6	10.5
SEA MAMMALS						
% Hunters	32%	16%*	44%	28%	12%*	48%
Months Hunting	4.3	4.2*	6.3	5.6	4.8*	6.3
Days Hunting	38*	35.5*	41.5	34.7	37.4*	34.1
CAMPING						
% Campers	49%	44%*	53%	42%	38%	47%
Months Camping	3	2.7*	3.2	2.4	2.4	2.4
Days Camping	13*	13.1	13.0	19.9	21.5*	18.2
FISHING						
% Fishers	41%*	36%*	46%	60%	55%*	69%
Months Fishing	4.3	5.1*	3.9	3.5	3.5	3.7
Days Fishing	20.9*	20.4	21.5	27.7	23.3*	32.4
SUBSISTENCE FOOD YESTERDAY						
Yes	64%	49%*	78%	58%	48%*	71%
SUBSISTENCE FOOD DAY BEFORE YESTERDAY						
Yes	61%	51%*	71%	57%	45%*	72%
EITHER DAY FOOD FROM OTHER HH						
Yes	37%*	49%	50%	36%	36%*	35%
MEALS WITH RELATIVES OTHER HOUSEHOLD PAST 2 DAYS						
1 or More	50%	43%*	56%	43%	33%*	54%
SUBSISTENCE MEAT AND FISH IN ANNUAL DIET						
≥50%	54%	40%*	67%	47%	34%*	64%
SPEAK Native LANGUAGE AT HOME						
Most of Time or Always	47%	35%*	55%	40%	30%*	48%
THINK ABOUT GAME AVAILABLE PAST 5	**PRE I**	**PRE MIX**	**PRE NAT**	**POST II**	**POST MIX**	**POST NAT**
YEARS						29%
Decreased	30%	22%*	41%	35%	40%	22%
Increased	31%	40%	20%	20%	18%	

Table 1 (continued)

	PRE 1987-1988 (*N* =5 48) I	PRE *MIXED* (*N* = 264)	PRE *NATIVE* (*N* = 284)	POST 1989-1990 (*N* = 308) II	POST *MIXED* (*N* = 170)	POST *NATIVE* (*N* = 138)
THINK ABOUT FISH AVAILABLE PAST 5 YEARS						
Decreased	46%	40%	54%	42%	56%*	26%
Increased	17%	22%	10%	16%	16%	16%
DAYS VISIT FRIENDS LAST WEEK						
3 or More	46%	44%	47%	43%	45%	41%
PUBLIC MEETINGS ATTENDED LAST MONTH						
1 or More	44%	41%	47%	48%	42%	54%
VOTE IN RECENT CITY COUNCIL ELECTION						
Yes	69%*	64%*	73%	57%	54%	60%
VOTE IN RECENT VILLAGE CORP ELECTION						
Yes	68%	63%*	72%	64%	60%	67%
SOCIAL TIES WITH PERSONS IN OTHER VILLAGES						
No Satisfaction	6%*	6%	5%	10%	12%	7%
Complete Satisfaction	22%	20%	23%	57%	51%	65%
FEELINGS ABOUT INCOME						
No Satisfaction	16%*	6%*	25%	25%	27%	22%
Complete Satisfaction	11%	13%*	10%	30%	29%	30%

[a]Asterisks (*) denote *Pretest:Posttest* and *Mixed:Native* contrasts significant at P ≤ .05. Pretest (I)/Posttest (II) contrasts are designated in the second column under Roman I. *Mixed/Native* contrasts for the **pretest** sample appear in the third column under PRE *MIXED* and for the **posttest** sample appear in the sixth column under POST *MIXED*. Significance of differences for *Mixed/Native* contrasts of nominal dichotomous variables are based on the test for the difference between proportions; the Kolmogorov-Smirnov two independent sample test is used for ordinal variables; and the *t*-test is used for interval variables.

Table 1. Of the 64 contrasts between *Mixed* and *Native* villages in the pretest and posttest samples, 38 of the differences would occur fewer than 5 times in 100 by chance.

Several variables in Table 1 summarize respondent characteristics, not traditional customs. We have frequently used these same characteristics in earlier versions of our analysis, including the research methodology volume, which serves as a primer to the inquiry, including the analyses of hypotheses we pursue here. We allow demographic factors--age, ethnicity, sex, education--to account for as much variation (or reduce as much error) as possible in evaluating our hypotheses.[20] These variables have importance for the entire study, so we will refer to Table 1 on several occasions. Other variables--such as those measuring employment, household size, household type, and length of residence in the community--either are partial causes (an item among multiple items that "cause" nontrivial consequences to the observation of traditional customs) or partial effects of the practice of traditional customs in certain contexts.

This last sentence may appear opaque. What is meant is that sustained employment and short-term residence in a community may combine to reduce the practice of some traditional customs, such as hunting sea mammals or eating naturally occurring resources on a regular basis, and visiting friends and relatives or eating with them in their homes. Several constraints can inhibit these practices. For example, the recent migrant (say the person is a male, married, and has been a resident for 2 or 3 years) (1) does not have much time to hunt sea mammals; or (2) does not know the environment well and has not established places to hunt; or (3) does not have relatives in the community with whom he (or his wife) can eat or share naturally occurring resources; or (4) does not attend public meetings because of disinterest, or because of little time, or because neither he nor his wife wants to be an interloper. Contrariwise, a large, composite household[21] may form because persons, relatively long-term residents, are undereducated and unemployed or underemployed, or infirm, or aged (or some combination of these factors). Perhaps the persons in the household can engage in a few extractive activities but nevertheless are the recipients of food and assistance from kinspersons and friends in the village. Although large, composite households are not traditional features, they

[20] Refer to footnote 1: D28 = ethnicity, RAGE = age, RSEX = sex, C1=education, PPEMP=source of employment, C6M = months employed, D2 = income, RHHSIZE = household size, RHHTYPE = household type, D25 = length in village.

[21] Nonnuclear households in which affines and collateral kinspersons may join a denuded nuclear coresidential unit, or in which two women with children but without husbands coreside, or for which there is some other arrangement that is not a single person, a conjugal pair, or a nuclear family.

are Native features, born of a communitarian ethic of sharing yet prompted by economic exigencies.

We begin with an analysis of the structure of traditional customs in the combined pretest-posttest sample (N = 856). This sample, composed of initial interviews obtained from residents in 31 Alaskan villages over four winter research waves from 1987 through 1990, provides a general SSA structure. The 3-D configuration provides a basis for assessing the way in which differences and similarities between the pretest and posttest samples of which it is composed can be evaluated. The analysis of the combined pretest-posttest sample will facilitate our knowledge of the most stable traditional customs and how they are practiced as conditions affecting them change.

The heart of the analysis begins with an SSA configuration for traditional customs and demographic variables in the pretest sample of 548 persons interviewed in 31 villages in 1987 and 1988 (78X). Next, the pretest sample is divided into two nearly equal subsamples, *Native* and *Mixed*. The *Native* subsample is composed of 284 respondents residing in 22 sample villages in which the populations are more than 75 percent Natives (Eskimos, Aleuts, and Athapaskans). The *Mixed* subsample is composed of 264 respondents in 9 sample villages in which the populations are more than 25 percent non-Natives. Analysis of the pretest sample, with and without theoretical contrasts, allows us to develop a concluding hypothesis of the structure of traditional customs in modern villages, in general, and in villages in which non-Natives constitute large minorities (over 25 percent) or absolute majorities of the residents.

We then address the posttest sample of 308 persons interviewed in 31 villages in 1989 and 1990 (90X). We follow the same procedure as above: the total posttest sample is analyzed, followed by analysis of the *Native* (N = 138) and *Mixed* (N = 170) posttest subsamples. The intention here is to determine how and in what ways the pretest and posttest samples differ. Differences are clues to change and social indicators should be sensitive to change while also demonstrating stability and reliability.

Stationariness requires panel data. Our final analysis of traditional customs is conducted on our panels. Differences between pretest and posttest samples may suggest whether and what kind of changes have occurred between 1987-1988 and 1989-1990, but because the posttest sample was drawn without replacement of the pretest sample, conclusions about change based on comparisons of pretest and posttest samples suffer from the threat of ecological fallacy (or specification error, see Social Indicators Study II [1993:25-73]). We control for ecological fallacy by embedding two panels in the research design. Panels are composed of subsamples of respondents drawn from the pretest samples and reinterviewed in two subsequent waves after their initial interviews. Analysis of panel data will allow us to reduce the threat to validity posed by specification error (attributing to the pretest the responses of the posttest and vice versa when pretest and posttest are unrelated samples). The pretest and posttest samples allow us to check threats to validity within panels from history, regression, and testing effect (again, see Social Indicators Study II [Jorgensen 1993:214-284]). The analysis of panel data will allow us to test our concluding hypotheses about traditional structure and factors that influence changes to that structure.

As shown in Table 1, the variables we have selected to assess respondent characteristics are especially powerful, but that power is masked in some of the following analyses. As such, concluding hypotheses are prompted from our impressions about the effects of ethnicity, sex, age, and other characteristics of the samples. Thus, before we analyze the total pretest/posttest sample we employ several subclassification and partialing techniques to exercise controls for sex, ethnicity, age, and education within and between the pretest and posttest samples and also within and between subsamples (*Mixed* and *Native* theoretical contrast samples).

IV. THE STRUCTURE OF TRADITIONAL CUSTOMS IN THE TOTAL SAMPLE

IV.A. Introduction

Figure 1 solves the relations among 35 traditional AOSIS variables in three dimensions.[22] A region comprising four areas appears in the center-right side of the box. Subsumed as TRADITIONAL EXTRACTORS are the two largest areas: Sea Mammal Extractors on the right and General Extractors on the left. Fitted toward the right front of the box, in front of the two areas designating extraction, are items measuring household size (B) and household type (C). Large household sizes and composite types fit with traditional customs. These variables are negatively correlated with the items in the HIGH PRIVATE INCOME region. I expected large and composite households to be more closely fitted within the TRADITIONAL EXTRACTORS region. The circumplex in the left front comprises attendance at public meetings (d, D16), receipt of food in the past 2 days from persons in households other than R's (X, A31), satisfaction with ties to persons in distant communities (h, E12), and the cognitive attitude that fish are more available now than 5 years earlier (U, A26A). I expected this area, too, to be fitted into the traditional region (this unlabeled circumplex exhibits considerable variation in the third dimension). The items in both of these areas at the front of the box reflect attitudes and customs of older Natives. Elders, then, appear to benefit from traditional extraction, even though they do not participate vigorously as extractors of multiple species of land mammals, sea mammals, and fish.

The matrix of coefficients on which Figure 1 is based appears in Table 1 of the Appendix. Of the 595 coefficients, 24 percent are significant at ≤ .02. Throughout the several tables of correlation coefficients in the Appendix, coefficients greater than .50 are marked by asterisks (*), and coefficients ranging from .20 to .49 are marked by plus signs (+). Most of these coefficients are significant at 0.000. (Each

[22] James Lingoes' SSA-I (similarity structure analysis for finding the smallest space in M dimensions) from the Guttman-Lingoes non-metric multidimensional space analysis program series is employed in the following figures. The intercorrelation matrices on which the figures are based are presented in the Appendix, Section B. Table numbers are identical to figure numbers, e.g., Table 1 corresponds to Figure 1.

Variable		D1	D2	D3
PPEMP	A	-1.13	-.54	.38
RHHSI	B	.60	-.48	-.32
RHHTYPE	C	.17	-1.18	.29
CACT1	D	.07	.64	-.04
CACT2	E	.66	.11	.21
CACT4	F	.32	.54	.31
CACT5	G	.35	.43	.58
CMN1	H	.20	.77	-.14
CMN2	I	.34	.12	.13
CMN4	J	.23	.76	.16
CMN5	K	.52	.52	.18
CREL1	L	-1.03	.22	.56
CREL2	M	-1.32	.32	.40
CREL4	N	-1.14	.51	.37
CREL5	O	-1.06	.63	.15
RDAY1	P	.21	.60	-.28
RDAY2	Q	.73	.28	-.24
RDAY4	R	.39	.49	-.01
RDAY5	S	.60	.48	-.07

Variable		D2	D2	D3
A26A	T	-.85	.08	-.74
A26B	U	-.37	-.93	-.89
A28	V	.72	-.24	.30
A30	W	.80	-.40	.17
A31	X	-.82	-1.03	.96
A32	Y	.48	-.37	.62
A33	Z	.63	-.40	.16
A38	a	.49	-.72	.35
D2	b	-.79	.46	-1.10
D13	c	-.22	.45	.79
D16	d	.03	.10	-.83
D19	e	.47	-.04	-.90
D22	f	.67	-.28	-.40
D25	g	.29	-.47	.19
E12	h	-.57	-1.00	-.25
E29	i	-.66	-.40	-1.05

Guttman-Lingoes' Coefficient of Alienation $K = .174$

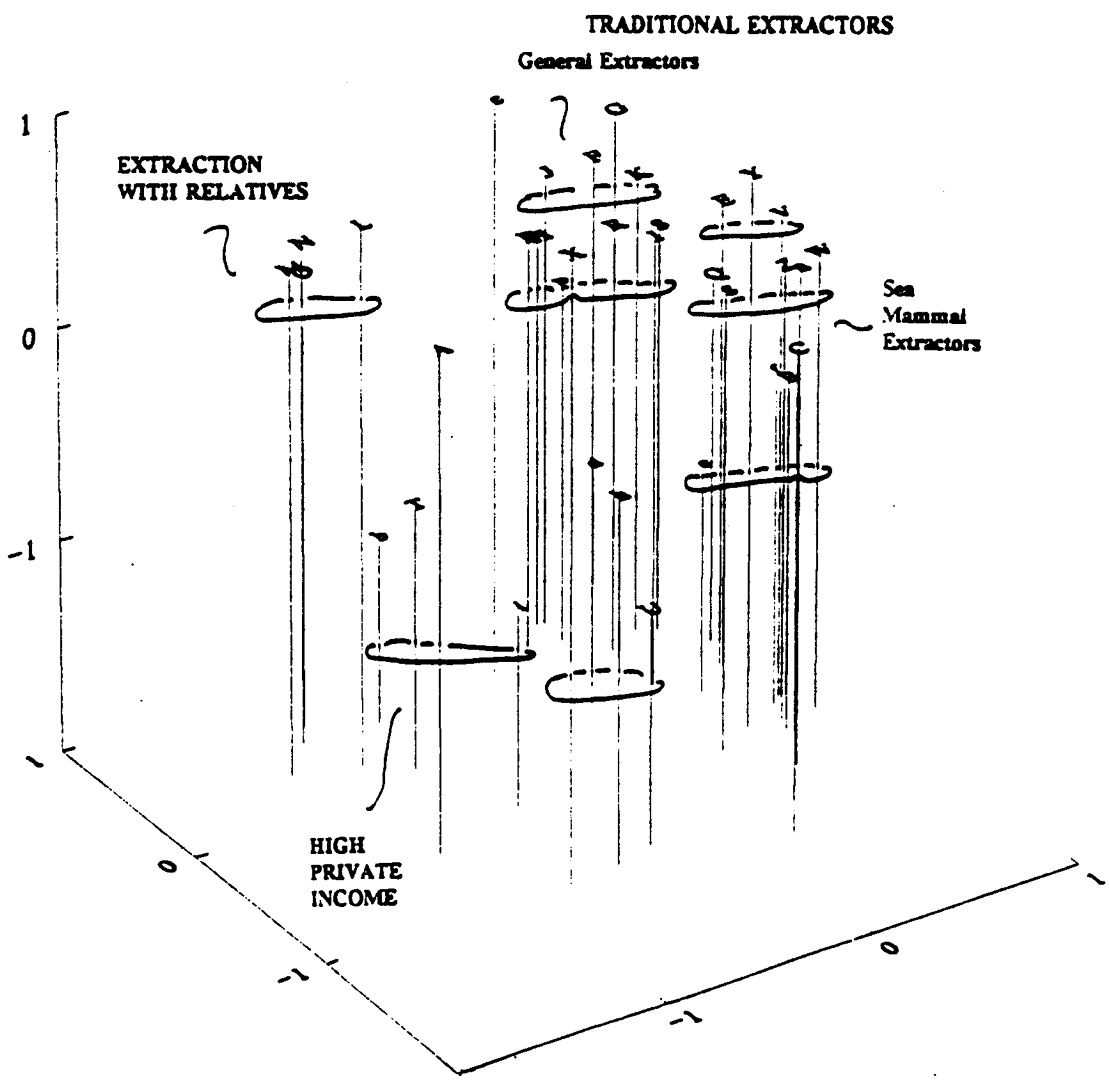

FIGURE 1. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 35 VARIABLES, N = 856, TOTAL PRETEST-POSTTEST SAMPLES COMBINED, 1987-1990

SSA figure is matched by a table of matrices in the Appendix with a number identical to the figure's number.)

At initial inspection, the structure of the TRADITIONAL EXTRACTORS area provides a modest surprise inasmuch as most of the customs other than subsistence extraction activities, themselves, are fitted into the Sea Mammal Extractors conex on the right. The General Extractors cylindrex toward the center rear better represents an involution in extractive pursuits and the time allocated to them. We begin with the General Extractors cylindrex, then turn to the significance of the Sea Mammal Extractors conex.

The General Extractors cylindrex comprises a lower and higher radex. At the lower level are fitted participation in land mammal hunting, and the cumulative days allocated to camping, fishing, and hunting land mammals. At the higher level are fitted participation in camping and fishing as well as the cumulative months in which persons engage in those activities. Thus, the cylindrex encompasses most of the major extractive activities--land mammal hunting; subsistence fishing by hook, net, and trap including winter fishing; establishing camps away from home; and repairing and maintaining equipment to conduct these activities. If R's engage in hook fishing, or trap fishing, or winter jigging, or subsistence netting, they are likely to engage in all of these activities at several times of the year (G, CACT5; K, CMN5) and also are apt to conduct many of these activities from camps (F, CACT4) established on a temporary basis throughout the year (J, CMN4). Whereas R's who fish and camp also hunt land mammals, R's who do not engage in several forms of fishing and extensive periods of camping (and maintaining equipment), also hunt land mammals (D, CACT1). The modest separation of the activities is represented in the cylindrex, distinguishing persons in large villages, especially non-Natives (we hypothesize) from Natives in multiple extractive activities.

Most R's who engage in several kinds of fishing also hunt land mammals and establish camps and maintain equipment for several extraction pursuits (with the exception of some R's who hunt several species of land mammals but who do not pursue many fish species and are less apt to camp to extract resources). As participation in these activities increases, so does the number of months in which they participate in each and the days in which they participate in each (months and days in which R's hunt land mammals [H, CMN1; P, RDAY1], months and days in which R's fish [K, CMN5; S, RDAY5], and months and days in which R's occupy camps [J, CMN4; R, RDAY4]).

Interestingly, if throughout the year R's hunt many species of land mammals, extract many varieties of fish, and often do so from camps established away from their permanent residences, they also hunt sea mammals during several months of the year (I, CMN2). Sea mammal hunting is perhaps the oldest specialized extraction technique of Eskimos and Aleuts. Thus, we have labeled the area Sea Mammal Extractors. It is the separation of the traditional customs of Native society from the General Extractors area and the fitting of sea mammal extraction to those variables that is of considerable interest. We conclude that the more species R's extract, the more months they extract those species; the more days they allocate to the tasks; and the more time they spend camping, preparing for camp, and maintaining their camping, hunting, and fishing equipment. The benefits of extractive pursuits, such as the amount of naturally occurring food in diets, or the amounts of resources that are shared, or the frequency with which subsistence foods appear as major portions of a respondent's meals are derivatives of the extractive pursuits. And still more distantly connected to extraction are the traditional practices of visiting with friends and relatives in distant communities, eating with persons in households other than one's own, and participating in community affairs.

The Sea Mammal Extractors area encompasses the traditional customs that are related to, but not the same as, extractive pursuits (with the exception of the pursuit of sea mammals). Sea Mammal Extractors comprises a conex in which subsistence food in R's diet (V, A28), recent sharing of meals with relatives in households different from R's (Y, A32), and hunting several species of sea mammals (E, CACT2) are at the apex of the cone. Beneath the apex, days spent hunting sea mammals (Q, RDAY2) increase with the length of time R has been resident in the community (g, D25). Across the cone, speaking one's Native language at home (a, A38) increases with the amount of (naturally occurring) meat and fish in R's annual diet (Z, A33) and the presence of subsistence foods in R's meals the day before yesterday (W, A30). At lower levels in the cone, voting in the most recent city council election (e, D19) increases with voting in the most recent village corporation election (f, D22). Thus, the levels of the conex represent items most directly related to extraction at the top two levels (extraction, sharing, and consumption) and communitarian items most distant from extraction at the bottom.

It is expected that voting in city council elections would be fitted below voting in village corporation elections. The latter is restricted to Natives; the former is not. Thus, Native R's vote in village elections of all kinds if they have resided in villages for long periods, perhaps most of their lives, eat naturally occurring resources, and share naturally occurring resources with friends and relatives. Many of the Native men also hunt sea mammals and spend many days doing so each year. In the similarity structure (Fig. 1) of the total sample, hunting sea mammals is the extractive activity that best indicates the persistence of traditional customs of diet and sharing and also best indicates some participation in village affairs. The persistence of sea mammal hunting, including the unique and demanding techniques of the tasks required to bag sea mammals appears to be embedded in a web of traditional customs. Those traditional customs need not be associated with the hunting of land mammals alone, or fishing activities alone, but almost always are associated with sea mammal extraction. And persons who extract sea mammals also extract fish, birds, plants, and land mammals (if available).[23] On the other hand, sea mammal hunting is not engaged in by non-Natives (following restrictions placed by the Marine Mammal Protection Act), but the percentage of Natives who hunt sea mammals is considerably influenced by whether they reside in *Native* or *Mixed* villages. Among *Native* village residents, 69 percent of men and 20 percent of

[23] Naturally occurring mammals, especially large ones such as moose and caribou, do not occur on most islands in our study area--St. Lawrence (a reindeer herd), the Aleutian chain, and the Pribilofs. Land mammal hunting is denied these residents unless they travel to the mainland or to Kodiak Island to hunt.

women report hunting sea mammals. Among residents of *Mixed* villages, 39 percent of men and 19 percent of women report hunting sea mammals.[24]

The region in the left center of Figure 1, HIGH PRIVATE INCOME, is a simplex comprising income (b, D2), private-sector employment (A, PPEMP), the cognitive attitude that land mammal availability has increased over the past 5 years (T, A26A), and the affective attitude that R's feel somewhat or completely satisfied with their family income (i, E29). In every multidimensional-scale configuration we have analyzed over the four waves of Social Indicators research from 1987 through 1990, some version of a high, private-sector-income region appears if we have not exercised theoretical contrasts for *Mixed:Native*, *Hub:Periphery*, or another of our major contrasts. Here we see that persons with private-sector employment tend to earn high incomes, tend to be satisfied with those incomes, and are apt to think that land mammals--the game most frequently hunted by high-income earners, particularly non-Natives--have increased over the past 5 years. Whereas all high earners are not necessarily non-Natives, and all high-earning employment is not necessarily in the private sector, and all extraction by high earners is not restricted to large land mammals, this region measures the hunting of preferred species by persons who can afford to hunt those species.

Fitted independently from the HIGH PRIVATE INCOME and the TRADITIONAL EXTRACTORS regions is the simplex EXTRACTION WITH RELATIVES. We have data only from the posttest sample on relatives with whom R engaged in camping, owning and maintaining equipment, and extraction (land mammals, sea mammals, birds, fish, marine invertebrates, and plants). It is evident that R's who hunt land mammals with relatives also hunt sea mammals, occupy camps, and fish with relatives (L, CREL1; M, CREL2; N, CREL4; O, CREL5). What is not evident is the meaning of engaging in subsistence activities with large numbers of friends and relatives. The four CREL items fitted here, similar to

[24] We refer to the problems associated with reports of sea mammal hunting by women respondents. For these subsistence activities questions, we sought responses about activities of the respondents, not other persons in the household. Yet some women respondents reported positively for men in their households, although they do not themselves hunt; some do not report engaging in the activities, even if men in their households do; and some women are, in fact, hunters of sea mammals.

CACT, CMN, and RDAY, are composites drawn from activities engaged in by R with several different relatives and friends. In the case of land mammals, for instance, it is possible for a respondent to engage in the following subsistence activities throughout a single year: (1) two or three caribou hunts, each occasion with different relatives; (2) a moose hunt with one but not all of the persons with whom he hunted caribou, or with some friends with whom he had not hunted caribou; (3) several rabbit drives with friends; (4) an opportunity shot at a brown or black bear, and the like. As a consequence, specific partner structures formed by siblings, or uncle-nephew, or some other relations, were seldom identified. The availability of persons to form partnerships or teams appears to fluctuate with opportunities to hunt, hence the composition of hunting parties in which R's engage throughout the year change in most communities. In addition, modern equipment facilitates speedy and successful hunts by solo hunters. The hunting of large whales and walrus are exceptions (although lone hunters frequently bag beluga whales). The more firmly structured crews for whale and walrus hunting in some communities are exceptions to catch-as-catch-can crews comprised of persons with skills who happen to be available. Although redundant, we reiterate that almost anything a party can do also can be done by a lone hunter or fisher.

Camaraderie and the availability of relatives appear to be the dominant factors in forming associations for hunting and fishing excursions. The personnel in those associations tend to change frequently. Seldom is the composition of R's partners and associates repeated in identical form for the hunting of many species of land mammals, the smaller species of sea mammals (essentially seals), many camping occasions, and the quest for many varieties of fish under many different circumstances with many different techniques. The CREL measures are interesting, but they only predict one another.

IV.B. The Structure of Traditional Customs by Theoretical Contrasts: *Native* v. *Mixed* Subsamples

Figures 2 and 3 contrast *Native* and *Mixed* subsamples of the total combined pretest-posttest samples. Each configuration accounts for about 80 percent of the variation among the 34 variables (K = .198). Whereas four-dimensional (4-D)

Variable		D1	D2	D3
PPEMP	A	-.73	-.31	-.87
RHHSI	B	.43	-.31	.67
RHHTYPE	C	-.98	-.58	-.21
CACT1	D	.81	.02	.08
CACT2	E	.72	.15	-.20
CACT4	F	.66	.38	-.22
CACT5	G	.25	.35	-.51
CHN1	H	.59	.18	.26
CHN2	I	.10	.34	.17
CHN4	J	.68	.46	.08
CHN5	K	.46	.55	-.17
CREL1	L	-.96	.52	-.18
CREL2	M	-1.02	.62	-.00
CREL4	N	-.86	.77	.35
CREL5	O	-.79	.77	-.05
RDAY1	P	.51	.56	.48
RDAY2	Q	.49	.57	.46
RDAY4	R	.49	.59	.20
RDAY5	S	.30	.74	.05

Variable		D1	D2	D3
A26A	T	-.77	-.71	.53
A26B	U	-.60	-.95	.60
A28	V	.59	-.17	-.71
A30	W	.59	-.51	-.84
A31	X	-1.62	.20	-.30
A32	Y	.03	-.09	-.85
A38	Z	-.10	-.59	-.89
D2	a	-.10	-.14	1.25
D13	b	-.07	.66	-.38
D16	c	.49	-.57	.06
D19	d	.70	-.83	-.07
D22	e	.67	-.69	.35
D25	f	-.42	-.50	-.30
E12	g	-.04	-1.20	.10
E29	h	-.50	-.29	1.05

Guttman-Lingoes' Coefficient of Alienation $K = .198$

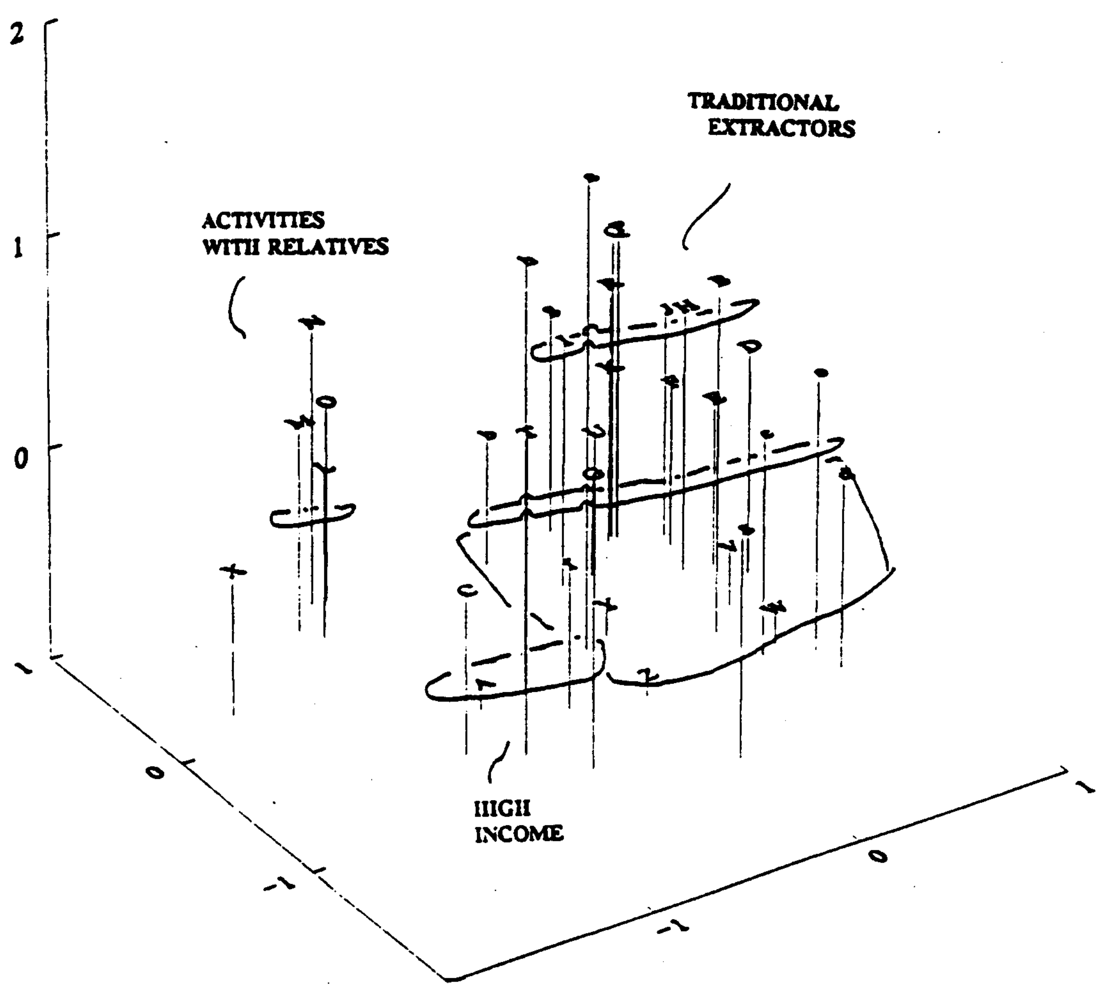

FIGURE 2. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 34 VARIABLES, N = 422, *NATIVE* SUBSAMPLE OF PRETEST-POSTTEST SAMPLE, 1987-1990

Variable		D1	D2	D3
PPEMP	A	.21	-1.18	.56
RHHSI	B	-.77	.11	-.52
RHHTYPE	C	-1.16	-.50	-.27
CACT1	D	.57	.40	.17
CACT2	E	-.31	.46	.31
CACT4	F	.32	.48	.42
CACT5	G	.39	.88	.41
CMN1	H	.62	.65	.06
CMN2	I	-.20	.49	.33
CMN4	J	.44	.48	.29
CMN5	K	.18	.82	.08
CREL1	L	.83	-.53	.60
CREL2	M	.99	-.73	.38
CREL4	N	.77	-.63	.50
CREL5	O	1.04	-.37	.14
RDAY1	P	.27	.37	-.18
RDAY2	Q	-.41	.61	-.32
RDAY4	R	.02	.53	.07
RDAY5	S	-.04	.76	-.22

Variable		D1	D2	D3
A26A	T	.61	-.32	-.60
A26B	U	-.36	-.72	-1.09
A28	V	-.66	.15	.41
A30	W	-.78	.18	.12
A31	X	-.90	-1.25	.46
A32	Y	-.89	.09	.49
A38	Z	-.91	-.08	.29
D2	a	.75	.08	-1.11
D13	b	.07	-.02	1.10
D16	c	.21	.11	-.96
D19	d	-.05	.38	-1.00
D22	e	-.66	.39	.05
D25	f	-.38	-.25	.27
E12	g	-.02	-1.23	-.25
E29	h	.26	-.61	-1.00

Guttman-Lingoes' Coefficient of Alienation $K = .197$

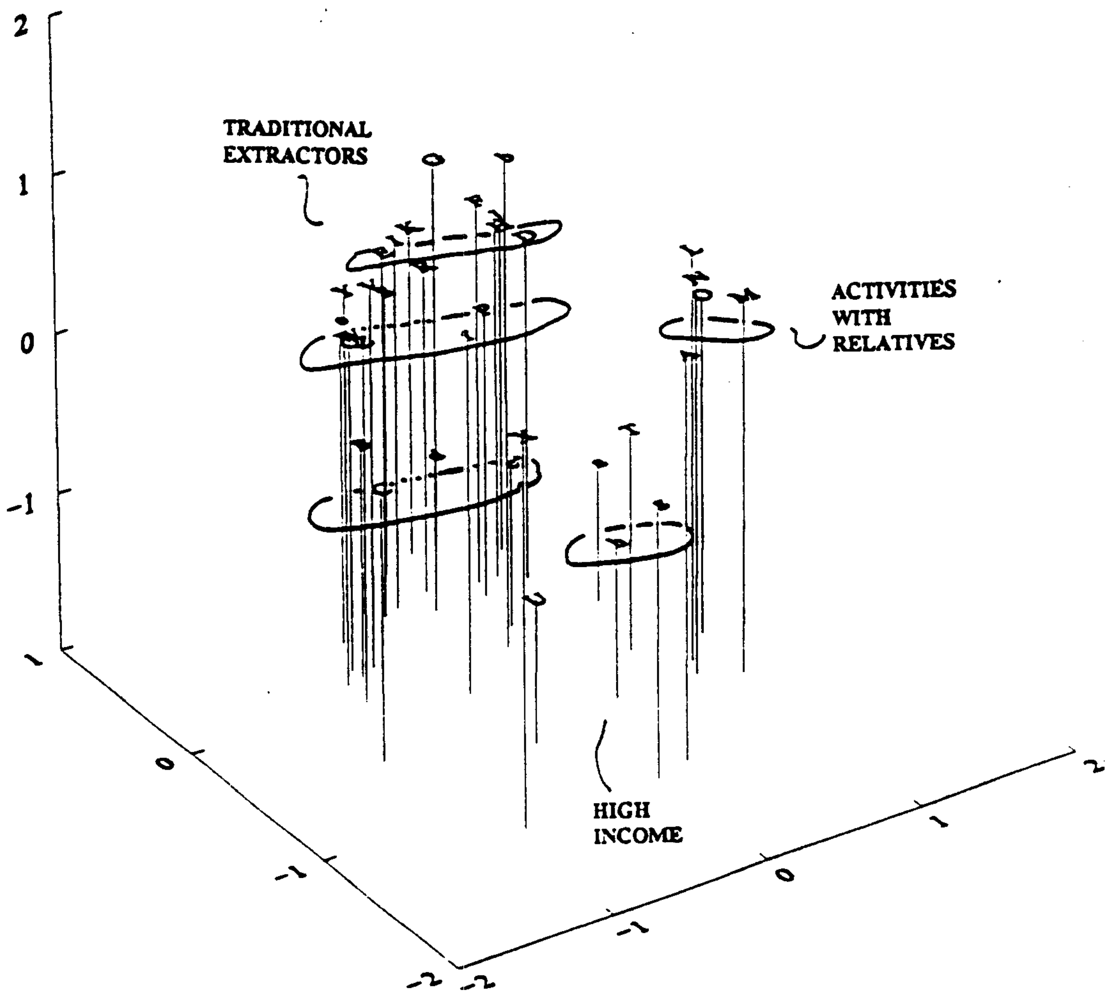

FIGURE 3. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 34 VARIABLES, N = 434, *MIXED* SUBSAMPLE OF PRETEST-POSTTEST SAMPLE, 1987-1990

configurations account for about 85 percent of the variation, 3-D configurations are simpler to read and are presented here. Throughout the several stages of this inquiry, less variation has been accounted for in *Native* configurations than in *Mixed* configurations. Even though the subsample of *Native* villages includes a wide variety of Native respondents--Aleut, Eskimo, and Athapaskan--and also non-Native respondents, *Native* villages are more homogeneous and responses are more similar than among the more heterogeneous populations in the *Mixed* villages. The smaller the variation within the matrix, the smaller the proportion of variation accounted for and the more complex the fitting of the points in the hyperspace.

Tables 2 and 3 in the Appendix, taken singly, yield fewer significant coefficients than does the matrix for the total sample. Of the coefficients in the *Native* subsample, 11 percent are significant at $\leq .05$; and 14 percent of the coefficients in the *Mixed* subsample are significant at $\leq .02$. The larger number of significant correlations (disregarding covariance) in the *Mixed* subsample is expected because variation is greater in that subsample.

Let us first assess the similarities between the theoretical contrasts. In both configurations, a region comprising ACTIVITIES WITH RELATIVES appears (left rear in the *Native* configuration and right front in the *Mixed* configuration). There are also some similarities between the two configurations in fitting many of the subsistence activities variables within the TRADITIONAL EXTRACTORS region (participation in the extraction of land mammals and fish; participation in camping; and time, including days and months, given to these tasks). The differences, however, are important.

The TRADITIONAL EXTRACTORS region in the *Native* configuration forms what appears to be a horseshoe in three dimensions. In fact, it is a conex in which subsistence activity-related variables are stacked on each other from a base that organizes the uses to which naturally occurring resources are put (meals, meals shared with relatives) to an apex that measures the days respondents engaged in subsistence-related tasks--hunting, fishing, camping. The polarizing facet is the days in which R's engage in hunting land mammals, hunting sea mammals, and camping throughout the year. Its modulating facet is how direct the connection is between the remaining variables in the region and the days given to these subsistence activities. The modulating facet determines the direction the points lie from the center. Items directly related to subsistence tasks are closest to the center (e.g., participation in the activities and the months in which activities are pursued), and items less directly related to days engaged in subsistence activities are more distantly placed (e.g., subsistence food in meals, sharing of meals). Communitarian village affairs are less directly related than any of the preceding, so they are the most distantly placed (visiting friends and relatives, participation in village affairs) from the polarizing facet.

At the apex of the conex are the variables measuring days spent engaged in camping and in extracting land mammals and fish (P, Q, R, S). Below and radiating from them are the variables measuring the months in which these activities are engaged (H, I, J, K) and participation in the activities (D, E, F, G). Three items of special interest appear in this radex: household size (B, RHHSI) increases with participation in subsistence activities, as does attending public meetings and voting in village corporation elections (c, D16; e, D22). Frequent visiting of friends and relatives in the community (b, D13) and voting in city council elections are positioned above the base, in which the variables measure whether subsistence foods were part of yesterday's meals (V, A28) or the day before yesterday's meals (W, A30), whether recently any meals have been eaten with relatives in homes other than R's (Y, A32), and whether the Native language is spoken at home (Z, A38).

It was possible to rotate the 3-D box so as to get a better perspective to view the configuration, but it was not possible to print the better perspective. As a consequence, the lines separating the TRADITIONAL EXTRACTORS region from the HIGH INCOME region are mildly confusing.

The HIGH INCOME region in the *Native* configuration (Fig. 2) is much less distinct and exhibits much greater variation than the comparable region in the *Mixed* configuration (Fig. 3). The differences are important. The most obvious difference is that household income (a, D2) is fitted on the periphery of the

TRADITIONAL EXTRACTORS area and, along with feelings about the adequacy of that income (h, E29), is set apart from all other points in the dimension of height. The income and income attitude variables do, however, form a simplex with private-sector employment (A, PPEMP). The simplex formed by these three variables is difficult to see because of the position of A (PPEMP) in dimension 3. The correlation between income and private employment is low and negative, rather than high and positive.

In Table 1, we see incomes are significantly lower in *Native* villages than in *Mixed* villages. In Table 2, we see that incomes greater than $40,000 comprise only 17 percent of all incomes in *Native* villages in contrast to 49 percent in *Mixed* villages. And although in both *Native* and *Mixed* villages most incomes greater than $40,000 are derived from the public sector, the public sector accounts for 11 percent more incomes in *Native* villages than it does in *Mixed* villages. It is a fact of life in village Alaska that the public sector dominates local economies, but that is not the main issue here. Turning our attention to differences between Natives and non-Natives in *Native* villages, 52 percent of non-Natives earn more than $40,000 annually whereas only 14 percent of Natives earn more than that figure. The lion's share of income for both subpopulations is derived from the public sector. The interesting differences between Native and non-Native incomes within *Native* villages are that non-Natives are nearly four times as likely as Natives to earn incomes greater than $40,000 and that 60 percent of private-sector incomes for Natives are less than $20,000, whereas 66 percent of private-sector incomes for non-Natives are more than $30,000. Nevertheless, 26 percent of Natives in *Native* villages earn incomes greater than $30,000. Most of the Natives who earn high incomes in *Native* villages practice some, but not all, of the traditional customs measured here.

Support for this inference is contained in Table 2: 69 Natives earn more than $30,000 annually. In addition, long-term residence in the community (f, D25), a Native practice, is fitted into the HIGH INCOME region. That same variable is located near the periphery of the TRADITIONAL EXTRACTORS region. Similar to

Table 2

INCOME BY EMPLOYMENT SECTOR BY *NATIVE:MIXED* CONTRASTS, BY ETHNICITY WITHIN *NATIVE* VILLAGES, AND BY ETHNICITY WITHIN THE TOTAL PRETEST-POSTTEST SAMPLE (*N* = 856), 1987-1990

	NATIVE:MIXED CONTRAST						NATIVE VILLAGES BY ETHNICITY						TOTAL SAMPLE BY ETHNICITY					
	NATIVE			*MIXED*			Native			Non-Native			Native			Non-Native		
INCOME	Public	Private	Row	Public	Private	Row	Public	Private	Row	Public	Private	Row	Public	Private	Row	Public	Private	Row
<$5,000	15 5.3	12 4.2	27 9.5	3 .9	9 2.8	12 3.7	15 5.8	12 4.6	27 10.4				18 4.4	20 4.9	38 9.3		1 .6	1 .6
<$10,000	23 8.1	23 8.1	46 16.3	6 1.8	10 3.1	16 4.9	23 8.8	23 8.8	46 17.7				28 6.9	32 7.9	60 14.7	1 .6	1 .6	2 1.1
<$20,000	30 10.6	38 13.5	68 24.0	25 7.7	33 10.1	58 17.8	26 10.0	36 13.8	62 23.8	4 17.4	2 8.7	6 26.1	47 11.5	53 13.0	100 24.6	8 4.4	16 8.9	24 13.3
<$30,000	37 13.1	20 7.1	57 20.1	19 5.8	22 6.7	41 12.6	36 13.8	20 7.7	56 21.5	1 4.3		1 4.3	46 11.3	32 7.9	78 19.2	10 5.6	8 4.4	18 10.0
<$40,000	23 8.1	14 4.9	37 13.1	20 6.1	20 6.1	40 12.3	20 7.7	13 5.0	33 12.7	3 13.0	1 4.3	4 17.4	29 7.1	18 4.4	47 11.5	11 6.1	15 8.3	26 14.4
<$50,000	9 3.2	7 2.5	16 5.7	19 5.8	23 7.2	42 12.9	7 2.7	7 2.7	14 5.4	2 8.7		2 8.7	14 3.4	15 3.7	29 7.1	13 7.2	13 7.2	26 14.4
>$50,000	21 7.4	11 3.9	32 11.3	66 20.2	51 15.6	117 35.9	14 5.4	8 3.1	22 8.5	7 30.4	3 13.0	10 43.5	32 7.9	23 5.7	55 13.5	50 27.8	33 18.3	83 46.1
Column Total	158 55.8	125 44.2	283 100	158 48.5	168 51.5	326 100	141 54.2	119 45.8	260 100	17 73.9	6 26.1	23 100	214 52.6	193 47.4	407 100	93 51.7	87 48.3	180 100

the *Mixed* configuration and also to the configuration obtained from analysis of the total sample (Fig. 1), the cognitive attitude that the amount of game available has increased in the past 5 years increases with income and feelings of satisfaction about that income (T, A26A).

The remaining variables in the HIGH INCOME region are at variance with the general structure obtained from analysis of the total sample (Fig. 1). These differences, too, are important. First, composite and other nonnuclear forms of households (C, RHHTYPE) increase with income. This is a definite trait of *Native* villages and Native households, not *Mixed* villages and non-Native households. In Figure 3, nonnuclear and composite household types increase with household sizes and with eating and sharing subsistence foods. Second, the cognitive attitude that fish availability has increased in the past 5 years (U, A26B) is at variance with the HIGH INCOME regions in the total and *Mixed* configurations. We anticipate that respondents with high incomes from commercial-fishing-related ventures or from other private-sector occupations will report that game has increased but fish have decreased in the past 5 years. The pursuit of game is an opportunity sport in which many residents in *Mixed* villages occasionally engage and which supplements the household larder for many of these persons, particularly if they are non-Native.

In the *Native* villages, about equal proportions of respondents think game and fish have decreased from amounts available 5 years earlier (34% and 36%). A larger proportion thinks the amount of game available to them has increased (19%) than thinks fish have increased (13%). In general, about 50 percent of the *Native* respondents thought game availability had not changed much in the preceding 5 years. Because about half of the sample (N = 422) thought there had been no change in availability, the interesting comparisons are between respondents who think amounts have decreased and those who think amounts have increased. Table 3 lists increase/decrease ratios for game and fish availability by income, partialled (subclassified) by race/ethnicity and sex.

Table 3

COGNITIVE ATTITUDES ABOUT THE INCREASE OR DECREASE IN THE AVAILABILITY OF GAME AND FISH DURING THE PAST 5 YEARS BY INCOME, SUBCLASSIFIED BY ETHNICITY AND EXPRESSED AS RATIOS, *NATIVE* SUBSAMPLE (*N* = 422) OF THE TOTAL AOSIS PRETEST-POSTTEST SAMPLE, 1987-1990

	TOTAL		RACE/ETHNICITY			
			NATIVE		NON-NATIVE	
INCOME	GAME I/D	FISH I/D	GAME I/D	FISH I/D	GAME I/D	FISH I/D
<$20,000	1:2	1:2.7	1:2	1:3.4	1:0	0:1
>$40,000	3:4	5:6	1:2.3	1:1	3:1	1:2

As income increases in *Native* villages, respondents are less apt to think that the availability of either game or fish has decreased. In the *Native* configuration (Fig. 2), attitudes about the increases of game and fish correlate with each other and with income. Table 3 demonstrates, nevertheless, that regardless of whether households earn less than $20,000 or more than $40,000 annually, greater proportions of respondents in *Native* villages think game and fish have decreased than increased.

The control for whether respondents are **Natives** or **Non-Natives** demonstrates large differences in attitudes about the availability of game and of fish. Natives, regardless of income, think game have decreased rather than increased by a ratio of about 2 to 1. Non-Natives think game is more available by a ratio of about 3 to 1. These are very large differences. The contrasts about the availability of fish are equally striking. Low-income Natives are more than three times as likely as high-income Natives to think the availability of fish has decreased in the past 5 years. Income surely affects attitudes about fish among Natives. These attitudes are related to the amount that Native persons are dependent on naturally occurring resources for subsistence. Low-income Natives are more dependent on the harvests of naturally occurring species than are high-income Natives. Turning our attention to the **Native:Non-Native** contrast about the availability of fish, non-Natives think fish have declined at a ratio greater than 2 to 1. Income again is a factor. A hidden factor in these contrasts is occupation. Commercial fishermen are less apt to think the availability of fish has increased.

Although not demonstrated in Table 3, controls for sex reveal that greater proportions of women than men, regardless of income, think resource availability has decreased. The exception is the attitude about game among women whose household incomes are less than $20,000. Women are less apt to extract game (sea mammals, land mammals, birds) than are men, but they are more apt to prepare the products for storage and for meals than men.

Comparison with the *Mixed* subsample will be of interest. Table 4 provides the ratios for the *Mixed* subsample.

Table 4

COGNITIVE ATTITUDES ABOUT THE INCREASE OR DECREASE IN THE AVAILABILITY OF GAME AND FISH DURING THE PAST 5 YEARS BY INCOME, SUBCLASSIFIED BY ETHNICITY AND EXPRESSED AS RATIOS, *MIXED* SUBSAMPLE (*N* = 434) OF THE TOTAL AOSIS PRETEST-POSTTEST SAMPLE, 1987-1990

	TOTAL		RACE/ETHNICITY			
			Native		Non-Native	
INCOME	GAME I/D	FISH I/D	GAME I/D	FISH I/D	GAME I/D	FISH I/D
<$20,000	1:2.2	1:3.2	1:2.4	1:4.5	1:2.5	1:2.7
>$40,000	1.3:1	1:2.5	1:1.4	1:2.7	2:1	1:2.2

Low-income earners in *Mixed* villages, similar to their matched counterparts in *Native* villages, think game availability has decreased. Yet higher earners are more apt to say game has increased rather than decreased over the preceding 5 years. Income seems to exercise a greater effect on attitudes about game availability among respondents in *Mixed* villages than in *Native* villages. Another difference is in the availability of fish. Whereas high earners and low earners in *Mixed* and *Native* villages think fish are less available currently than 5 years earlier, the ratios for respondents in *Native* villages are much lower than those for respondents in *Mixed* villages. Non-Native high earners think game has increased rather than decreased at a ratio of 2 to 1. Native high earners think the opposite at a ratio of 1.4 to 1. The importance of game and fish to Native subsistence almost surely accounts for the differences in the ratios between contrasts and between race/ethnic groups within contrasts.

Turning our attention back to the SSA solutions, the most obvious differences between the *Mixed* (Fig. 3) and *Native* (Fig. 2) configurations lie in the tight clustering of points in the TRADITIONAL EXTRACTORS cylindrex and the spatially distinct fitting of the HIGH INCOME region in the *Mixed* configuration. The HIGH INCOME region fits increasing income (a, D2) with increasing satisfaction with that income (h, E29), private-sector employment (A, PPEMP), satisfactory feelings about ties with persons in other communities (g, E12), and the cognitive attitude that game availability has increased during the past 5 years (T, A26A). The HIGH INCOME region fits our expectations from the configuration for the total sample.

Attitudes about the availability of fish correlate negatively with the variables in this region. Following the third wave of research in Panel A, we hypothesized that non-Natives--whether recent migrants or relatively long-term residents--felt satisfied with their ties to relatives and persons in distant villages (Final Report Social Indicators Research Project 1987-1989 [Jorgensen 1990:142-169]). Natives, however, even if they were high earners, did not feel satisfied with their ties to persons in distant villages if they were relatively recent migrants to the villages in which they were interviewed. By relatively recent, we mean within the past 3 to 5 years. We concluded that non-Natives relocated for employment and expected to maintain relatively infrequent contacts with relatives in other parts of the State, Nation, or world. Natives, to the contrary, longed for the more intimate family and friendship ties and sought to maintain them. The HIGH INCOME region is heavily influenced by non-Native respondents.

The TRADITIONAL EXTRACTORS region in Figure 3 provides a most interesting set of differences from the *Native* configuration. First, household size and household type (B, RHHSI; C, RHHTYPE) are fitted into the traditional extractors region, as are length of residence in the village (f, D25), attendance at public meetings (c, D16), voting in village corporation and city council elections (d, D19; e, D22), visiting friends and relatives within the community (b, D13), and so forth.

In the cylindrex formed by the TRADITIONAL EXTRACTORS, variables are stacked on each other in a fashion somewhat similar to that of the conex in Figure 2. The polarizing facet is traditional subsistence pursuits--hunting, fishing, camping. The modulating facet is how distant or indirect an item is from hunting land mammals or sea mammals, or from fishing, or from camping while on subsistence harvests. The farther toward the periphery of each radex an item is placed, the less direct the connection. The axis along which the radexes are stacked is a perpendicular version of the modulating facet, namely, the less direct the connection to the actual engagement in subsistence pursuits, the lower the plane on which the point is located. There are a few exceptions on two of the three planes, but those exceptions are accounted for by the modulating facet. At the base are fitted social and community features (household type and size, political participation in village elections). In the middle are the uses to which naturally occurring resources are put (meals, meals shared with relatives) and also speaking one's Native language at home and length of residence in the village. On the highest plane are measures of the subsistence activities and the days and months in which respondents engaged in them, and also the practice of visiting relatives and friends in distant villages.

The variation provided by greater proportions of non-Natives in *Mixed* than in *Native* villages produces the more definite separation of high income from traditional customs and more firmly places larger households and a greater variety of composite households (compositions of a wide variety of kinspersons and friends) in the traditional extractor region where subsistence foods are eaten, meals are shared, and visiting beyond the village is common. The higher earners among Native residents of *Mixed* villages visit friends and relatives more frequently than do non-Natives.

The combined pretest-posttest sample yields a basic structure of traditional customs in which high income households are separated from most traditional activities and which provides evidence that those high earners are optimistic that game is more available in the present than 5 years earlier, that ties with persons in more distant communities are satisfactory, and that the income earned is satisfactory. The theoretical contrasts demonstrate that high income, alone, does not distinguish persons who practice traditional customs from those who do not. High incomes in *Native* villages are more often in the public sector than the private, and household types are more apt to be large and composite than small and nuclear (or single persons or conjugal pairs living alone). In the *Native* villages, then, income appears to facilitate many traditional customs (sharing meals, eating subsistence foods, and sharing houses with persons other than relatives within the nuclear family). It is in the *Mixed* subsample where traditional activities are best distinguished from the customs and attitudes of high-income earners predominantly in the private sector and, most likely, predominantly non-Native. Non-Natives in *Native* and *Mixed* villages think that more game is available than do their Native counterparts, and the differences between their positive assessments increase with income.

V. THE STRUCTURE OF TRADITIONAL CUSTOMS IN THE PRETEST SAMPLE

V.A. Introduction

Because the combined pretest-posttest sample (70X analyzed above) merges all respondents from the 1987-1990 period, differences over time are indistinguishable. If changes occurred to one or more of the traditional customs measured here between the period when the villages were pretested (initial interviews among respondents in Schedule A villages in 1987 and Schedule B villages in 1988) and the period in which they were posttested (initial interviews among respondents--selected without replacement--in Schedule A villages in 1989 and Schedule B villages in 1990), those changes should be determined through the differences in the results of the pretest and posttest configurations. Below we analyze the structure of traditional customs in the pretest sample, making comparisons with the total combined sample to account for similarities and differences.

In Social Indicators Study II (Jorgensen 1993), we did not detect changes in any of the traditional activities variables (A26A - A38) between pretest and posttest samples or between the first and third waves of either of the panels. Therefore, significant differences discovered in any of the traditional customs variables (AOSIS, Section A) analyzed here will be discovered through our theoretical contrasts, suggesting that exogenous factors influence the practice of traditional customs. In our methodological analysis, we detected significant changes in three variables used in the current analyses: household type (RHHTYPE), annual household income (D2), and voting in city council elections (D19). We are, therefore, especially interested in any differences associated with these variables between the configurations for the pretest sample (78X) and the posttest sample (90X).

We accounted for the differences noted in these variables thus: more pretest than posttest respondents voted in the most recent city council elections (D19) because of some mobility among villages caused by a downturn in the Alaskan economy. Some residents moved for financial reasons. We picked up several recent migrants in our posttest samples, making the unsurprising discovery that newcomers vote less often than long-term residents in city council elections (and State elections). The changes in income were especially significant between pretest and posttest. Posttest respondent income, on average, was lower than pretest income, yet high-income earners tended to be long-term residents *and* to vote in city council elections. Household type in Alaskan villages is in large part a function of ethnicity on the one hand and income on the other. Composite households increase with economic downturns as Natives share roofs, resources, or both, and as non-Natives, who most frequently reside in nuclear, single person, or conjugal pair households, relocate. During times of economic upturns, nuclear, single person, and conjugal pair households increase as non-Natives acquire employment and locate in villages and as some composite households break up into smaller units.

Figure 4 yields a structure similar to the configuration for the *Mixed* subsample (Fig. 3) of the combined pretest-posttest sample in that two regions, HIGH INCOME to the left center and TRADITIONAL EXTRACTORS to the right, are distinctive, the latter forming a cylindrex. Similarities with the configuration for the total sample (Fig. 1) are also apparent, particularly in the relations between sea mammal-hunting activities and the bulk of traditional customs assessed here.

Looking first at the cylindrex we have labeled TRADITIONAL EXTRACTORS, we see that the axis is formed by participation in subsistence activities (these activities are located in the center of the cylindrex). In the center of the lower radex is fitted increasing participation in camping (F, CACT4), the harvesting of sea mammals (E, CACT2) and fish (G, CACT5), and the months in which persons engage in those activities (J, CMN4; K, CMN5). In the center of the higher radex is fitted increased days given to hunting, fishing, and camping (M, RDAY2; N, RDAY4; O, RDAY5) and in the case of sea mammals, also months (I, CMN2). Similar to the configuration for the total pretest-posttest sample, the sea mammal-related variables occur toward the right center. Although we have circumscribed the region as a single cylindrex of traditional activities and customs, the Sea Mammal Extractors area on the right side is a strong predictor of other traditional customs, as we see when turning our attention to the modulating facet.

The modulating facet in the TRADITIONAL EXTRACTORS cylindrex is the directness of the relation to subsistence activities. Located toward the periphery in the lower radex are traditional customs dependent upon, but not the same as, extractive activities, including subsistence food in yesterday's meals and the day before yesterday's meals (R, A28; S, A30) and eating with relatives not in R's household (T, A32). Beyond them are fitted traditional customs less directly related to extraction, including speaking one's Native language at home (V, A38), receiving food harvested by person's other than household members (T, A31), and R's satisfaction with his/her social ties with persons in distant communities (c, E12).

Fitted toward the periphery of the upper radex are household type and household size (C, RHHTYPE; B, RHHSI), length of residence in the community

Variable		D1	D2	D3	Variable		D1	D2	D3
PPEMP	A	-1.12	-.20	-.86	A26A	P	-1.41	.11	-.14
RHHSI	B	.85	-.02	.43	A26B	Q	-1.55	-.15	.22
RHHTYPE	C	.18	-1.08	.60	A28	R	.76	-.43	-.08
CACT1	D	.10	1.03	.01	A30	S	.72	-.47	-.22
CACT2	E	.79	.19	-.22	A31	T	-.49	-1.57	-.20
CACT4	F	.50	.08	-.63	A32	U	.02	-.74	-.37
CACT5	G	.42	-.11	-.75	A38	V	.34	-.81	-.12
CMN1	H	.03	.81	-.29	D2	W	-.86	.86	.52
CMN2	I	.61	.36	.10	D13	X	-.38	.22	-.92
CMN4	J	.09	.73	-.50	D16	Y	-.23	.14	.52
CMN5	K	.19	.25	-.41	D19	Z	.17	-.19	.96
RDAY1	L	.09	.77	.26	D22	a	.34	-.27	.34
RDAY2	M	.43	.60	.34	D25	b	.59	-.52	.41
RDAY4	N	.03	.54	.06	E12	c	-.52	-.88	.03
RDAY5	O	.13	.61	.02	E29	d	-.81	.14	.90

Guttman-Lingoes' Coefficient of Alienation K = .178

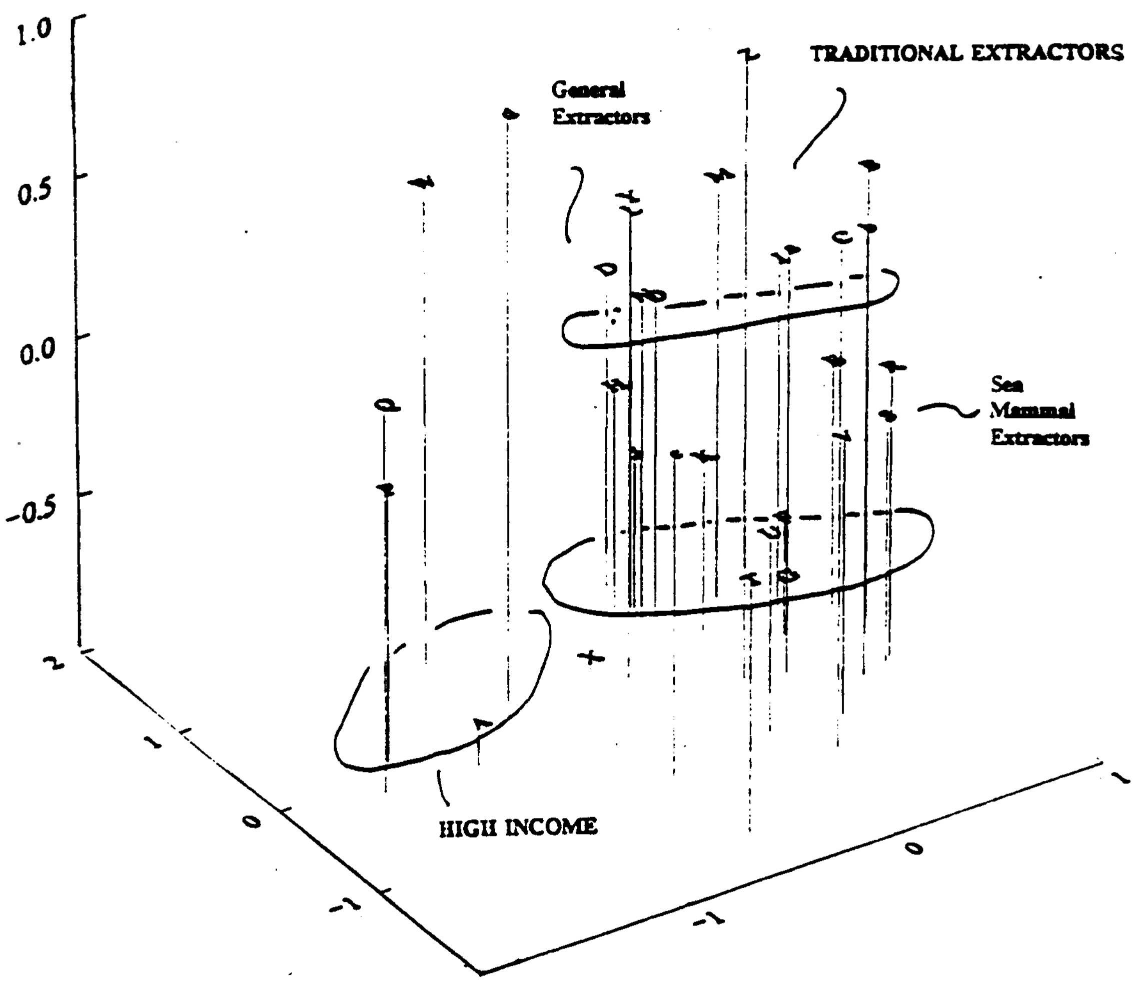

FIGURE 4. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 30 VARIABLES, N = 550, TOTAL PRETEST SAMPLE, 1987-1988

(b, D25), attendance at public meetings (Y, D16), and voting in village corporation (a, D22) and city council elections (Z, D19).

Thus, the items least directly related to extraction are located on the peripheries of the two radexes, with the least closely related items fitted in the higher radex. This structure places large and composite households and most of the measures of traditional customs toward the periphery of the front half of the cylindrex, closer to sea mammal-extraction items than to activities associated with land mammal hunting.

Land mammal hunting, as measured by number of species hunted (D, CACT1) and the months (H, CMN1) and days involved in hunting them (L, RDAY1), is located toward the upper left periphery of the cylindrex, pulled toward, but not into, the HIGH INCOME region. The item measuring visiting relatives and friends outside one's own village (X, D13) also is pulled toward, but not into, the HIGH INCOME region. These placements indicate that both Natives and non-Natives hunt land mammals. It is the hunting of choice for non-Natives, who can afford to hunt and who pursue many large species (deer, caribou, moose, bear) but do not pursue nearly so many species of fish (or sea mammals) nearly so often as do Natives. They also indicate that Natives and non-Natives visit relatives beyond their own village but that high incomes are required to do so.

A traditional profile derived from this structure supports the prediction that if a male R hunts several species of sea mammals, he also resides in camps away from his home village on one or more occasions each year and harvests a wide variety of fish and land mammals throughout the year, eats subsistence food almost every day, frequently dines at a relative's or friend's home, speaks his Native language at home, and often receives subsistence food from another extractor. If he has hunted sea mammals frequently throughout the year, he probably is a long-term resident of the community, resides in a large and composite household, attends most public meetings in his village, and has voted in recent village corporation and city council elections.

The HIGH INCOME region separates increasing income, increasing satisfaction with that income (W, D2; d, E29), and the attitude that persons think more fish and more game are available now than were available 5 years earlier (P, A26A; Q, A26B) from the variables measuring traditional customs and also from large composite households (a consequence, we hypothesize, of low incomes coupled with Native customs). Whereas the public-private employment variable also is fitted in the region, it yields a zero correlation with income, meaning only that high-income earners are employed--as often in the public as private sector in 1987-1988. The positive relations between high incomes and the cognitive attitude that game are more abundant in the present than in the past yields negative correlations with almost every variable measuring subsistence activities and traditional customs. We surmise that Natives, engaged in several forms of extraction and dependent on naturally occurring resources for their subsistence fare in 1987 and 1988, did not think game and fish were more plentiful than in 1982 and 1983. It is evident from Tables 3 and 4 that Natives do not think game and fish are more plentiful now than 5 years ago, even though income mitigates those thoughts.

V.B. The Structure of Traditional Customs by Theoretical Contrasts: *Native* and *Mixed* Subsamples of the Pretest Sample

It is noteworthy that the *Native* configuration (Fig. 5) accounts for slightly more variation (81%, or the residual of *K*) than does the *Mixed* configuration (79%, Fig. 6). In the *Native* configuration, the differences associated with higher incomes and lower incomes are distinct, more so than in the *Mixed* configuration for the pretest sample (Fig. 6). Yet the HIGH INCOME region comprises only two variables: income (W, D2) and satisfaction with that income (d, E29). Attitudes about an increased availability of game, and the frequency of visits with relatives and friends, and so forth, and dominance of private-sector employment are not fitted into the region. In part, we explain the separation of income from these items as a consequence of the higher proportion of unemployed persons (29%), dominance of public-sector (39%) over private-sector jobs (32%), the larger proportion of Native respondents (95%), and the larger proportion of men (57%) in the *Native*

Variable		D1	D2	D3
PPEMP	A	-.60	.19	-1.05
RHHSI	B	.61	.10	.76
RHHTYPE	C	-1.22	-.18	.28
CACT1	D	.84	-.25	.14
CACT2	E	.64	.39	.27
CACT4	F	.54	.57	.02
CACT5	G	.24	.73	-.12
CMN1	H	.79	-.02	-.02
CMN2	I	.63	-.34	.12
CMN4	J	.92	.28	.00
CMN5	K	.41	.18	-.42
RDAY1	L	.82	-.38	-.40
RDAY2	M	.86	-.31	-.30
RDAY4	N	.61	-.46	-.20
RDAY5	O	.67	-.06	-.60

Variable		D1	D2	D3
A26A	P	-1.38	-.23	-.66
A26B	Q	-1.35	-.74	-.26
A28	R	.06	.69	.44
A30	S	-.07	.79	.34
A31	T	-1.51	.20	.22
A32	U	-.78	.36	-.32
A38	V	-.61	.39	.54
D2	W	.24	-1.17	-.09
D13	X	.12	.44	-.88
D16	Y	-.13	-.21	-.34
D19	Z	-.26	-.45	.64
D22	a	.06	-.41	.74
D25	b	-.50	.07	.92
E12	c	-.47	.86	-.08
E29	d	-.15	-1.02	.31

Guttman-Lingoes' Coefficient of Alienation K = .187

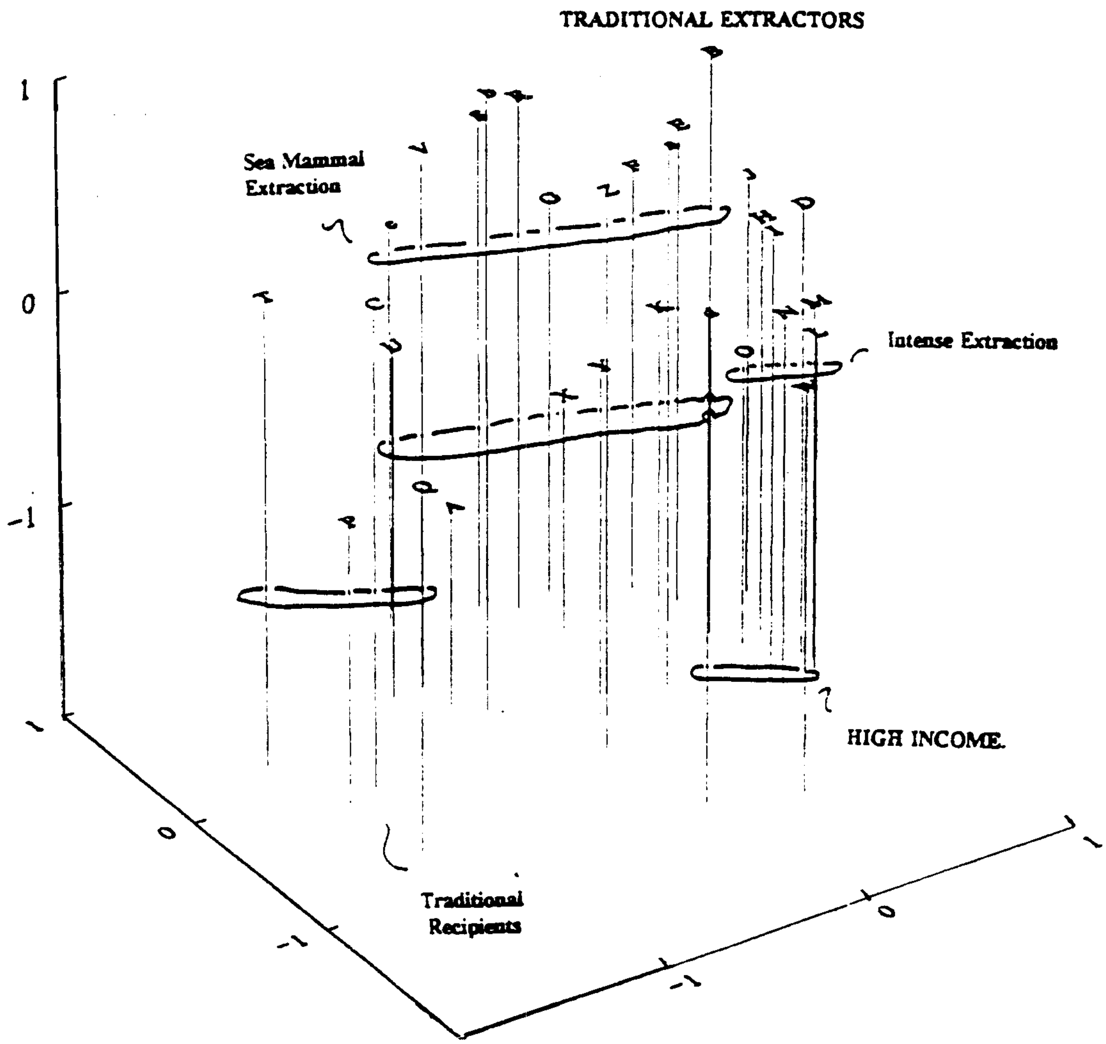

FIGURE 5. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 30 VARIABLES, N = 285, *NATIVE* SUBSAMPLE OF PRETEST SAMPLE, 1987-1988

Variable		D1	D2	D3
PPEMP	A	-.02	1.47	-.08
RHHSI	B	-.15	-.92	.15
RHHTYPE	C	-.80	-.60	-.69
CACT1	D	.99	.05	.54
CACT2	E	-.29	-.41	.65
CACT4	F	-.40	.32	.75
CACT5	G	-.36	.25	.96
CMN1	H	.58	.28	.66
CMN2	I	-.08	-.41	.60
CMN4	J	.39	.56	.58
CMN5	K	.00	.34	.63
RDAY1	L	.62	-.24	.18
RDAY2	M	.40	-.57	.12
RDAY4	N	.38	.12	.25
RDAY5	O	.44	-.17	.21

Variable		D1	D2	D3
A26A	P	.46	.86	-.45
A26B	Q	.32	1.09	-.77
A28	R	-.67	-.51	-.03
A30	S	-.69	-.65	.12
A31	T	-1.31	.85	.01
A32	U	-.68	.09	-.19
A38	V	-.88	.02	-.01
D2	W	1.23	-.26	-.04
D13	X	.91	.08	-.71
D16	Y	.66	-.48	-.50
D19	Z	.25	-.92	-.67
D22	a	-.45	-.19	.24
D25	b	-.33	-.55	-.45
E12	c	-.70	.50	-.92
E29	d	.19	.01	-1.15

Guttman-Lingoes' Coefficient of Alienation K = .214

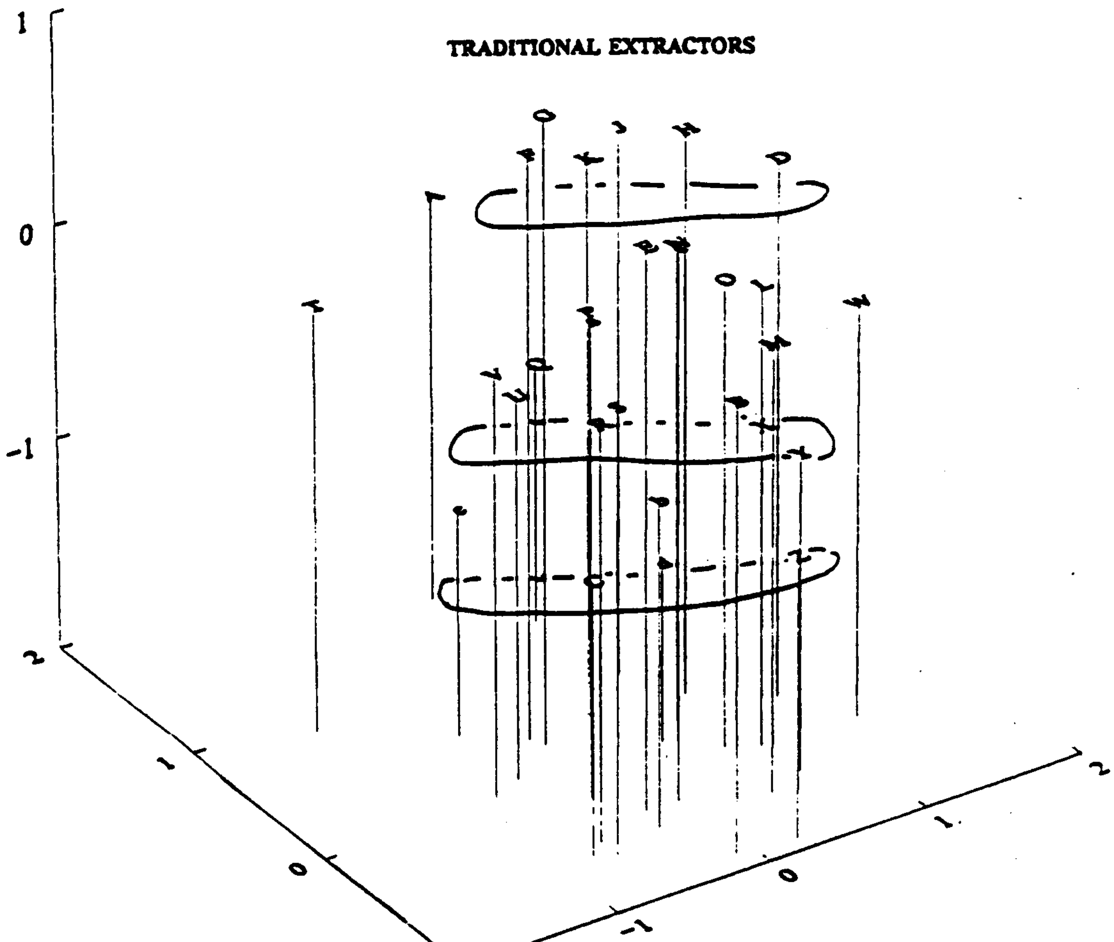

FIGURE 6. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 30 VARIABLES, N = 265, *MIXED* SUBSAMPLE OF PRETEST SAMPLE, 1987-1988

subsample than in the *Mixed* subsample (where the figures are 19% unemployment, 46% to 35% public- vs. private-sector employment, 59% Native and 44% men). In *Native* villages, participation in extractive subsistence pursuits is very high for Native men. As participation increases, Natives think the availability of game and/or fish have decreased in the past 5 years (see Table 5, Appendix). So, high incomes in *Native* villages, except for non-Natives, does not correlate with the attitude that land mammal availability has increased.

The TRADITIONAL EXTRACTORS region in Figure 5 is separated into two areas: Intense Extraction and Sea Mammal Extraction. Fitted toward the right center of the box are the variables measuring days and months in which R's engage in extractive activities. This tight area, labeled Intense Extraction, demonstrates the involution of extractive tasks: if persons pursue several species of land mammals (D, CACT1), the days spent hunting land mammals and sea mammals, the days spent camping and maintaining equipment, and the days spent fishing increase, as do the months throughout the year in which R's engage in these tasks. In addition, the more days R's allocated to subsistence tasks (L, M, N, O) and the greater the number of months in which they engaged in those tasks (H, I, J) in 1987 and 1988, the more likely it was that they thought the availability of game (P) and fish (Q) had decreased in the preceding 5 years. Yet, as in the *Mixed* configuration (Fig. 6), higher incomes correlate with land mammal hunting and days allocated to extractive activities. These features are fitted toward the HIGH INCOME variables and demonstrate the influence of income on these variables.

The Sea Mammal Extraction area is the larger of the two, forming a cylindrex in which subsistence-extraction and subsistence-consumption activities jointly form the polarizing facet. In the center of the higher radex are fitted the participation in frequent camping trips and many forms of fishing (F, CACT4: G, CACT5) and the presence of subsistence foods in the meals of the preceding 2 days (R, A28; S, A30). In the center of the lower level are fitted the frequency of visits with friends and relatives in the past week (X, D13) and months in which R's fished (K, CMN5). The modulating facet is the directness of the relation to either extraction or consumption of subsistence foods. Around the periphery of the upper radex, beginning on the far right, is participation in the hunting of many species of sea mammals (E, CACT2) (pulled toward, but not into, the intense extraction area), increasing household size (B, RHHSI), voting in village corporation and city council elections (a, D22; Z, D19), length of residence in the village (b, D25), speaking one's Native language at home (V, A38), and satisfaction with one's social ties with persons in distant villages (c, E12). Around the periphery of the lower radex is fitted attendance at public meetings (Y, D16), public-sector employment (A, PPEMP), and eating meals recently with relatives in the relative's households (U, A32).

The Sea Mammal Extraction area demonstrates slight differences from the similar area in Figure 1. In the pretest *Native* village subsample, it is evident that sea mammal extraction is a powerful indicator of the practice of traditional customs, but it is less powerful a predictor than extensive fishing and camping practices and subsistence food in daily meals. This is surely a function of the wide distribution and wide variety of environments in which *Native* villages are situated, some of which have little or no access to sea mammals (e.g., Anaktuvik and Aniak), and others of which have little or no access to land mammals (e.g., the St. Lawrence Island and Aleutian-Pribilof islands villages). Among Natives, whether they reside in *Native* or *Mixed* villages, sea mammals are the animals which, when available, best predict the practice of traditional customs. But most of those species are difficult to bag, some are not preferred,[25] and some species are most easily extracted when persons are least able to hunt them.[26] In *Mixed* villages, preferred sea mammal species may not be available, either because the animals avoid concentrations of people or because of environmental degradation due to tanker traffic and oil-related operations. When full-time employment or commercial-fishing

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[25] Residents of some North Slope and Bering Sea communities do not prefer walrus and grey whales so do not make special efforts to extract them when other resources are available. Contrariwise, some communities depend on walrus for food and for byproducts so they hunt them throughout the year.

[26] During commercial-fishing seasons, seals and sea lions plunder the set nets of commercial fishermen. At those times, Native fishermen regard sea mammals as expensive nuisances that they do not have time to shoot, retrieve, and prepare.

activities limit the time a person has available for extractive pursuits, sea mammal hunting is certainly affected.

At the far left (Fig. 5) is an interesting region separated from the others. Fitted together are the cognitive attitudes that game and fish have increased in the past 5 years (P, A26A; Q, A26B), household type (C, RHHTYPE), and receipt of food in the past 2 days from someone not in R's household (T, A31). Inasmuch as all of the subsistence-extraction variables correlate negatively with the variables measuring cognitive attitudes about current resource abundance, and because large, composite households and the receipt of food from persons not in R's household are fitted together, this region appears to represent households of elderly, infirm, or female-headed respondents in these *Native* villages. There are significantly more denuded nuclear and composite households in the *Native* subsample than in the *Mixed* subsample. So this area is labeled Traditional Recipients.

The 30 AOSIS items in the *Mixed* subsample (pretest) do not partition into a traditional region and a high-income region. Rather, inspection of Figure 6 demonstrates that income (W, D2), the source of employment (public or private sector) (A, PPEMP), attitudes about the availability of fish (Q, A26B), and receipt of food eaten in a recent meal that was procured by someone from a household other than the respondent's (T, A31) are outliers. An outlier does not fit within a region. So income in *Mixed* villages correlates highly and positively with hunting a wide variety of land mammals (W, CACT1), days engaged in hunting land mammals (L, RDAY1), and the months in which land mammals were hunted (H, CMN1); and as in Figure 3 (*Mixed* configuration for the combined pretest-posttest sample), income also correlates negatively with all variables measuring traditional customs (the A series), voting in village corporation elections (a, D22), length of residence in the village (b, D25), and the cognitive attitude about the availability of fish in the past 5 years (Q, A26B) (see Table 6, Appendix).

The importance of these outliers must be emphasized. High incomes in the 1987-1988 *Mixed* subsample are more often derived from public sources; and A (PPEMP), therefore, is fitted outside the traditional region. Yet because publicly earned incomes also are high, A is distant from income (W, D2) as well. In *Mixed* villages, the correlation between income and attitudes about the availability of game (in general) is near zero (but positive .01) and of fish (in general) is near zero (but negative -.06). In Table 1, it is evident that *Mixed* respondents by ratios of about 4:1 think that game availability increased or stayed the same in the past 5 years, whereas fish availability decreased or stayed the same during the same period. As demonstrated in Tables 3 and 4, income, alone, is not sufficient to account for attitudes about the abundance of natural resources but in conjunction with racial/ethnic differences accounts for a large proportion of attitudes respondents hold toward the availability of naturally occurring resources.

In the *Mixed* configuration (Fig. 6), the traditional sector comprises a single, tightly fitted cylindrex in the front center of the box. The cylindrex is complex, as the K score demonstrates, accounting for only 79 percent of the variation. The polarizing facet of the TRADITIONAL EXTRACTORS region is, simply, traditional customs. As we have seen in other configurations, an increase in the variety of sea mammals harvested (E, CACT2) and an increase in the months in which those harvests occur (I, CMN2) are powerful predictors of the traditional customs of resource distribution and consumption. In Figure 6, we identify three radexes. As in other configurations, the modulating facet for those radexes is determined not only by the directness of the relation between the item and extractive subsistence activities but also by income. In previous solutions, high incomes set apart high earners into a separate region.

It is our impression that hidden in the high-income facet is the high preponderance of non-Native respondents earning high incomes. The tight cylindrex in Figure 6 is a case in point. The middle and lower radexes distinguish high-income features on the right and low-income features on the left. The high-income items represent activities and customs that either Natives or non-Natives can practice. The low-income items on the left, however, characterize Native customs. Thus, this complex cylindrex distinguishes an extraction facet at the highest radex that is predominantly engaged in by Natives, but the lower radex are modulated by income that places low-income traditional customs to the left and high income to the right.

The modulating effect of income pulling items toward the right front is obvious in the lowest radex through the fitting of the amount of visits R made to relatives and friends in the past week (X, D13), frequency of attendance at public meetings in the past month (Y, D16), and voting in the most recent city council election (Z, D19). The longer Natives or non-Natives reside in a community, the more likely they have voted in the most recent city council elections and the more frequent their attendance at public meetings.

Longevity in the community also correlates with larger household sizes (B, RHHSI) but not with composite and other nonnuclear households. Thus, evidence suggests that Native and non-Native households in *Mixed* villages increased with income in 1987-1988, and those households were most frequently variations on the nuclear type. The high earners were apt to have nuclear households, large or small, and also were more apt to visit friends and relatives frequently. Changes to any one, but especially to all, of these variables indicate changes to the length of residence in the village, or changes in employment. Loss triggers outmigration, especially of non-Natives. Gain triggers inmigration. If the employment requires high education skills and pays high salaries, or if the occupations require heavy capital outlays, as in commercial fishing, the inmigrants are disproportionately non-Natives.

The highest radex, labeled Intense Extraction, fits participation in extractive activities with months in which these activities occur. It is not a coincidence that land mammal hunting (D, CACT1) in the extractor radex at the top of the cylindrex, and the days spent hunting land mammals (L, RDAY1) in the middle radex, are pulled toward the high-income variables. High rates of non-Natives engage in land mammal hunting, but in the middle radex we also see that higher incomes correlate positively, although not significantly, with *days* given to all subsistence activities--the hunting of land mammals and sea mammals, fishing time, and camping time. The obvious conclusion is that increased incomes facilitate more days, perhaps weekends or postworking-hour periods, in which R's or members of their households engage in subsistence trips (see Jorgensen 1990:95-132). The less obvious point is that the overwhelming majority of persons engaging in the subsistence activities are Natives. The extractive activities in which they engage and the months in which they engage in these activities are pulled to the left. They are fitted above the variables measuring the days devoted to those activities. Non-Natives hunt land mammals and extract some fish, but they do not invest much time or money in either (see Chapter 4 for a fuller analysis). Natives invest heavily in both.

Observing the left side of the cylindrex, in the lowest radex we see the modulating effect of traditional customs least directly related to subsistence-extraction activities, household type (C, RHHTYPE), and satisfaction with social ties to persons in other communities (c, E12). In the middle radex are fitted, from center to periphery, voting in village corporation elections (a, D22), eating meals with relatives in the relative's home (U, A32), and speaking one's Native language at home (V, A38). The lowest radex, then, organizes traits that are exclusively Native.

The center of the middle radex fits the extraction of several types of sea mammals (E) and the months in which extraction occurs (I) with increasing numbers of days spent camping, repairing equipment, and the like (N, RDAY4). The lower radex fits eating subsistence foods in meals yesterday and the day before yesterday (R, A28; S, A30) with length of residence in the village (b, D25). Satisfaction with income also is positioned within the center.

The pretest structure among *Mixed* villages lends itself to the interpretation that economic conditions of Native and non-Native households in *Mixed* villages (pretest) are less influenced by private-sector income and, if not more equitable, do not produce two significant regions--one traditional and one high income--the latter suggesting a non-Native, Western pattern. It is evident, however, that high-income and low-income differences in extraction, subsistence practices, and customs are present in the pretest's *Mixed* subsample.

VI. THE STRUCTURE OF TRADITIONAL CUSTOMS IN THE POSTTEST SAMPLE

VI.A. Introduction

Figure 7 demonstrates some major similarities to the configurations for the total combined sample (Fig. 1) and for the total pretest sample (Fig. 4). Focusing first on the HIGH INCOME region (right front of the box), we see that it is far removed from the Sea Mammal Extraction area of the TRADITIONAL EXTRACTORS region. But it is the several differences from the solution for the total pretest sample (Fig. 4) that are most interesting. Not the least of the differences is the fitting of the variables that comprise the HIGH INCOME region. As in previous measures, income (X, D2), satisfaction with that income (e, E29), and the cognitive attitude that game is more plentiful in the present (1989-1990) than 5 years earlier (D, A26A) are members of the region. Here, however, income is the most distant member of the region. In addition, frequent attendance at public meetings (Z, D16) and voting in the most recent city council election (a, D19) are fitted in the region. These last two measures correlate with long-term rather than short-term residence, almost surely more than 6 years, and apply equally to Natives and non-Natives. It is our impression that high earners in the 1989-1990 sample are predominantly non-Natives who were not forced to relocate because of the economic downturn in the mid- to late-1980's. High earners think game is more plentiful in the present than 5 years earlier.

Thoughts about the availability of fish are another matter: higher earning respondents in *Mixed* villages thought that fish availability had plummeted, whereas higher earning respondents in *Native* villages thought availability had increased a little. The commodity value of fish and the importance of commercial fishing to the economies of the majority of *Mixed* villages in our sample is important. Inasmuch as some of the 1989 interviews were administered immediately following the Exxon Valdez oil spill (and some immediately before), and all the questionnaire interviews in 1990 were administered after the spill, it appears that the responses among higher earners in the *Mixed* villages reflect either the absolute loss of fish or the inability to

Variance		D1	D2	D3
PPEMP	A	-.93	-.47	1.02
RHHSI	B	-.37	-.34	-.55
RHHTYPE	C	-1.06	.12	-.35
A26A	D	.32	-.86	.52
A26B	E	-.50	-.89	.00
A28	F	-.22	.51	-.57
A30	G	-.18	.16	-.80
A31	H	-1.88	-.09	.34
A32	I	-.28	.82	-.30
A33	J	-.27	.30	-.47
A38	K	-.83	.40	-.48
CACT1	L	.73	.18	.39
CACT2	M	.05	.46	.04
CACT4	N	.70	.43	.08
CACT5	O	.77	.38	-.20
CMN1	P	.58	.24	.48
CMN2	Q	-.01	.52	.18

Variance		D1	D2	D3
CMN4	R	.58	.43	.13
CMN5	S	.62	.40	-.17
RDAY1	T	.62	.26	.38
RDAY2	U	-.01	.45	.14
RDAY4	V	.45	.58	.07
RDAY5	W	.52	.49	-.24
D2	X	.93	-1.47	.16
D13	Y	.08	.26	1.09
D16	Z	.48	-.80	-.26
D19	a	.74	-.51	-.71
D22	b	-.30	-.25	.48
D25	c	-.78	.47	.38
E12	d	-.73	-.83	-.42
E29	e	.19	-1.33	-.35

Guttman-Lingoes' Coefficient of Alienation $\underline{K}$ = .161
Proportion of Variance (RSQ) is: .863

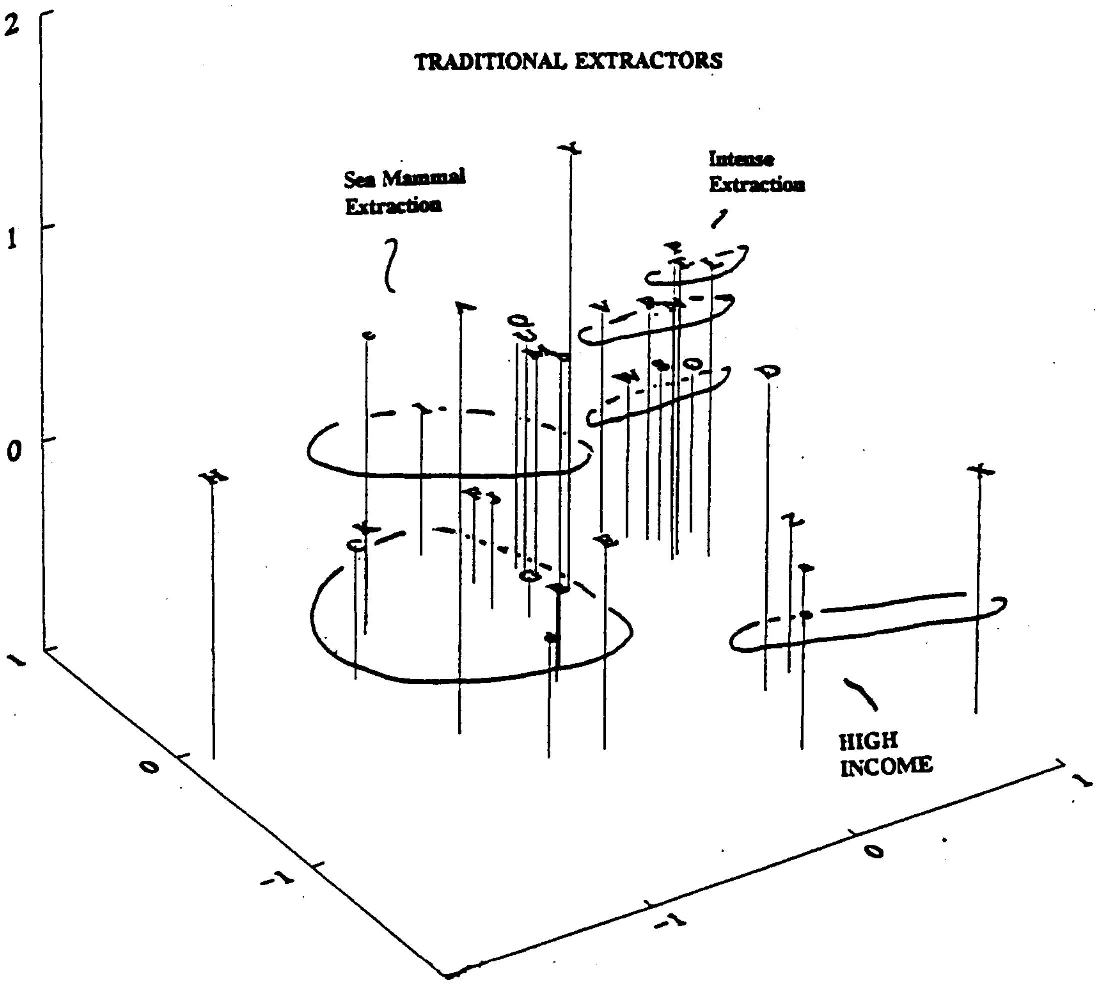

FIGURE 7. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA SOLUTION (3-D), 31 VARIABLES, *N* = 310, TOTAL POSTTEST SAMPLE, 1989-1990

harvest fish. Perhaps, too, the response is a reaction to the threat posed to the fishing environment.

In *Native* and *Mixed* villages, the more intensively persons engaged in extractive activities, regardless of income, the less often they reported that game (or fish) is more abundant than 5 years earlier. If those persons also were dependent, in part or in whole, on commercial-fishing-related business for their livelihoods, then it is very rare that they perceived an increase in fish in the past 5 years.

Thus, it is evident that posttest and pretest respondents are similar in their attitudes about resource availability and that these attitudes are conditioned by whether that resource is extracted heavily for subsistence or is extracted as a commodity, the ethnicity of the respondent, and the income of the respondent. The multivariate relations posited here are depicted in Table 5. A version of this hypothesis is tested in a later section.

Table 5

MULTIVARIATE HYPOTHESIS ABOUT RELATIONS AMONG ETHNICITY, INCOME, ACTIVITIES, AND ATTITUDES IN RELATION TO NATURALLY OCCURRING RESOURCES[a]

Ethnicity	Income	Attitude Resource	Subsistence Activities	Attitude Resource	Commodity Activities	Attitude Resource
	↗	Game up				
Native →	High	→	LM,SM,F,C	→	Comm. Fish	
	↘	Fish down	↘↘	G&F down	↘↘	G&F down
	Mid	→	LM,SM,F,C	→	Comm. Fish	
	↘↘	G&F down	↘↘	G&F down	↘↘	G&F down
			↗↗	G&F up		
	Low	→	fish/None			
	↘↘	G&F down				
	↗	Game up	↗	Game up	↗	Game up
Non-Native →	High or Mid	→	LM,f/None	→	Comm. Fish	
	↘	Fish down	↘	Fish down	↘	Fish down

[a] LM = land mammals, SM = sea mammals, F = fish, C = camping (upper case=heavy -, lower case = light extraction); G&F = game and fish

The TRADITIONAL EXTRACTORS region is composed of a circumplex and a conex, similar in many ways to the comparable region in Figure 1 (combined pretest-posttest sample, 1987-1990). This comparison is less important than the comparison with the pretest configuration (Fig. 4), from which it differs because the total sample masks differences between the pretest and posttest. The extractive activities and traditional customs form a single region in the total pretest sample (Fig. 4).[27]

In Figure 7, the Intense Extraction area has a tight distribution very similar to the Intense Extraction area in Figures 4 and 5 (the total and the *Native* pretest solutions). The structure integrates fishing, camping (and maintaining equipment), and the hunting of land mammals into a conex. Camping for subsistence-extraction pursuits--the amount and variety of trips, the months in which they are engaged, and the days given to them--is the polarizing facet, separating hunting, at the apex, from fishing, at the base. The more frequently respondents set up camps away from their residences, the more varieties of fish and land mammals they will extract, and the greater the amount of time they will devote to those extractive pursuits. These items are not so firmly connected to traditional customs as are the extraction of a wide variety of sea mammals. We have noted this structural phenomenon above, so let us turn to the Sea Mammal Extraction area.

Sea mammal extraction is important in the total pretest sample and the *Mixed* and *Native* pretest subsamples. In the total pretest sample (Fig. 4), sea mammal extraction is a major feature of the polarizing facet of a single traditional region. In the total posttest sample (Fig. 7), sea mammal extraction is pushed toward the periphery of the area that encompasses traditional customs, central to which are subsistence food in the diet. Thus, consumption and sharing, rather than extraction, per se, represent the polarizing facet in the Sea Mammal Extraction area in the total posttest solution.

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[27] The variables measuring relatives and friends with whom R engaged in extractive activities (CREL 1-2, 4-5) have been dropped from the total posttest sample. The CREL variables correlate highly and positively with each other, forming a tight region similar to those in Figures 1-3. By eliminating them from the total posttest sample, we were able to spread out the points to obtain a more easily interpreted configuration.

The position of sea mammal extraction in the solution does not deny the importance of sea mammal hunting as a powerful predictor of the practice of traditional customs. Rather, the positions occupied by the eating of subsistence food in meals yesterday (F, A28) and the day before yesterday (G, A30), and the proportion of naturally occurring meat and fish in R's diet (J, A33), suggest that use rather than extraction better accounts for the maintenance of traditional customs in 1989-1990 than earlier. Natives dominate among long-term residents. Subsistence foods, we hypothesize, are always staples in the diets of traditional households, but they become more frequently used when required by economic exigencies.

The modulating facet in the Sea Mammal Extraction area is traditional customs associated with subsistence food. Following around the inner circle of the lower radex, we see fitted eating meals with relatives in the relatives' home(s) (I, A32), increasing household size (B, RHHSI), and speaking one's Native language at home (K, A38). Around the periphery of the lower radex is fitted nonnuclear (composite) household types (C, RHHTYPE), satisfaction with social ties with persons in distant communities (d, E12), and the attitude that fish are more abundant now than 5 years earlier (E, A26B).

In the higher radex, the sea mammal-extraction variables are fitted in the space just beyond the center. As the variety of sea mammals harvested increases (M, CACT2), so do the months (Q, CMN2) in which hunts occur and the days (U, RDAY2) given to the hunts. The importance here is that although the correlations are very high between the variety of sea mammal species hunted, the months in which those species are hunted, the days invested in those hunts, and the months and days given to other subsistence-extraction pursuits (camping, fishing, land mammal hunting), sea mammal extraction correlates positively and higher with the traditional communitarian customs, in general, than do the other subsistence activities.

Somewhat more distant around the periphery are located visits with relatives and friends in distant communities (Y, D13), voting in the most recent village corporation election (b, D22), and the number of years the respondent has resided in the village (c, D25). The public-private-sector employment variable (A, PPEMP) is fitted on the outer edge. Unemployment/retirement is higher (by 4%), and private-sector employment is lower (by 6%) than the pretest sample. It is significant that the private sector, which accounted for most employment in the pretest population, particularly the *Mixed* village population in which 46 percent of all employment was private, accounts for only 33 percent of total employment and 34 percent of employment in *Mixed* villages in the posttest. The swing is undoubtedly a function of loss of private-sector jobs and businesses. The public sector proved more stable in the short run. Natives (and non-Natives) who occupied public-sector jobs before 1989 likely held them after 1989.

The Sea Mammal Extraction area, removed a considerable distance from the HIGH INCOME region, fits together several items that recur in "traditional" regions in most configurations. These include long-term residency; satisfactory social ties with persons in distant communities; and large, nonnuclear (or nonsingle person or nonconjugal pair) households. These items correlate negatively with items in the HIGH INCOME region, though they need not. High incomes in the pretest sample correlate positively with large families (although not with nonnuclear forms) and also with satisfactory social ties with persons in other communities.

Longevity, or duration of residence in a community, is a central factor in the constellation of traditional practices. It is the case that few Native households earn more than $40,000 a year, but it is also the case that the largest incomes (and the smallest incomes) earned by Natives are earned by persons who have resided in the villages in which they were interviewed for more than 11 years (see Table 6 for comparisons of pretest and posttest samples). This accounts for the positive relations among length of residence in the community, income, and satisfaction with social ties. The subclassification tables (Table 6) demonstrate the effects of race/ethnicity and age on income, length of residence, and affective attitudes about social ties with persons in other communities. The differences between Natives and non-Natives are great, as are the differences between younger Natives (18-34) and older Natives (60+) with non-Natives in the relation between length of residence

Table 6

RELATIONS AMONG HOUSEHOLD INCOME, YEARS RESIDENCE IN VILLAGE, AGE OF RESPONDENT, AND SATISFACTION WITH SOCIAL TIES WITH PERSONS IN OTHER COMMUNITIES, CONTROLLED BY RACE/ETHNICITY AND AGE OF RESPONDENT, PRETEST AND POSTTEST AOSIS SAMPLES

PRETEST SAMPLE, N = 548, 1987-1988

	Native					Non-Native				
Income (D2) — Income by Years Residence in Village by Race/Ethnicity (D25)	Year or Less	2-5 Yrs	6-10 Yrs	11+ Yrs	Row	Year or Less	2-5 Yrs	6-10 Yrs	11+ Yrs	Row
<$20,000	9	11	16	175	210 55.4	5	5	5		15 13.6
<$40,000	1	5	9	90	105 27.7	9	10	8	9	36 32.7
>$40,000	1	2	6	54	64 16.9	5	21	21	12	59 53.6
Column η D2 η D25	11 2.4	18 4.7	31 8.2	319 84.2	379 100 .08 .06	19 17.3	36 32.7	34 30.9	21 19.1	110 100 .26 .23
Social Ties (E12) — Social Ties with Other Communities by Years Residence in Village by Race/Ethnicity (D25)										
Not Satisfied		1	4	13	18 4.7	4	3	3		10 10.2
Somewhat Satisfied	8	13	21	233	276 71.9	8	25	24	19	76 77.6
Completely Satisfied	2	6	6	76	90 23.4	4	2	2	4	12 12.2
Column η E12 η D25	10 2.6	20 5.2	31 8.1	322 83.9	384 100 .08 .03	16 16.6	30 30.6	29 29.6	23 23.5	98 100 .18 .24

POSTTEST SAMPLE N = 308, 1989-1990

	Native					Non-Native				
Income (D2) — Income by Years Residence in Village by Race/Ethnicity (D25)	Year or Less	2-5 Yrs	6-10 Yrs	11+ Yrs	Row	Year or Less	2-5 Yrs	6-10 Yrs	11+ Yrs	Row
<$20,000	1	3	24	73	101 53.4	7	3	4	2	16 16.3
<$40,000	3	1	7	42	53 28.0	1	7	6	5	19 19.4
>$40,000	1	4	8	21	35 18.5	6	15	23	19	63 64.3
Column η D2 η D25	5 2.6	8 4.2	40 21.2	136 72.0	189 100 .15 .14	14 14.3	25 25.5	33 33.7	26 26.5	98 100 .31 .29
Social Ties (E12) — Social Ties with Other Communities by Years Residence in Village by Race/Ethnicity (D25)										
Not Satisfied	2		2	9	13 6.5	1	7	4	3	15 15.8
Somewhat Satisfied	1	1	19	44	65 32.7	4	8	9	11	32 33.7
Completely Satisfied	2	6	22	91	121 60.8	8	10	18	12	48 50.5
Column η E12 η D25	5 2.5	7 3.5	43 21.6	144 72.4	199 100 .18 .10	13 13.7	25 26.3	31 32.6	26 27.4	95 100 .20 .08

Table 6 (continued)

	PRETEST SAMPLE (CONTINUED) Income by Age of Respondent by Race/Ethnicity (AGE)								POSTTEST SAMPLE (CONTINUED) Income by Age of Respondent by Race/Ethnicity (AGE)							
	Native				Non-Native				Native				Non-Native			
Income (D2)	18 to 34	35 to 59	60+	Row	18 to 34	35 to 59	60+	Row	18 to 34	35 to 59	60+	Row	18 to 34	35 to 59	60+	Row
<$20,000	83	83	35	201 55.2	6	9		15 14.0	30	50	18	98 53.3	12	4		16 16.7
<$40,000	34	56	12	102 28.0	20	12	3	35 32.7	18	25	9	52 28.3	9	9		18 18.8
>$40,000	21	38	2	61 16.8	23	30	4	57 53.3	14	18	2	34 18.5	13	48	1	62 64.6
Column η D2 η AGE	138 37.9	177 48.6	49 13.5	364 100 .19 .05	49 45.8	51 47.7	7 6.5	107 100 .08 .11	62 33.7	93 50.5	29 15.8	184 100 .12 .13	34 35.4	61 63.5	1 1.0	96 100 .44 .44
Social Ties (E12)	Social Ties with Other Communities by Age of Respondent by Race/Ethnicity (AGE)								Social Ties with Other Communities by Age of Respondent by Race/Ethnicity (AGE)							
Not Satisfied	9	7	2	18 4.9	6	4		18 4.9	9	2	2	13 6.7	5	9		14 15.1
Somewhat Satisfied	98	131	33	262 71.6	33	33	6	72 76.6	19	38	6	63 32.6	14	18		32 34.4
Completely Satisfied	25	39	22	86 23.5	4	6	2	12 12.8	32	58	27	117 60.6	13	32	2	47 50.5
Column η E12 η AGE	132 36.1	177 48.4	57 15.6	366 100 .16 .14	43 45.7	43 45.7	8 8.5	94 100 .17 .16	60 31.1	98 50.8	35 18.1	193 100 .19 .19	32 34.4	59 63.4	2 2.2	93 100 .16 .18

Table 6 (continued)

Years Residence (D25)	PRETEST SAMPLE (continued) Years Residence in Village by Age of Respondent by Race/Ethnicity (AGE)								POSTTEST SAMPLE (continued) Years Residence in Village by Age of Respondent by Race/Ethnicity (AGE)							
Year or Less	7	2	1	10 2.5	10	7	1	18 16.5	3	2		5 2.5	9	5		14 14.4
2-5 Years	11	4	4	19 4.8	17	17	1	35 32.1	6	1		7 3.6	13	12		25 25.8
6-10 Years	13	16	4	33 8.3	16	16	2	34 31.2	16	24	2	42 21.3	8	22	1	31 32.0
11+ Years	111	170	53	334 83.9	6	12	4	22 20.2	38	72	33	143 72.6	4	22	1	27 27.8
Column η D25 η AGE	143 35.9	193 48.5	62 15.6	398 100 .14 .12	49 45.0	52 47.7	8 7.3	109 100 .21 .24	63 32.0	99 50.3	35 17.8	197 100 .27 .29	34 35.1	61 62.9	2 2.1	97 100 .38 .39

and income: non-Natives are high earners from the outset, and their incomes increase over 10 years, but there is only modest benefit for staying longer than 10 years.

Natives are much more apt than non-Natives to be completely satisfied with the social ties they maintain with persons in other communities and much more apt to become more satisfied the longer they reside in the village (and the older they become). This generalization holds even though only 5 percent of non-Natives over the age of 60 earn more than $40,000 annually, whereas 62 percent (5 of 8) of non-Natives over the age of 60 earn more than $40,000 annually.

Short-term Native residents, even if high earners, do not report satisfactory social ties with persons in distant communities, tend to be young, and tend to have small households (household-size and household-type correlations appear below). Short-term and long-term non-Native residents tend to be high earners and report satisfactory relations with persons in distant communities, although short-term non-Natives tend to reside as single persons, in conjugal pairs, or in small nuclear households; long-term non-Natives tend to reside in large nuclear households. Long-term, high-earner Natives tend to reside in large composite households.

Household size, household composition, and attitudes about ties to persons in other communities, then, are complex multivariate relations. Some similarities to attitudes about the availability of game and of fish are obvious: the correlations among these items vary by ethnicity and income. Hidden within ethnicity, of course, are differences in communitarian behavior (sharing, visiting, pooling resources, coresidence) and expectations about what constitutes a satisfactory relation with someone in a distant community.

In the pretest and posttest samples, the extraction of sea mammals is a powerful predictor of intense participation in other extractive activities (camping, repairing equipment, fishing throughout the year, hunting many species of land mammals); consuming diets consisting of high amounts of naturally occurring meats (sea mammals, land mammals, seabirds, waterfowl, grouse, fish, marine invertebrates); sharing meals and food as a recipient and as a donor; pooling resources with lineal and collateral relatives beyond the nuclear family, often under the same roof (large composite households); being satisfied with social ties with persons in distant villages; and attending public meetings and exercising the franchise in village and city elections. If you know that a respondent hunts sea mammals, the likelihood is great that the respondent and other persons in his household engage in most, if not all, of the traditional customs listed here.

The evidence suggests that income, age, sex, and length of residence in the village influence the amount to which Natives participate in these several customs. Non-Natives present a special case. Whereas non-Natives have a very short history in Alaska (less than 200 years) and non-Native respondents in our samples are, for the most part, first-generation migrants to Alaska, some of these persons, too, practice some of the customs we have identified as traditional. In particular, these practices include hunting a wide variety of land mammals and harvesting several varieties of fish, maintaining equipment and moving to camps to hunt and fish, eating products of the chase, attending public meetings, and voting in city council elections. The factors that influence whether non-Natives engage in these traditional customs, with the exception of Native ethnicity and the culture history Native ethnicity implies, are the same factors that influence Native participation. An additional factor influencing non-Natives is whether or not the non-Native has a Native spouse. If he or she does have a Native spouse, it is our impression that the household participates in more traditional customs than if he or she does not. We control for non-Native/Native marriages in a later section (see also Final Report Social Indicators Research Project 1987-1989 [Jorgensen 1990:147-152]).

VI.B. The Structure of Traditional Customs by Theoretical Contrasts: *Native* and *Mixed* Subsamples of the Posttest Sample

The solutions in Figures 8 and 9 provide interesting contrasts to one another, as well as to the comparable solutions for the pretest sample (Figs. 5 and 6). In the *Native* posttest configuration (Fig. 8), 81 percent of the variance is explained (as measured by K), about the same amount explained in the *Native* configuration, pretest sample (Fig. 5). In contrast, about 83 percent of the variance is accounted for in the *Mixed* configuration for the posttest sample (Fig. 9). This represents a

Variable		D1	D2	D3
PPEMP	A	-.28	-1.13	.06
RNHSI	B	.40	-.72	-.30
RNHTYPE	C	-.29	-.96	.31
CACT1	D	.60	.51	.07
CACT2	E	.45	.29	.30
CACT4	F	.37	.70	.35
CACT5	G	.02	.64	.48
CMN1	H	.39	.39	.01
CMN2	I	-.11	.22	.23
CMN4	J	.30	.56	.25
CMN5	K	.19	.62	.53
RDAY1	L	.32	.41	.03
RDAY2	M	.25	.17	.08
RDAY4	N	.25	.47	.40
RDAY5	O	.05	.53	.60
CREL1	P	-1.14	.05	.31
CREL2	Q	-1.22	.10	.27
CREL4	R	-1.18	.52	.00
CREL5	S	-1.09	.35	.22

Variable		D1	D2	D3
A26A	T	-.19	-.21	-.84
A26B	U	-.03	-.88	-.65
A28	V	.73	-.36	.55
A30	W	1.00	-.76	.27
A31	X	-1.63	-.60	.08
A32	Y	.34	-.15	.74
A33	Z	.69	-.50	.41
A38	a	.23	-1.07	.51
D2	b	-.28	.86	-1.04
D13	c	-.30	-.02	.57
D16	d	.64	.08	-.71
D19	e	.54	.64	-.88
D22	f	.78	-.18	-.61
D25	g	-.79	-.45	-.48
E12	h	.47	-.41	-.96
E29	i	-.46	.30	-1.15

Guttman-Lingoes' Coefficient of Alienation K = .191
Proportion of Variance (RSQ) is: .773

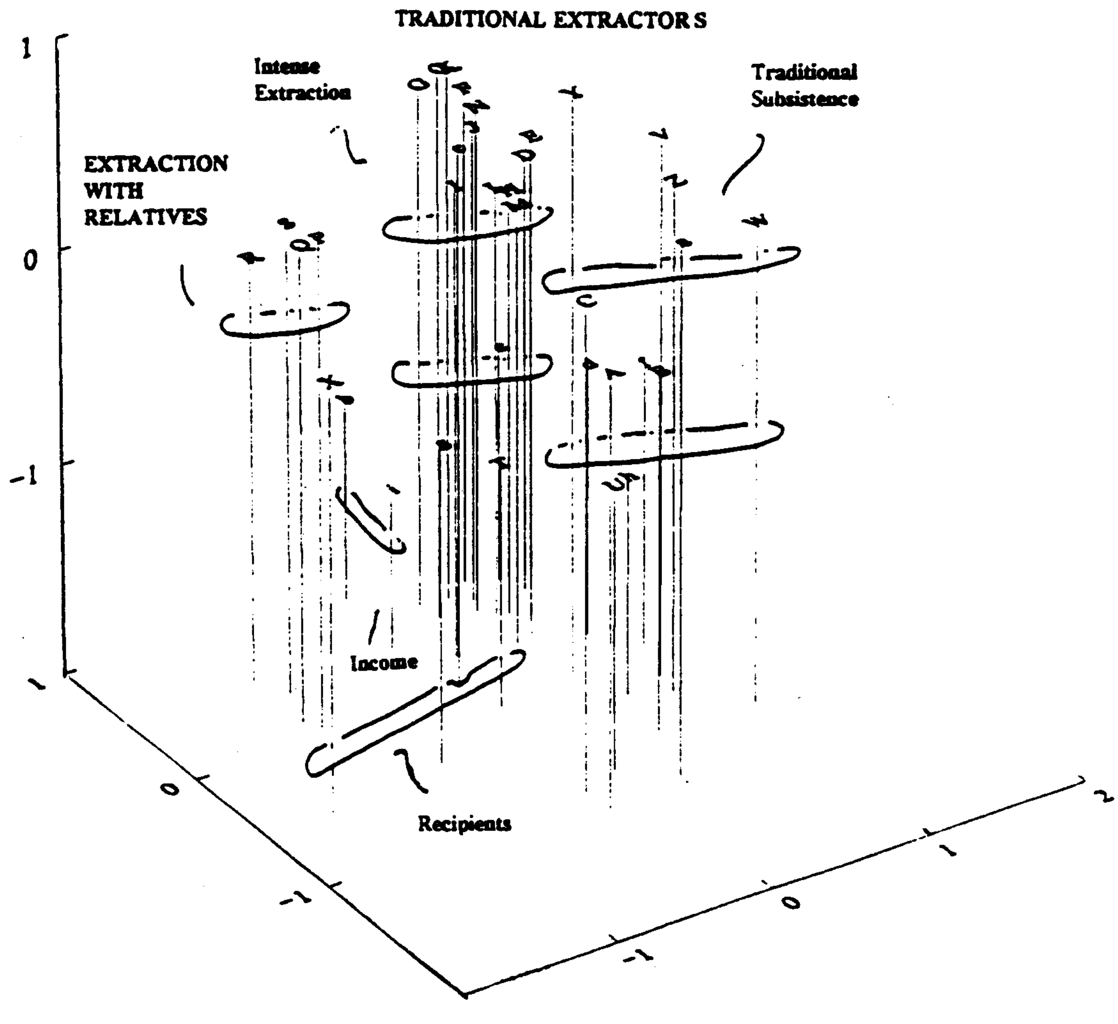

FIGURE 8. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA SOLUTION (3-D), 35 VARIABLES, N = 142, *NATIVE* SUBSAMPLE OF THE TOTAL POSTTEST SAMPLE, 1989-1990

Variable		D1	D2	D3
PPEMP	A	.13	-1.08	.80
RHHSI	B	.47	-.19	-.78
RHHTYPE	C	1.03	-.48	-.51
CACT1	D	-.65	.46	.21
CACT2	E	.29	.66	.16
CACT4	F	-.28	.52	.06
CACT5	G	-.56	.63	-.34
CHM1	H	-.65	.68	.23
CHM2	I	.16	.64	.27
CHM4	J	-.19	.59	.04
CHM5	K	-.32	.72	-.30
RDAY1	L	-.44	.61	.20
RDAY2	M	.42	.73	.18
RDAY4	N	.00	.63	-.02
RDAY5	O	-.18	.71	-.42
CREL1	P	-.39	-.35	.97
CREL2	Q	-.63	-.56	.90
CREL4	R	-.48	-.36	.92
CREL5	S	-.79	-.29	.69

Variable		D1	D2	D3
A26A	T	-.70	-.51	-.28
A26B	U	.09	-.87	-.88
A28	V	.75	.22	.02
A30	W	.61	.10	-.32
A31	X	1.13	-.95	.31
A32	Y	1.07	.35	.04
A33	Z	.57	-.12	-.13
A38	a	1.03	.00	-.12
D2	b	-1.03	-.59	-.66
D13	c	.26	.39	.95
D16	d	-.68	-.38	-.77
D19	e	-.49	.01	-.96
D22	f	.36	.41	-.61
D25	g	.59	-.22	.67
E12	h	.10	-1.16	.02
E29	i	-.62	-.95	-.55

Guttman-Lingoes' Coefficient of Alienation K = .171

Proportion of Variance (RSQ) is: .798

TRADITIONAL EXTRACTORS

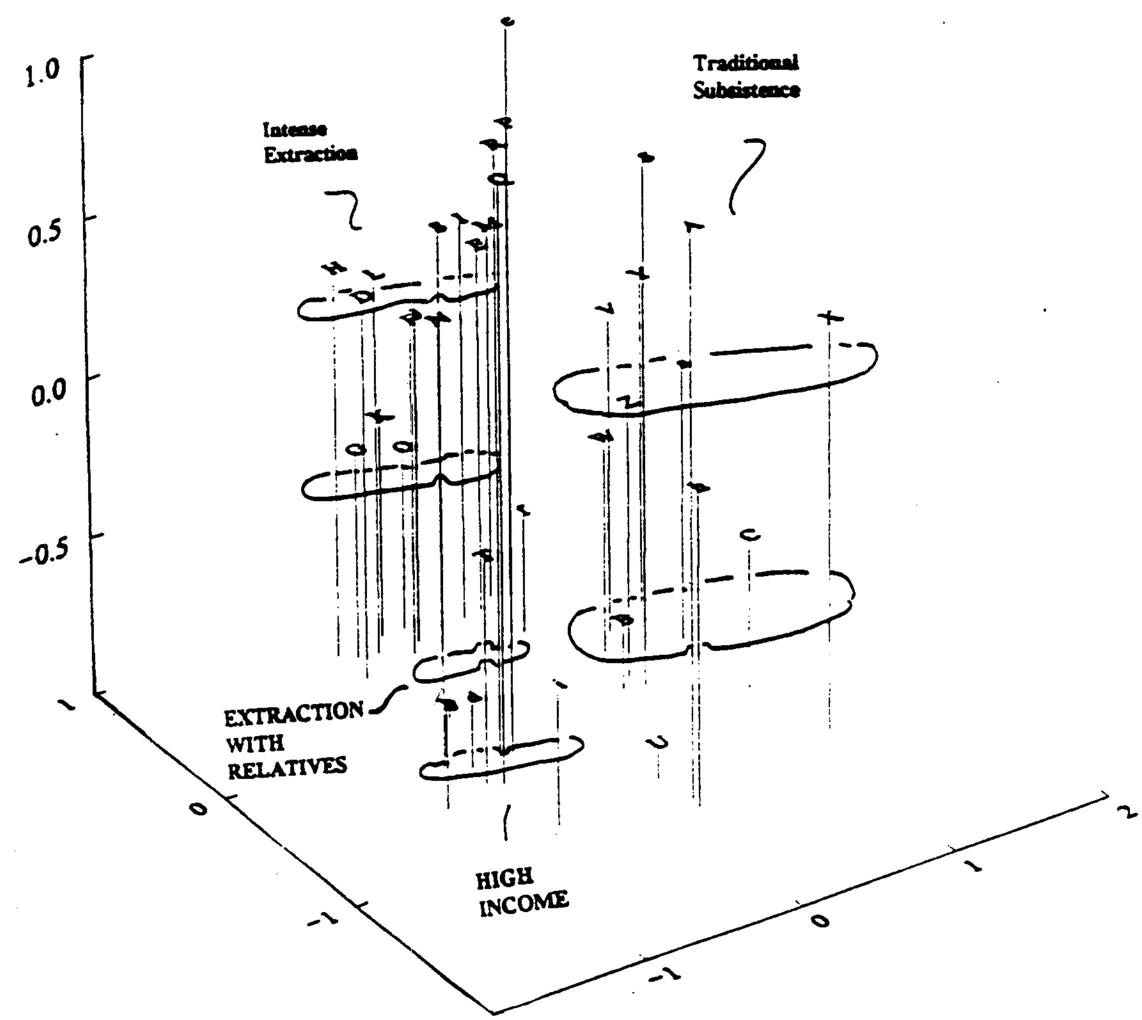

FIGURE 9. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA SOLUTION (3-D), 35 VARIABLES, N = 168, *MIXED* SUBSAMPLE OF THE TOTAL POSTTEST SAMPLE, 1989-1990

4-percent improvement over the configuration for the *Mixed* pretest sample (Fig. 6), as well as a reversal of positions between *Mixed* and *Native* subsamples in the pretest and posttest samples.

It is evident that there is greater variation within variables in the posttest subsample than in the pretest sample for *Mixed* villages. *Mixed* villages--with their greater infrastructures, more heterogeneous populations, higher rates of employment, and better developed private sectors--are complemented by more diverse responses on most variables in the corpus we are using here.

The likely explanation of the reduction of the coefficient of alienation from $K = .214$ to $K = .171$ (the increase in variation explained from .79 to .83) is found in the changes in proportions of *Mixed* and *Native* samples in the pretest and posttest and the proportions of Natives to non-Natives in the *Mixed* subsamples for pretest and posttest. Table 1 shows that respondents in *Mixed* villages comprise 48 percent of the pretest sample and 55 percent of the posttest sample. We intentionally undersampled the largest *Mixed* villages with the largest proportions of non-Native residents (Kodiak City, Dillingham, and Unalaska) in the pretest wave so as not to swamp our measures of *Native* villages (see Social Indicators Study II [Jorgensen 1993:38-40]).

During the 1990 wave of the posttest, we increased the proportional representation of the large *Mixed* villages of Dillingham and Kodiak. We did so because the Exxon Valdez oil spill occurred as we were concluding the 1989 posttest wave. We used our flexible sampling design to assess the spill's effects on commercial-fishing villages in the southern part of our study area. To do so, we had to increase the representation of non-Natives in the study because Kodiak, a commercial-fishing village with fewer than 10 percent non-Natives, is the largest village in the entire sample (ca. 6,100 population). Dillingham, another large, *Mixed*, commercial-fishing village with fewer than 10 percent non-Native residents, also was sampled at a rate greater than other villages in the posttest.[28]

[28] The large, *Mixed*, commercial-fishing villages of the Aleutian-Pribilof region, such as Unalaska, were sampled in the 1989 posttest wave shortly before the Exxon Valdez spill, so it was too late to increase the number of respondents in those villages.

Kodiak was directly affected by the spill and Dillingham, we presumed, was indirectly affected by the spill (we presumed that all of the Aleutian-Pribilof and Bristol Bay villages would be indirectly affected by the spill). The heavier proportional sampling in the *Mixed* villages, while following random-sampling techniques, selected a heavier proportion of non-Native respondents for the total sample and for the *Mixed* subsample than was the case for the pretest (see Table 1). The posttest *Mixed* subsample is composed of 52 percent non-Natives in comparison to 41 percent in the *Mixed* pretest sample. There is, then, greater heterogeneity among *Mixed* villages in the posttest. In addition, the posttest sample demonstrates a definite economic downturn (25% unemployment/retirement as opposed to 19% in the pretest), a significant drop in the proportion of private-sector employment, and a decrease in long-term residents. Whether this means that long-term residents lost businesses or jobs and relocated is not clear, although evidence from the panels suggest persons with jobs remained in villages. Unemployed non-Natives were more apt to relocate than unemployed Natives. The most stable employment sector for non-Natives (and Natives) is public.

The configurations for the combined, pretest, and posttest samples (Figs. 1, 4, and 7), then, obscure important differences between *Native* and *Mixed* subsamples for the pretest and posttest.

Figure 8 demonstrates one well-defined region in the center of the box, TRADITIONAL EXTRACTORS, comprising two areas: Intensive Extraction and Traditional Customs (each a circumplex). The tight little region to the left, EXTRACTION WITH RELATIVES, fits the four items measuring subsistence-extraction activities engaged in with relatives and friends. The involution of these practices occurs in every solution for which we have data on persons with whom R engages in extractive pursuits (Figs. 1-3 and 7-9 [the CREL variables were deleted from the solution in Fig. 7]). There is too little variation to commend any analysis of the phenomenon except to observe that persons who engage with relatives and friends in one activity tend do so in others. We have pointed out above that one person, equipped and acting alone, can bag, harvest, catch, or fell most of the resources measured here. Task groups of relatives or friends are necessary to hunt large whales (but not necessarily small ones, such as beluga), to seine for fish on rivers, and to coordinate rabbit (hare) drives. Thus, engaging in extractive activities with friends and relatives makes trips more secure and more pleasant, while spreading the costs somewhat, but the composition of the parties can and does change as conditions and opportunities change.

Between the TRADITIONAL EXTRACTORS and EXTRACTION WITH RELATIVES regions are fitted income (b, D2) and satisfaction with that income (i, E29). All extractive activities, with the exception of land mammal hunting (H-L-M), correlate negatively with income, while income correlates negatively with public- and private-sector employment (A, PPEMP). So high earners are in the public sector, and if high earners engage in extractive pursuits, they typically pursue land mammals. These correlations are similar to correlations obtained in the pretest sample, except that the relation between higher incomes and public-sector employment is much higher in the posttest than the pretest, suggesting a loss of private-sector employment and a concomitant plummeting of private-sector income.

The structure of traditional customs in *Native* villages is familiar, similar in many ways to the structures in Figures 2 and 5. Let us focus our attention on comparisons with the solution for the pretest *Native* sample (Fig. 5). In the pretest configuration, the TRADITIONAL EXTRACTORS region forms two cylindrexes, one Sea Mammal Extraction and the other Intense Extraction. The posttest configuration is similar, but not identical. The difference is that the traditional customs, especially the consumption of naturally occurring resources and the communitarian behavior that accompanies consumption of those subsistence foods is separated from the measures of sea mammal extraction. Thus, we label the areas in the TRADITIONAL EXTRACTORS region of Figure 8 Traditional Subsistence and Intense Extraction.

The HIGH INCOME regions of pretest and posttest configurations are similar in that they include only two items, income and satisfaction with income (D2, E29). And they are similar in that low-income behaviors reflecting Traditional Recipients are separated from the measures of high income and from the measures of Intense Extraction. The Traditional Recipient area in Figure 5 includes nonnuclear households, the receipt of food from persons in households other than the respondent's, and the attitudes that the availability of both game and fish have increased in the past 5 years. In Figure 8, the Recipient area includes receipt of food from persons in a household other than the respondent's, long-term residence in the community, and the attitude that game is more available now than 5 years earlier.

Unemployment is greater in the posttest than the pretest *Native* subsample, although posttest incomes are $3,000 higher ($2,000 in 1987-1988 dollars). This may account for the fitting of nonnuclear households with large households and other traditional features in the Traditional Subsistence area. In any event, the differences between the pretest and posttest *Native* configurations are modest.

We can understand the similarities between the pretest and posttest configurations if we look closely at the sea mammal-extraction variables within the Intense Extraction cylindrex. The Intense Extraction cylindrex not only incorporates sea mammal extraction but also incorporates some community variables that are only indirectly related to extraction: voting in the most recent city election (e, D19) and frequent visits with relatives in the past week (c, D13). Visiting increases with participation in extractive activities but is negatively correlated with income. This is likely due to the traditional practices of persons who engage in sea mammal hunting because, as we have seen, if a person extracts sea mammals, they extract other naturally occurring resources heavily and also practice most of the traditional customs we analyze here. The sea mammal-extraction variables (E, CACT2; I, CMN2; M, RDAY2) form a simplex from right center to left center in the Intense Extraction cylindrex. They are pulled toward, but not into, the Traditional Subsistence area.

Communitarian customs are the polarizing facet of the Traditional Subsistence cylindrex, and the directness of the relation between an item and communitarian customs is the modulating facet. Not only are traditional customs separated from extractive activities, but an inversion of modulating facets between the pretest and posttest occurs. The higher radex of the Traditional Subsistence cylindrex demonstrates the relationships between extractive activities and the consumption of the items extracted. So although subsistence consumption is fitted in the Traditional Subsistence area, the positive relations between extraction (in the Intense Extraction area) and consumption of naturally occurring species is obvious. But the separation of the two areas demonstrates that whether or not respondents are actively engaged in several forms of extraction throughout the year--or in a few forms, or do not engage in many extractive activities at all (the elderly, the infirm, persons in women-headed households)--subsistence foods constitute large portions of their diets, and communitarian customs are frequently practiced.

In turning our attention to the radex on the lower level of the Traditional Subsistence cylindrex, we see fitted together measures of household organization (B, RHHSI; C, RHHTYPE), feelings about social ties with persons in distant communities (h, E12), and participation in village affairs (f, D22; d, D16). Also, persons who are in the larger and frequently nonnuclear households and who have resided in the village for the longest periods think that there are more fish available in the present than 5 years earlier (U, A26B), whereas persons most actively engaged in subsistence fishing and other extractive activities think that fish are less available in the present than 5 years earlier.

One surprising difference between pretest and posttest solutions for the *Native* subsamples is that length of residence correlates positively with household size and with household type in the pretest, but negatively with household size and positively with household type in the posttest. Table 1 demonstrates that the *Native* posttest sample had significantly more nonnuclear households than the *Native* pretest sample or either of the *Mixed* subsamples. The households also were much larger than either of the *Mixed* subsamples but smaller than the pretest *Native* sample. There are, then, more small, nonnuclear households among long-term residents whose incomes are low (the correlation between length of residence and income also is negative) in the posttest than in the pretest *Native* sample. Composite, stem, joint, remnant, and other nonnuclear households are indicators of changing household organizations and pooling of resources in response to economic exigencies. Thus, it appears that declining income influenced single persons living alone, conjugal pairs, and nuclear families to relocate, while causing the formation of several nonnuclear households. Nevertheless, average household size decreased from about 3.1 persons to 2.9.

Source of employment (A, PPEMP) correlates negatively with income, reflecting lower incomes in the Traditional Subsistence area which, in turn, correlates positively with household sizes and types (B, C) and also with length of residence in the community (g). The profile we can derive from these results is that older persons and persons in large and composite households have lower incomes and are less actively engaged in subsistence extraction--but not less actively engaged in the consumption of naturally occurring resources.

The loose simplex in the left center of the box, labeled Recipients, represents some special characteristics of the older Native population. It comprises the receipt of food in the past 2 days harvested by others (X, A31, this item is pulled toward Q, the variable measuring relatives with whom R hunts sea mammals), length of residence in the village (g, D25), and the attitude that the amount of game available has increased during the past 5 years (T, A26A). That attitude, of course, correlates with persons who hunt land mammals but do not engage in many other subsistence activities. It also correlates with Native persons--elders and the like--who receive products from the chase but do not engage in the chase.

The configuration for the *Mixed* posttest sample (Fig. 9) reveals a few marked differences from the configuration for the pretest *Mixed* sample (Fig. 6) and some interesting similarities with the configuration for the posttest *Native* configuration (Fig. 8). Most obvious in the comparison of pretest with posttest is that the posttest has a definite HIGH INCOME region, whereas the high-income variables in the pretest are fitted as outliers to a single, large cylindrex. The pretest cylindrex is, to be sure, influenced by income as a modulating facet, pushing high-income-related items to the right of the center and low-income-related items to the left (see the discussion above).

The posttest configuration (Fig. 9) produces a HIGH INCOME region in which are fitted income (b, D2), satisfaction with that income (i, E29), voting in the most recent city council election (e, D19), frequently attending public meetings (d, D16), and the cognitive attitude that game is more plentiful in the present than 5 years earlier (T, A26A).

It is our impression on the basis of the political and public activities of high-income respondents that a greater proportion of those high earners in the posttest sample are employed in the public sector than is the case for the pretest sample. It is also likely that, on average, the posttest high earners have resided longer in the villages in which they were interviewed than the high earners in the pretest sample. We suspect this because public-sector employees are more often year-round residents of villages, more often participate in village affairs than do private-sector employees, and probably are well represented among higher income earners in the posttest sample. Table 1 suggests that private-sector jobs were eliminated more quickly than public-sector jobs in the late 1980's. In addition, the high earners tended to have smaller, nuclear, single person or conjugal pair households, whereas the larger households, particularly nonnuclear forms, more frequently correlate with respondents who are long-term residents, who speak their Native language at home, who vote in village corporation elections, and who observe the most traditional customs in consuming and sharing resources. Nevertheless, as income increases, household size also increases, suggesting that high-income Natives, in particular, have large households. On the other hand, the best predictors of larger households are nonnuclear household types, especially composite households.

Indeed, it is the last mentioned traits which, for the most part, define the Traditional Subsistence area of the TRADITIONAL EXTRACTORS region. As in the pretest sample, the evidence suggests that some Natives were high-income earners, but many of those Natives also observed customs we have classified as traditional. If overall rates of employment dropped between pretest and posttest waves as our two samples suggest, the drop may have prompted some persons to relocate. What seems most likely is that Native households with higher incomes in *Mixed* villages increased their extractive activities including, perhaps, more concerted extraction of less preferred species,[29] while households of elderly Natives, or households headed by women, benefitted from extraction through sharing. This will account for the separation of the two cylindrexes in the TRADITIONAL EXTRACTORS region and for the appearance of a HIGH INCOME region that comprises traits that are known to be characteristic of long-term non-Native residents.

This brings us to an assessment of the TRADITIONAL EXTRACTORS region. The Intense Extraction area demonstrates a structure we have observed in most solutions, namely: if persons hunt a wide variety of sea mammals, extract a wide variety of fish, or establish and reside in camps away from their residences, they are likely to engage in all of those activities, to do so during several months of the year, and to allocate many days to the tasks. In addition, if they engage in these tasks, they also hunt many varieties of land mammals and do so frequently. In the pretest sample, we noted that some persons hunt many species of land mammals but engage infrequently in the other tasks. We identified those persons as high earners. It is our impression that a large proportion of the land mammal hunters are non-Natives, but we also note that participation in fishing (all measures, particularly days allocated to fishing throughout the year) increase with income and that the variables measuring those activities are fitted into a simplex directly beneath the land mammal simplex. We aver that a greater proportion of non-Natives participated in land mammal hunting *and* fishing in the posttest than the pretest. The greater participation in subsistence extraction suggests an economic exigency, but it can as well reflect a more stable and older population in the posttest than the pretest *Mixed* subsample.

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[29] See Table 1 re land mammals, sea mammals, camping, and fishing. Significantly greater proportions of posttest respondents than pretest respondents participated in land mammal hunting and fishing. The reverse is true for sea mammal hunting and for camping, suggesting that non-Natives increased their hunting and fishing activities.

Land mammal extraction (D,H,L) is fitted on the left periphery of the radex, whose center is the camping variables (F,J,N), and on whose right periphery is fitted the sea mammal-extraction variables (E,I,M) (the fishing variables are fitted at the lower radex, close to the center). The significance of the cylindrex is that all of the variables measuring sea mammal hunting, fishing, and camping correlate highly and positively with the traditional subsistence variables (subsistence food in recent meals, meat and fish in the annual diet, eating meals with relatives, and speaking the Native language at home). Among them, only sea mammal extraction correlates negatively with income (fishing and camping correlations vary between .01 and .10 with income, but are positive). The sea mammal set correlates most highly with the variables in the Traditional Subsistence area. The variables measuring land mammal hunting correlate negatively (or near zero) with those items in the traditional set, and positively with income.

Thus, the fitting of items within the Intensive Extraction area distinguishes practices that are more exclusively Native from land mammal hunting in which non-Natives and Natives engage. The separation of the Traditional Subsistence area from the Intensive Extraction area identifies customs observed by Natives, even if they cannot or do not extract large varieties of naturally occurring species on a regular basis. Those who cannot or do not extract--because of constraints caused by employment, physical impairment, age, or financial embarrassment--are recipients of those resources from donors who extract them. For example, recently eating a meal at a relative's home (Y, A32) is the best predictor of whether a person has received food extracted by someone in another household for a meal eaten by R in her/his own home yesterday or the day before yesterday (X, A31).

The EXTRACTION WITH RELATIVES region is fitted between HIGH INCOME and Intensive Extraction. If persons form task groups with relatives and friends, they tend to do so for many activities. If they do not create regular task groups for one activity, they tend not to do so for a second or third extractive activity. All of these variables correlate negatively with income.

The evidence that traditional customs continue to be practiced in large, complex, multiethnic villages as well as small, simple, more homogeneous ones is considerable. Furthermore, the predictive power of sea mammal extraction is obvious in every sample and subsample we have analyzed. Whether some traditional practices wane among Natives during periods of high employment and wax during periods of economic distress is not determined, and the effects exercised by age, ethnicity, education, and income have not yet been addressed. In our analyses of the two panels embedded in our pretest-posttest design, we determined that few differences and fewer significant differences occurred between the waves of the panels and the initial samples with which they were matched in the same year. By that, we mean responses from a pretest sample of initial respondents in 1988, say, was compared with the responses obtained from a wave of panel reinterviews adminstered during 1988 (see Social Indicators Study II [Jorgensen 1993]).

In the following sections, we analyze whether any of the traditional items measured in the preceding analyses of the pretest, posttest, and combined pretest-posttest samples are sensitive to exogenous changes, such as those that occur to employment and income. Two types of validity issues must be addressed; both deal with generalizability. In the first, we ask whether the results can be generalized to our total sample over-time. The second addresses specification error. Inasmuch as the posttest sample was drawn without replacement of the pretest sample, we must eliminate the threat of ecological fallacy.

We address the first threat to validity by analyzing the impressions and concluding hypotheses generated above by exercising controls for ethnicity (Native or non-Native), age, education, income, and residence in either commercial-fishing or noncommercial-fishing villages for the combined pretest-posttest sample. We address the second threat to validity by testing the empirical results from the controls exercised on our contrast samples, with results obtained from comparable analyses of our embedded panel (we merge the A and B panel into a single panel with three waves--an initial interview wave and two reinterview waves). We refer to the panel either as the total panel or, simply, the panel from comparable analyses of our embedded panel.

VII. EMPIRICAL GENERALIZATIONS FOR THE TOTAL PRETEST-POSTTEST SAMPLE (COMBINED)

VII.A. Introduction

It was proposed above (see Table 5) that pretest and posttest respondents are similar in their attitudes about resource availability and that these attitudes are conditioned by whether that resource is extracted heavily for subsistence and/or is extracted as a commodity, whether the respondent is Native or non-Native, and the amount of the respondent's income. It was also proposed above (Table 6) that ethnicity, age, and length of residence in the community exercise strong influences on the respondent's (1) cognitive attitudes about the availability of natural resources in the present as compared with 5 years earlier and (2) affective attitudes about satisfaction with the social ties the respondent maintains with persons in distant communities.

A simple stochastic model of PRE coefficients supports the concluding hypotheses proposed above that age, length of residence in the community, and ethnicity are dominant factors in accounting for participation in traditional activities and customs, including accounting for cognitive ideas about whether the amount of game and the amount of fish available for harvesting have increased or decreased over the preceding 5 years. Table 7 is a seriation model in which six variables rated for the combined pretest-posttest sample (N = 856) are organized on the basis of the proportion of error reduced (all PRE scores are gammas [γ]). It is evident that as age increases, errors are reduced in predicting the years a respondent has resided in the village and the respondent's attitude that social ties with persons in other communities are satisfactory.[30]

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[30] The matrix can be understood by assessing the average PRE scores for each succeeding diagonal immediately above the line of self-relationship. (Also see the box regarding ordered matrices in Chapter II.) Within the matrix, each item above or to the right of every item should be equal to (=) or less than (-) that item. If the matrix conforms to the partial-ordering assumptions we have made, the average gamma score for each diagonal above the line of self-relationship should either be the same as, or lower than, the average of the diagonal that precedes it (the diagonal closer to the line of self-relationship). Here we see that coefficients decrease from the line of self-relationship to the most distant relations. There are two matrix errors (age reduces a greater proportion of the error in predicting satisfaction with social ties than does years resident in the

(continued...)

Table 7

STOCHASTIC (SERIATION) MATRIX OF COGNITIVE AND AFFECTIVE ATTITUDES, AGE, LENGTH OF RESIDENCE IN THE COMMUNITY, AND INCOME OF RESPONDENTS, TOTAL PRETEST-POSTTEST QUESTIONNAIRE SAMPLE (*N* = 856), 1987-1990

Age	Years Resident	Social Ties	Fish Avail	Game Avail	Income	Average Diags
X	.37	.27	.09	.04	-.02	
	X	.09	.02	-.04	-.29	-.02
		X	.13	.05	-.02	-.25
			X	.46	.03	.03
				X	.18	.09
					X	.25

The matrix suggests that all things being equal and given an indefinite amount of time, as persons grow older their terms of residence in their village will increase, they will become more satisfied with their ties with persons in other communities, they will be more apt to think that as much fish and as much game are available currently as were the cases 5 years earlier, and their incomes will increase.

Age, therefore, is an important factor in influencing attitudes about a person's social ties, as well as attitudes about the amount of fish and of game available to harvest during the current year as compared with 5 years earlier. Our analysis to this point has conclusively demonstrated that incomes of Natives do not increase beyond 50 years of age, and that there are more elderly Natives than non-Natives in the sample. So, we must exercise controls to ferret out differences between populations. It is important to control for age and for ethnicity in assessing the number of kinds of subsistence activities in which persons engage. We have

[30](...continued)
community, and age also reduces more error than does income--although only 8%--in accounting for cognitive attitudes about the availability of game).

suggested that as Native persons grow older and as their incomes dwindle, they are more apt to be recipients of resources harvested by others than they are to have harvested those resources themselves. It is plausible that the fewer resources persons harvest, controlling for age, the more they receive from others and the more likely it is that they will hold the opinion that resources are as abundant in the present as they were 5 years earlier.

We thicken the following analysis (see Table 5 and Chapter III.A above) by introducing controls for whether respondents reside in commercial-fishing villages--a means to help assess whether fish are harvested for commodity, for subsistence, or both.[31] We also exercise controls to determine the effects of sex; ethnicity (whether or not respondents are Natives); income; age of respondent; length of residence in the village; satisfaction with social ties with persons in distant communities; cognitive attitudes about the amount of fish and the amount of game available for harvesting in the current year as compared with 5 years earlier; and the amount of participation in the hunting of land mammals and sea mammals, in fishing, and in camping.

The roles of women in traditional subsistence activities are inadequately measured by the AOSIS questionnaire. Table 8 controls for sex by dividing the total sample into women only (*N*413) and men only (*N*442) respondents. The Kolmogorov-Smirnov test for two independent samples reveals that male and female respondents are significantly different ($P < .02$) in age (the males are older), in length of residence in the villages (males have resided in the villages longer), in cognitive attitudes about the availability of game (males think more game is currently available than do females), and in participation in various subsistence activities. These results are anticipated, but they are not trivial. Women tend to be younger than their spouses. Native women more often relocate to their husband's community than vice versa if the couple had been reared or resided in separate villages prior to marriage; they frequently take up their postnuptial residence in their

[31] We switch from the contrast between *Native:Mixed* villages to the contrast between *Comm Fish:NonCom Fish* villages; and we contrast Native:Non-Native ethnicity rather than village types.

husband's village. Men learn to extract resources in the terrain (the space) of their youths, usually forming extracting networks with relatives and friends within those territories. Whereas Native women often are deeply engaged in extractive pursuits such as gathering, but also fishing, they also do the bulk of food preparation and storage, yet they seldom hunt land mammals and less seldom hunt sea mammals.[32] So the differences between males and females are expected. Female customs are, nevertheless, inadequately measured.

Table 8

CONTRASTS BETWEEN MALE (*N* = 442) AND FEMALE (*N* = 413) RESPONDENTS ON AGE, LENGTH OF RESIDENCE, INCOME, AND FOUR MEASURES OF PARTICIPATION IN SUBSISTENCE PURSUITS; COGNITIVE ATTITUDES ABOUT GAME AND FISH; AND ATTITUDES ABOUT SOCIAL TIES (*N* = 856) 1987-1990[a]

	Age	Years Reside	Social Ties	Attitude Fish	Attitude Game	Income	Total Acts
Women							
AGE	1.000						
YEARS	0.360	1.000					
SOCIAL	0.295	0.077	1.000				
FISH	0.007	0.089	0.168	1.000			
GAME	0.040	-0.075	0.071	0.472	1.000		
INCOME	-0.002	-0.222	-0.056	-0.018	0.100	1.000	
TOTACT	-0.117	-0.006	-0.015	-0.157	0.002	0.124	1.000
Men							
RAGES	1.000						
YEARS	0.349	1.000					
SOCIAL	0.239	0.106	1.000				
FISH	0.123	-0.047	0.080	1.000			
GAME	0.002	-0.036	0.015	0.427	1.000		
INCOME	-0.034	[illegible]	-0.001	0.070	0.229	1.000	
TOTACT	-0.129	0.290	0.031	-0.062	-0.020	[illegible]	1.000

[a]Double underlined coefficients represent differences ≥10% between the samples of male and female respondents. [illegible] coefficients represent differences ≥8% between the total sample and the male subsample.

[32] Twenty percent of Native women in *Native* villages and 19 percent in *Mixed* villages reported hunting sea mammals. It is unclear how many of these women respondents were reporting the hunting activities engaged in by men in their households and how many women actually engaged in the activities.

There are only two PRE coefficients in the matrix for the male subsample that are different by more than 8 percent from the coefficients in the total sample (years residence in a village accounts for a greater *negative* proportion of error in income among men than among the total sample, and income accounts for a greater *negative* proportion of error in participation in total subsistence activities in the male subsample than in the total sample) (Table 7). It is reasonable to infer that women account for the discrepancy between the male and total samples on the relations between income and years residence in the village and between income and total subsistence activities.

Turning our attention to differences between the male and female subsamples, we see that 8 of 21 PRE coefficients are greater than 10 percent different from one another. As women become older they are less apt than men to think fish are more available in the present than they were 5 years earlier, yet the longer they have resided in the village the more likely they are than men to think that game are more available in the present than in the past. It is the case that the longer a women resides in a village, the more likely it is that she is Native. It also may be the case that she has become more knowledgeable about fish availability for subsistence extraction. It may further be the case that the longer a non-Native woman has resided in a commercial-fishing village, the more likely it is that she will know about the amount of fish available for commercial extraction. We must control for ethnicity, and we also must control for whether respondents reside in villages in which commercial fishing is (or is not) the dominant sector in the economy.

Women, Native women at least, process fish and so should have reasonable estimates of fish procured for subsistence purposes. Non-Native women, particularly those married to commercial fishermen or those whose businesses or public services are affected by commercial fishing, should have informed opinions about commercial-fish harvests (and subsistence harvests as bycatches of the commercial harvest). Measures in our sample, the present ones included, are not sufficiently sensitive to determine how many women in the subsample process fish for subsistence or hold (or whose husband's hold) public- or private-sector jobs affected by commercial fishing. We can see from the longevity measure (length of residence in the village) that the longer women reside in a village the more apt they are to think that fish are somewhat more available in the present than in the recent past. There is a negative association between the estimate of fish availability and income among women, but a low positive association for this relation among men. The PRE coefficients for the relation between the amount of participation in total activities and years residence in the community, attitudes about fish, and income differ by large amounts between the male and female subsamples. It is expected that women will not increase the subsistence activities in which they engage with length of residence in the village; but it is not expected that their attitudes about the availability of fish will be increasingly negative with the number of subsistence activities in which they engage, or that activities increase with the number of activities in which they engage.

Because men and women are quite similar on most measures, except attitudes about the availability of fish and participation in four composite subsistence activities (TOTAL ACTS, or TOTACT, in Table 9), it is appropriate to combine them into a total sample before exercising controls for race/ethnicity, and for residence in commercial-fishing or noncommercial-fishing villages. The controls for ethnicity exercised here are not for *Native:Mixed* contrasts. Rather, the contrast distinguishes between respondents who are **Natives** and respondents who are **non-Natives.** The controls for commercial fishing exercised here contrast respondents who reside in commercial-fishing villages (abbreviated to *Comm Fish*) with those who do not (abbreviated to *Noncom Fish*), so the contrast is by village (*Comm Fish:Noncom Fish*) and not by respondent's occupation.

Table 9 provides matrices of PRE coefficients derived from Native respondents in commercial-fishing villages and from Native respondents in noncommercial-fishing villages. It also provides matrices of PRE coefficients derived from non-Native respondents in commercial-fishing villages and non-Native respondents in

Table 9

CONTRASTS BETWEEN NATIVE AND NON-NATIVE RESPONDENTS, CONTROLLING FOR RESIDENCE IN COMMERCIAL- OR NONCOMMERCIAL-FISHING VILLAGES, ON AGE, LENGTH OF RESIDENCE, INCOME, PARTICIPATION IN SUBSISTENCE PURSUITS, COGNITIVE ATTITUDES ABOUT GAME AND FISH, AND ATTITUDES ABOUT SOCIAL TIES (*N* = 856) 1987-1990[a]

	Age	Years Reside	Social Ties	Attitude Fish	Attitude Game	Income	Total Acts
NATIVE							
COMMERCIAL-FISHING VILLAGES (*N* = 172)							
AGE	1.000						
YEARS	**0.155**	1.000					
SOCIAL	**0.262**	0.054	1.000				
FISH	**0.067**	0.004	**0.201**	1.000			
GAME	0.091	-0.018	-0.174	**0.651**	1.000		
INCOME	**-0.183**	**-0.044**	**-0.149**	0.003	**0.121**	1.000	
TOTACT	**0.040**	**-0.035**	**0.075**	-0.112	**0.052**	0.233	1.000
NONCOMMERCIAL- FISHING VILLAGES (*N* = 447)							
AGE	1.000						
YEARS	0.448	1.000					
SOCIAL	0.264	-0.047	1.000				
FISH	0.054	0.166	0.172	1.000			
GAME	-0.052	0.057	0.179	0.379	1.000		
INCOME	0.012	-0.143	0.041	0.021	0.149	1.000	
TOTACT	-0.142	0.020	0.051	-0.112	0.141	0.057	1.000
NON-NATIVE							
COMMERCIAL-FISHING VILLAGES (*N* = 136)							
AGE	1.000						
YEARS	**0.546**	1.000					
SOCIAL	**0.125**	**0.010**	1.000				
FISH	**0.276**	**-0.101**	**-0.110**	1.000			
GAME	**0.159**	**0.011**	**-0.077**	**0.443**	1.000		
INCOME	0.329	0.216	0.181	0.026	**0.231**	1.000	
TOTACT	**-0.092**	**0.219**	**-0.243**	**-0.024**	**-0.174**	**0.152**	1.000
NONCOMMERCIAL-FISHING VILLAGES (*N* = 76)							
AGE	1.000						
YEARS	0.126	1.000					
SOCIAL	0.568	0.244	1.000				
FISH	-0.071	0.247	0.164	1.000			
GAME	0.308	0.221	0.595	0.160	1.000		
INCOME	0.346	0.121	0.217	0.003	0.076	1.000	
TOTACT	0.177	0.114	0.005	0.314	0.287	-0.040	1.000

[a] **Shadowed** coefficients in the Native Commercial-Fishing Villages matrix of the table represent differences ≥ 12 percent between Natives residing in commercial-fishing villages and non-Natives residing in commercial-fishing villages. Double Underlined coefficients in the Native Noncommercial-Fishing Village matrix of the table represent differences ≥ 12 percent between Natives residing in commercial-fishing villages and noncommercial-fishing villages. **Bold** coefficients in the Non-Native Commercial-Fishing Village matrix of the table represent differences ≥ 12 percent between non-Natives residing in commercial-fishing villages and non-Natives residing in noncommercial-fishing villages. Redlining of coefficients in the Non-Native Noncommercial-Fishing Villages matrix represent differences ≥12 percent between non-Native residents of noncommercial-fishing villages and Native residents of noncommercial-fishing villages.

noncommercial-fishing villages. Contrasts are assessed within ethnic and between ethnic groups while controlling for village types.

VII.B. Intra-Native Contrasts: *Comm Fish:Noncom Fish*

Differences in PRE coefficients greater than 12 percent between Natives residing in *Comm Fish* villages and Natives residing in *Noncom Fish* villages are marked by double underlines in the Native Noncommercial-Fishing Villages matrix of Table 9. It is evident that age and length of residence are powerful factors in distinguishing between Native respondents in the two types of communities. The older the Native resident in *Noncom Fish* villages, the longer the person is apt to have resided there, the less likely that person thinks that game is abundant in the present as in the recent past, and the more likely it is that that person is actively engaged in all four composite subsistence activities. With age, the PRE for income is close to zero. As previously discussed, income for Natives is low; but income increases for employed Natives up to about age 59, then plunges thereafter. Many Native respondents in *Noncom Fish* villages are beyond 65 years of age, in part accounting for the zero coefficient with income. Also, Natives in *Comm Fish* villages are employed at a much higher rate and earn much higher incomes than Natives in *Noncom Fish* villages. In addition, the larger number of Natives over 65 years of age in *Noncom Fish* villages account for the negative PRE score with total subsistence activities.

The contrasts between Natives in *Comm Fish* villages and Natives in *Noncom Fish* villages yield results that support the concluding hypotheses proposed above following the *Native:Mixed* contrasts of the pretest and the posttest sample.

Although income affects participation in subsistence activities, elders engage in fewer activities than persons under 65 years of age. Native elders with higher incomes in *Comm Fish* villages are more apt to engage in a greater number of subsistence activities than elders with lower incomes in the *Noncom Fish* villages. Income, then, influences participation in subsistence activities among elderly Natives in the two types of villages.

The longer a Native has resided in a *Noncom Fish* village, the more likely it is that the person thinks fish are as plentiful in the present as they were 5 years earlier. Natives in *Comm Fish* villages are less apt to hold this view as they increase in age, almost surely reflecting their experiences in commercial-fishing villages.

Among Natives in *Noncom Fish* villages, satisfaction with social ties is more apt to increase with income and with the cognitive attitude that game is as plentiful in the present as it was 5 years earlier than it is among Natives in *Comm Fish* villages. Contrariwise, Natives in *Noncom Fish* villages are much less likely than their congeners in *Comm Fish* villages to think that both fish and game are as abundant, or more abundant, in the present than 5 years earlier. It is likely that this difference is caused by greater reliance upon game and on fish among Natives in *Noncom Fish* villages, so they are more discriminating in their distinctions between the two. This point is made above in relation to the relative dependence of Natives in *Native* villages on subsistence harvests of naturally occurring resources.

The relation between income and the number of subsistence activities in which respondents engage is near zero among Natives in *Noncom Fish* villages but accounts for 23-percent reduction of error among Natives in *Comm Fish* villages. The conclusion we draw is that Natives in *Noncom Fish* villages engage in subsistence pursuits regardless of income (but conditioned by age), whereas Natives in *Comm Fish* villages increase their subsistence pursuits as their incomes increase--allowing them to engage in several such pursuits.

VII.C. Inter-Ethnic Contrasts: *Comm Fish* Villages

We have demonstrated that Natives and non-Natives residing in *Mixed* villages are different over a range of important measures. Here, we change the contrast to *Comm Fish* villages to better isolate the economic underpinnings of the contrast. There are more and greater differences between non-Natives residing in *Comm Fish* villages and Natives residing in *Comm Fish* villages, than the differences between Natives residing in *Comm Fish* villages and Natives residing in *Noncom Fish* villages (above). Differences between Native and non-Native respondents residing in *Comm Fish* villages are ≥12 percent for 13 PRE coefficients. The average difference of those PRE values is 24 percent. Respondent ages, the duration of their residence in the village, their affective attitudes about social ties with persons in distant communities, and the total number of subsistence activities in which they engage are markedly different between Natives and non-Natives.

The following results lend empirical support to concluding hypotheses (above) in the analysis of the pretest and the posttest samples:

- It is evident from the PRE scores for the relation between age and the length of residence in the village that there are more youthful respondents and more elderly respondents among Natives than among non-Natives, demonstrating that the Native populations in *Comm Fish* villages are more similar to Native populations in *Noncom Fish* villages than they are to non-Natives in *Comm Fish* villages. Native populations form an age pyramid that is characteristic of Native villages--a bottom-heavy, youthful population that narrows with age, but in which there are many persons over age 65. The bottom-heavy, youthful population is evident in the contrast as larger proportions of Native respondents than non-Native respondents are younger than 25. The sex ratios in our random samples for Natives and non-Natives in *Comm Fish* villages are similar (57% female, 43% male).
- Non-Natives have slightly fewer respondents between 18 and 25 than do Natives (11.8% to 14.1%) and many fewer respondents over 60 (5.2% to 16.5%). Recognizing the differences in the age structures and age structures by sex is important to understanding differences in several PRE scores. For example, as Natives grow older, they are more likely than non-Natives to engage in several subsistence activities, yet the longer non-Natives have resided in *Comm Fish* villages, the more likely they are than Natives to engage in several subsistence activities. As for sex, we observe that Native women comprise larger portions of total *Comm Fish* populations than do Native men (33% to 23%). We also observe that Native women relocate to *Comm Fish* villages at younger ages than do Native men. Often, they relocate soon after completing high school or soon after completing a couple of years of college. This sex and age imbalance (young Native women outnumber young Native men) affects PRE scores for Native participation in subsistence

activities in their youth and contrasts with participation by Natives in subsistence activities in *Noncom Fish* villages.[33]

It is observed in Chapter 4 that the longer a non-Native resides in an Alaskan village, particularly if the non-Native is married to a Native, the more likely that they will engage in some "traditional" practices, particularly the harvesting of some naturally occurring resources.

The conclusion supported here is that the non-Native population is heavily weighted by persons between the ages of 25 and 59--the period in a person's life when they are most likely to be employed. As is demonstrated in the various *Mixed:Native* contrasts, non-Natives reside in Alaskan villages for employment or because their spouse is employed. This is the case in *Comm Fish* villages, too.

The differences we have discovered here are not controlled for ethnicity of spouse; for the moment, that is not important. It is evident that these differences turn on differences in the age structures of Natives and non-Natives in commercial-fishing villages (Natives are older and younger than non-Natives) and the income structure (non-Natives earn more than Natives). Non-Natives who live beyond their productive income years, no matter what the economic base may be of the village in which they reside, usually relocate to the lower 48 states. Income allows older non-Natives who have resided in *Comm Fish* villages for a long time (more than 10 years) to engage in activities that are not engaged in by older Natives in those same villages. Older Natives are restricted by income, but also by age. As we see in the Native contrasts in *Comm Fish:Noncom Fish* villages, there also is a difference between elderly Natives. Older Natives with higher incomes in *Comm Fish* villages engage in more types of subsistence activities than older Natives in *Noncom Fish* villages. It is of more than passing interest to note that six Native respondents in *Comm Fish* villages are 80 years or older. That is about identical to the number of non-Natives age 60 or older.

[33] Native men constitute 59 percent and 39 percent, respectively, of *Native* and *Mixed* populations in our sample, whereas women constitute 41 percent and 61 percent of those populations. The outmigration from *Native* villages and relocation to *Hub-Mixed* villages by women is almost surely not a vagary of our random sampling procedure. The differences between male and female proportions of the *Native* and *Mixed* villages is real.

Returning to correlations with age, as Natives in *Comm Fish* villages increase in age, they are twice as likely as non-Natives to be satisfied with their social ties with persons in distant villages, they are less likely than their non-Native counterparts to think that fish or game are more abundant in the present than 5 years earlier, and they are much less apt than non-Natives to enjoy increasing incomes with increasing age (the difference between PRE scores for Natives and non-Natives on age and income is 51%).

It is the case that Natives are much more dependent than are non-Natives on harvests of naturally occurring resources for their subsistence. In several places we have noted that as Natives increase their dependence on naturally occurring resources, they are less likely than are non-Natives to think that abundances are greater in the present than in the recent past. This holds for residents of *Comm Fish* villages. Dependence on naturally occurring resources increases with age for Natives; thus, their cognitive attitudes about the availability of fish are influenced both by the availability of fish for commodity extraction and for home consumption.

The difference between Natives and non-Natives is mitigated by length of residence. As duration increases for non-Natives, it is less likely that they will think that fish are more abundant in the present than in the past. We have noted this relation as well. The longer a person resides in a village, the more likely it is that they will extract resources for home consumption (see the PRE score for years residence with total activities). When this is coupled with residence in a *Comm Fish* village, the cognitive attitude is that fish currently are less available for harvest than they were 5 years earlier.

Knowing what Natives think about the availability of game reduces errors in predicting what they think about the availability of fish by 65 percent. That is 21 percent better than the reduction of error for non-Natives on the same relation. And when age is not considered, knowing that Native income increases reduces prediction error in knowing how many types of subsistence activities Native respondents engage in by 23 percent. This represents a positive difference of only 8 percent over the reduction of error for non-Natives on this relation, but it nevertheless shows that Native persons increase their subsistence activities as their incomes increase (again demonstrating that younger Natives earn more than do older Natives--a relation that does not hold for non-Natives).

VII.D. Intra-Non-Native Contrasts: *Comm Fish:Noncom Fish*

Non-Natives in *Comm Fish* villages and their counterparts in *Noncom Fish* villages are very different: 16 of 21 PRE coefficients vary from one another by more than 12 percent. The average difference for the 16 PRE's is 32 percent. The large differences uncovered in this contrast help to account for the different patterns we uncovered in the *Mixed:Native* contrasts for the pretest and for the posttest samples. We averred that (1) the differences in the *Mixed* configurations for the pretest and the posttest samples were produced by a downturn in the economy and by the likelihood that persons, particularly non-Natives, interviewed in the posttest were survivors, i.e., enjoyed more stable employment than many persons interviewed in the pretest sample, and (2) the increased proportion of sample respondents in *Comm Fish* villages in the posttest (in comparison with the pretest) accounted for the differences. The contrasts here demonstrate the marked differences between non-Natives in *Comm Fish* villages and non-Natives in *Noncom Fish* villages. Our presumption about the influence of *Comm Fish* villages with the *Mixed:Native* contrasts seems to be correct. All *Comm Fish* villages are also *Mixed* villages, but all *Mixed* villages are not *Comm Fish* villages.

The differences between non-Natives in the *Comm Fish:Noncom Fish* contrast are greater than the differences between Natives and non-Natives in *Comm Fish* villages. Residence and, perhaps, occupation (sex proportions are similar), then, influences some similarities among Natives and non-Natives in *Comm Fish* villages. We must hedge on occupation because the measures of the extent to which Natives engage in commercial-fishing and commercial-fishing-related businesses are inadequate. We can be much more firm in our generalizations about non-Natives in *Comm Fish* and *Noncom Fish* villages. Non-Natives enjoy very different occupations in those villages. The occupations carry with them many traits that serve to distinguish the non-Native populations.

In comparison with non-Natives in *Comm Fish* villages, non-Natives in *Noncom Fish* villages are better educated (72% to 61% have attended college or either professional or graduate school); are much more apt to be married to a Native (48% to 12%); are more apt to have engaged in some subsistence activity (66% to 58%); are more apt to be in the high-earning years of their lives (ages 35 to 59) (61% to 52%); are much more apt to be employed in the public sector (69% to 41%); are much more apt to earn higher incomes, in general (55% to 38% earn more than $50,000 annually); and are less apt to have resided in the village for more than 11 years (18% to 27%). Many of the public-sector employees, particularly in *Noncom Fish* villages, also benefit from perquisites such as free or subsidized housing, travel allowances, utilities allowances, and the like.

There is, then, an apparent contradiction: non-Natives have lived in *Comm Fish* villages longer than non-Natives in *Noncom Fish* villages, yet the non-Natives in *Comm Fish* villages are less apt to be married to Natives, less apt to engage in as many subsistence pursuits, and are less apt to earn as much income as their counterparts in *Noncom Fish* villages.

The AOSIS questionnaire did not address many of these questions, but we know from our key informant observations that well-educated non-Natives dominate the top public-sector jobs provided by the Federal Government, State Government, boroughs, and regional (and often village) for-profit organizations. Whereas most non-Natives in *Noncom Fish* villages are either single (33%) or, if married, have non-Native spouses (52% of all married respondents), a large proportion of non-Natives are married to Natives (48% of all married respondents). Some of those employees sought employment in Alaska because they were married to Natives; some married Natives after gaining employment. These persons tend to be short-term residents (less than 10 years, or during that time in which public-sector employment increased throughout Alaskan villages). They migrate to the village for work, and they migrate from the village when their work is terminated or when they locate better employment elsewhere. Mobility is facilitated by household composition and size. Single persons and conjugal pairs are mobile. Non-Natives in

Comm Fish villages overwhelmingly reside in single-person or conjugal-pair households (67%). Single-person households (or a pair of same-sex single persons) and conjugal pairs constitute the majority of households (57%) among non-Natives in *Noncom Fish* villages as well.

Upon establishing that non-Native households are heavily weighted toward single persons and conjugal pairs, we assessed the marriages between Natives and non-Natives to help account for differences in the *Comm Fish:Noncom Fish* contrast. We also assessed the influence of length of residence in the village as factors in distinguishing among non-Natives. The idea here was to account for differences in attitudes about social ties with persons in distant villages. We hypothesized that non-Natives in mixed marriages, regardless of length of residence in a village, are satisfied with their social ties and also engage in a variety of subsistence tasks.

The Non-Native matrices in Table 9 demonstrate that the length of residence of non-Natives in *Comm Fish* villages increases with the age of the respondent. Very little error in the length of residence of non-Natives in *Noncom Fish* villages is accounted for by age. We know that non-Native respondents in *Noncom Fish* villages are heavily represented by persons in their late 20's through late 40's who have resided in those villages for relatively short times (less than 10 years). The longer non-Natives reside in a *Noncom Fish* village (and the older they become), the greater their satisfaction with the social ties they maintain with persons in distant communities. Error in predicting satisfaction with social ties is modest with knowledge of age or knowledge of length of residence in *Comm Fish* villages for non-Natives. We know from our protocol interviews and from our key informant observations that many commercial fishermen, whatever their marriage and household arrangement, relocate to the lower 48 out of season, returning for the following fishing season.

It is not a fortuity that non-Natives, 67 percent of whom are single or married without children, relocate to the lower 48 at very high rates around age 60. This, coupled with seasonal relocation, reflects modest ties to the villages in which non-

Natives reside. The satisfaction with social ties is in part influenced by the large number of Native/non-Native marriages that facilitate acceptance in the community and also facilitate ties with the spouse's relatives in distant communities. In *Noncom Fish* villages, respondents in mixed marriages are two-and-one-half times as likely as respondents in non-Native/non-Native marriages (40% to 16%) to be completely satisfied with the ties they maintain with persons in distant villages.

It is almost surely the case that adoption of many Native subsistence practices by non-Natives married to Natives also occurs and that these practices include sharing (giving and receiving) resources with affines, elders, and friends.[34] For example, in *Comm Fish* villages, non-Native respondents in mixed marriages are more apt to participate in one or more subsistence activities than are respondents married to non-Natives by 89 percent to 56 percent. In *Noncom Fish* villages, respondents in mixed marriages are more apt than respondents married to non-Natives to engage in one or more subsistence pursuits by 73 percent to 61 percent.

Turning our attention to sharing, although our measures are inadequate, the differences between non-Natives in *Comm Fish* villages and *Noncom Fish* villages, controlling for spouses, are very interesting. Respondents in mixed marriages in *Comm Fish* villages are half as likely as non-Native couples to have received subsistence food from persons in households other than their own. In addition, they are slightly less likely than persons with non-Native spouses (9% to 13%) to have eaten meals with relatives or friends from different households. We conclude that non-Natives share game, but more likely they distribute some of their commercial catch and bycatch with friends and relatives in the village.

Mixed couples differ from non-Native couples in that they are more apt to have gained some of the food they eat from naturally occurring resources that they have procured themselves. They also are more apt to have received some of those resources from other persons in their own household.

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[34] There are no measures of gifting of resources and byproducts in the AOSIS questionnaire. The only measures are of receiving goods and sharing meals with others. The inference that non-Natives married to Native spouses give resources to relatives (affines) and friends is supported by the analysis of the KIP data below.

The contradiction is explained when we control for the *Comm Fish:Noncom Fish* contrast. Non-Native couples in *Comm Fish* villages participate in subsistence tasks at a much lower rate than do mixed couples (56% to 89%). Nearly half of the non-Native couples must receive subsistence food from friends or relatives if they are to have any such food in their meals.

In *Noncom Fish* villages, mixed couples are twice as likely as non-Native couples to have received food from persons in a household other than their own in the past 2 days and four times as likely to have eaten meals with relatives in households other than their own.

One contrast stands out that deserves some attention. It appears to distinguish long-term non-Native couples (and their households) in *Comm Fish* villages from short-term non-Native couples and mixed couples (putting aside single persons). Naturally occurring resources contribute 50 percent or more to the diets of 26 percent of non-Native couples and 16 percent of mixed couples in *Comm Fish* villages. It is interesting that approximately the reverse relation obtains in *Noncom Fish* villages, i.e., 15 percent of non-Native couples and 25 percent of mixed couples gain 50 percent or more of their diets from naturally occurring resources. The reversals suggest that mixed couples participate more fully in traditional sharing practices in *Noncom Fish* villages than mixed couples do in *Comm Fish* villages and also that mixed couples reside for longer periods in *Noncom Fish* villages and for shorter periods in *Comm Fish* villages.

Non-Natives fit into the structure of *Noncom Fish* villages in two basic ways. About 40 percent of non-Native single persons and about 40 percent of non-Native couples engage in no subsistence activities at all. They are highly educated, mobile, short-term residents. Mixed couples, on average, have resided in the villages for even shorter periods than the non-Native couples but for longer periods than single non-Natives. The non-Native respondent in a mixed marriage also is less well-educated than the single respondent or the respondent with a non-Native wife. The difference is that the mixed marriage facilitates adoption of some traditional activities in a briefer period than is the case for non-Native couples, should the latter adopt Native subsistence and sharing practices at all.

Non-Native respondents in *Comm Fish* villages and in *Noncom Fish* villages also are distinguished from each other by the total number of subsistence activities in which they engage and by the cognitive attitudes they express about the availability of game and of fish. The greater the number and types of resource-harvesting activities in which non-Natives in *Noncom Fish* villages engage, the more likely it is that those persons think that the availability of game and of fish has increased rather than decreased in the past 5 years. For non-Natives in *Comm Fish* villages to the contrary, negative PRE coefficients obtain between the number of subsistence activities in which they engage and the cognitive attitudes they express about the availability of fish and game.

Income appears to exercise some influence on attitudes expressed by non-Natives about the abundance and availability of game and of fish, whether or not they reside in commercial fishing villages. As income increases among non-Natives in *Comm Fish* villages, 23 percent of the time respondents think that the availability of game is greater than was the case 5 years earlier. Income is not so strongly and positively related to attitudes held by non-Natives about the availability of game in *Noncom Fish* villages, although in 7 percent of the cases in which income increases, cognitive attitudes about the availability of game increase.

Fish used for home consumption or for distribution to friends and relatives is more difficult to assess than are the harvests and uses of sea mammals (Natives only), marine invertebrates, birds, and land mammals. Non-Native commercial fishermen often take some parts of their catches for home use. These respondents overwhelmingly report that fish are less available in the present than 5 years earlier. Non-Natives in *Noncom Fish* villages who are not commercial fishermen frequently harvest fish for subsistence, particularly if they have Native spouses. These persons tend to report that fish are as available in the present as in the past. It is apparent that occupation influences cognitive attitudes about the availability of fish and of game among non-Natives.

VII.E. Inter-Ethnic Contrasts: *Noncom Fish* Villages

The differences between Natives and non-Natives in *Noncom Fish* villages are as distinct as the differences assessed immediately above between non-Natives in the two parts of the contrast. Fourteen PRE scores are more than 12 percent different. The Native population is represented by a much wider range of ages among respondents than the non-Native population (70 years as opposed to 50 years), length of residence in the village increases with age, income decreases with age, and cognitive attitudes about the availability of game and the total number of activities engaged in are negative with age. The opposites are true for the non-Native population. Inasmuch as the non-Native population is bunched in the income-earning years, participation in more than one subsistence activity occurs as persons get older. If non-Natives engage in subsistence activities, they most commonly harvest fish and next most commonly hunt land mammals. If they extract resources, they are likely to report fish and game to be as available if not more available than each was 5 years earlier. The opposite is true for Natives. Naturally occurring resources constitute larger portions of the annual diets of Natives than non-Natives in *Noncom Fish* villages. Here we see that ethnicity and subsistence reliance on resources influence cognitive attitudes about the availability of game. These results support our concluding hypotheses in the *Mixed:Native* contrasts for the pretest and the posttest samples.

VII.F. Income and Attitudes about Resources, Controlling for Race/Ethnicity, Subsistence Activities, and Residence in Commercial-Fishing Villages

In Table 5, we assessed part of an hypothesis about the relations between income and attitudes about the availability of game and of fish while controlling for ethnicity. Because of the complex multivariate nature of the hypothesis, further analysis has been held for discussion here. Table 10 exercises additional controls through subclassification for the total subsistence activities in which respondents engage and for whether or not they reside in *Comm Fish* villages. Gammas (Γ,γ) measure the proportional reduction of error in the paired relations, Sommer's D measures the proportional reduction of error (ordinal) in attitudes accounted for by income, and η measures the curvilinear relations in attitudes accounted for by

Table 10

RELATIONS BETWEEN INCOME AND COGNITIVE ATTITUDES ABOUT THE AVAILABILITY OF GAME AND OF FISH, EXERCISING CONTROLS FOR RACE/ETHNICITY, TOTAL SUBSISTENCE ACTIVITIES IN WHICH RESPONDENTS ENGAGE, AND WHETHER RESPONDENTS RESIDE IN COMMERCIAL-FISHING VILLAGES, MEASURED BY GAMMA (γ), SOMMER'S D, AND PEARSON'S ETA (η), COMBINED PRETEST-POSTTEST SAMPLE (N = 856), 1987-1990

	NATIVE							NON-NATIVE						
	TOTAL SUBSISTENCE ACTIVITIES					COMMERCIAL FISHING		TOTAL SUBSISTENCE ACTIVITIES					COMMERCIAL FISHING	
	0	1	2	3	4	YES	NO	0	1	2	3	4	YES	NO
Income	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**	**Inc**
Attitude Game												No Sea Mammal		
γ	.24	-.01	.13	.10	.37	.14	.18	.67	.40	.47	-.26		.45	.00
D	.15	-.01	.08	.07	.24	.09	.12	.50	.28	.21	-.16		.31	.00
η	.17	.09	.19	.14	.27	.14	.14	.42	.26	.17	.16		.29	.00
Attitude Fish												No Sea Mammal		
γ	.04	.07	.11	-.29	.35	-.05	.07	.06	.46	.10	.27		.24	.11
D	.02	.04	.06	-.19	.21	-.03	.04	.04	.24	.05	.18		.15	.06
η	.09	.17	.11	.21	.24	.12	.05	.17	.31	.12	.17		.15	.08

changes in income for *Comm Fish* villages and *Noncom Fish* villages. The *Comm Fish:Noncom Fish* contrast measures residence in village type. We have no reliable measure of participation in the commercial-fishing economy by respondent.[35] Whether the mixing of males and females and all persons employed, unemployed, retired, and unemployable in the fishing-village contrasts distorts the PRE scores with bias cannot be determined. The results suggest that residence in *Comm Fish* villages coupled with high incomes influence Native attitudes about the availability of resources.

Native respondents who reside in *Comm Fish* villages and earn less than $10,000 annually think the game available currently is less than the game harvested 5 years earlier, those earning less that $40,000 think the game available either is less or about the same, and those making from $40,000 to more than $50,000 annually think that game availability is about the same or more than earlier.

In *Comm Fish* villages, non-Native respondents earning less than $30,000 think game has stayed the same or even decreased, whereas those earning over $30,000 think game availability has increased. Most non-Natives (two-thirds) earn more than $30,000. Most Natives (three-fourths) earn less than $30,000. In *Comm Fish* villages, then, the highest earning Natives (over $30,000 = 18%) and most non-Natives (over $40,000 = 53%) think game has increased. The model in Table 5 fits the results, with the exception of the high-income Natives, who display attitudes about game more similar to non-Natives (assuming that the Natives are, in fact, engaged in commercial fishing).

Although the subclassification tables are not produced here, the correlation ratios demonstrate that changes in income account for more variation (curvilinear) among non-Native than among Native respondents. In short, Native responses tend to be "same as" or "decreased" as income varies.

In every income category, over half of the Native respondents residing in *Comm Fish* villages think that the availability of fish has decreased. Among Natives

[35] The AOSIS variables D3 and D3A--which measure self-owned business activities, including commercial fishing--do not discriminate commercial fishing from other business activities. The construct validity problem is addressed in Social Indicators Study II (Jorgensen 1993:180-181, 219, 264-265).

respondents earning more than $30,000, 65 percent think fewer fish are available now than were available 5 years earlier.

Among non-Natives, cognitive attitudes bounce up and down like a yo-yo from "decreased" to "stayed same" between every income category, yielding a relatively high curvilinear correlation ratio (η .33). Among non-Natives earning over $40,000 annually (53% of all non-Natives), the majority think fish availability has decreased, a minority that it has remained the same. The responses of Natives and non-Natives in *Comm Fish* villages fit the model, even though the measure of participation in commercial fishing is inadequate. When the resource is harvested as a commodity (as inferred from the highest incomes), its availability is thought to have decreased. Presuming that Natives harvest the resource for commodity and for subsistence, the attitudes are mixed (greater variation than among non-Natives).

Natives and non-Natives residing in *Noncom Fish* villages are very different in many ways, but especially in education, occupation, income, household type, and dependence on naturally occurring resources. Eighty percent of non-Natives think game availability has increased or stayed the same in comparison with 5 years earlier. Interestingly, 40 percent of non-Native respondents earning less than $40,000 think game has decreased, and 30 percent of respondents earning more than $40,000 think game has increased. Income appears to influence non-Native attitudes about game in a similar fashion whether or not respondents reside in *Comm Fish* villages.

Native attitudes about the availability are quite flat, split about equally between "stayed same" and "decreased." About 30 percent of Natives earning over $50,000 think game has increased, whereas 34 percent think game has decreased. The similarities with Natives in *Comm Fish* villages are obvious.

Non-Natives are more likely than Native respondents in *Noncom Fish* villages to think that fish are less available in the present than 5 years earlier. Every income category, by ratios of approximately 8.5:1, thought that fish availability has stayed the same or decreased for Natives and non-Natives.

To understand responses better, we turn to the relation between income and attitudes while controlling for subsistence activities. It is evident from the gamma and Sommer's D scores that among Native respondents, income does not account for attitudes about the availability of game or fish while controlling for the total number of subsistence activities in which respondents engage. All of the PRE scores with the exception of one set are positive, reflecting a modest relation between increasing income and attitudes that game is about the same or perhaps more available in the present than in the past. But the PRE's are close to zero, especially Sommer's *D*, which measures the amount of error reduced in attitudes when the distribution of income is known. Thus, when income changes, attitudes about the availability of game change in the same direction only a modest amount of the time (controlling for total activities in which respondents' engage).

VII.G. Inter-Ethnic Differences: Harvesting, Eating, Eating With Others, and Sharing Naturally Occurring Resources

Natives and non-Natives, regardless of the types of villages in which they reside, exhibit very different behavior in harvesting resources and in sharing the products from those harvests. Table 11 compares Natives and non-Natives, controlling for age, on the number of subsistence activities in which they participate by whether subsistence foods eaten over the preceding 2 days were harvested by the respondent, some person in the respondent's household, or someone from a household different from the respondent's. About 64 percent of the most youthful non-Natives and about 81 percent of the most youthful Natives engage in at least one type of subsistence harvest (predominantly land mammals for non-Natives, fish or land mammals for Natives). The interesting contrast is not that Native youths participate at higher rates and pursue more species, but that even when Natives engage in three or more activities, nearly two-thirds of them ate meals in the preceding 2 days in which some of the food was harvested by other persons in the household or in different households (slightly more respondents received food from households other than their own than from persons in their own households). Among the non-Natives who harvested one or more resource, 57 percent did not eat resources harvested by anyone else during the preceding 2 days.

Among middle-aged non-Native respondents, it is evident that persons who harvest one or more resources are as likely to have eaten something during the last 2 days that was harvested by another person in their own household or in a different household as they are to have harvested all of the subsistence food they have eaten themselves. The AOSIS instrument did not seek information about who donated the resources, so whether the resources that were shared were harvested by Natives or by non-Natives is unknown. After age 34, then, there is a modest increase in the amount of sharing of naturally occurring resources among older non-Natives. There is little change among Natives: two-thirds of all Natives who actively participate in subsistence harvests have eaten subsistence food in the preceding 2 days that they did not harvest themselves.

Not one non-Native over the age of 60 participated in subsistence harvest activities, and not one reported receiving naturally occurring resources from others. Fifty-seven percent of Native respondents over the age of 60 reported engaging in subsistence harvests. We expected that the participation rate for elders would drop below the rates for youthful (81%) and middle-aged (85%) Natives. It is nevertheless significant that no matter how many types of activities an elderly person engaged in, that person was likely during the preceding 2 days to have eaten food harvested by someone else. If elderly Natives engaged in no harvest activities at all, the likelihood that they received subsistence foods from someone within their own household was 3.5:1; and the likelihood that they received subsistence food from someone in another household was 12:1. Among Natives, sharing food with elders is greatest for those who do not or cannot participate in harvests. Regardless of whether elders participate in harvests, the likelihood is 8.5:1.5 that persons in or outside their own household have provided food for them in the preceding 2 days.

A second measure of differences in customs between Natives and non-Natives is the number of meals eaten with relatives outside the respondent's own household in the 2 days preceding the interview. Sharing meals with relatives and friends is a traditional activity among Natives in Alaska. This question captures some of the visiting and eating that occur daily but does not measure the number of times

Table 11

SOURCE OF SUBSISTENCE FOOD IN MEALS FOR PREVIOUS 2 DAYS BY TYPES OF SUBSISTENCE ACTIVITIES IN WHICH RESPONDENTS ENGAGE, CONTROLLING FOR ETHNICITY AND AGE, TOTAL PRETEST-POSTTEST SAMPLE (*N* = 856) 1987-1990

	NATIVE									NON-NATIVE						
	AGES 18 - 34			AGES 35 - 59			AGES 60 +			AGES 18 - 34			AGES 35 - 59			60 +
Subsistence Activities	Either Day Food Harvested by Another? Self	Same HH	Other	Either Day Food Harvested by Another? Self	Same HH	Other	Either Day Food Harvested by Another? Self	Same HH	Other	Either Day Food Harvested by Another? Self	Same HH	Other	Either Day Food Harvested by Another? Self	Same HH	Other	Either Day? Self
None	2	7	16	4	8	21	2	7	24	1	2	5	1		4	5
One	3	9	15	10	8	15	2	4	11	1	1	2	5	1	5	
Two	4	10	15	10	18	24	1	3	3	2			6	4	3	
Three	6	10	11	17	11	12	3	2	5	5	2	1	7	1	6	
Four	11	5	7	19	23	12	4	3	2							

relatives or other persons from households other than the respondent's dined at the respondent's home. In Table 12, we see that about 60 percent of all Native respondents snacked or dined with relatives in the relatives' homes in the 2 days immediately prior to the interview. The frequency of eating with relatives increases with age, so that 20 percent of Native persons over age 60 snacked or dined with relatives four or more times in the 2 days prior to the interview. Several Native respondents reported eating more than eight times with relatives in the 2-day period. Our observations of family life within the house make this behavior understandable to us: persons are almost always offered food when visiting, so light snacking, usually of subsistence food (such as salmon strips, black meat, or berry preserves), occurs frequently in most Native households.

During the 2 days prior to the interview, 12 percent of non-Natives dined with relatives in different households from their own. Only one person reported eating more than three meals with a relative. No person over age 60 dined with a relative in that relative's home in the 2 days prior to the interview. Whether this is a measure of the private, self-contained nature of the non-Native households or an expected consequence among non-Natives who have no relatives or few relatives within the villages in which they reside is not known. The dining and visiting pattern of Natives, whether they engage in many or few subsistence activities, are very different from the dining and, ostensibly, visiting patterns of non-Natives. Self-reliance and private eating patterns are much more obvious among non-Natives. It is interesting that middle-aged non-Natives who engage in the greatest number of types of subsistence activities also most frequently dine with relatives in the relatives' homes. As in the measure for receipt of subsistence food from someone in the respondent's household or from a different household in the past 2 days, middle-aged persons who are engaged in the greatest variety of subsistence resource-harvesting activities also eat most frequently with relatives.

An unresolved question is whether the non-Native respondents whose meals included subsistence food harvested by others and the non-Native respondents who dined at their relatives' homes during the 2 days prior to the interview have Native

Table 12

MEALS EATEN WITH RELATIVES OUTSIDE RESPONDENT'S HOUSEHOLD BY NUMBER OF SUBSISTENCE ACTIVITIES IN WHICH RESPONDENT ENGAGES, CONTROLLING FOR ETHNICITY AND AGES, PRETEST-POSTTEST SAMPLE (N = 856), 1987-1990[a]

	NATIVE												NON-NATIVE					
	AGES 18 - 34 (*N* = 168)				AGES 35 - 59 (*N* = 239)				AGES 60 + (*N* = 84)				AGES 18 - 34 (*N* = 55)			AGES 35 - 59 (*N* = 87)		60 + (*N*=6)
	No. Meals with Relatives				No. Meals with Relatives				No. Meals with Relatives				No. Meals with Relatives			Meals/Relatives		Meals
Sub. Acts	0	1-3	4-7	8+	0	1-3	4-7	8+	0	1-3	4-7	8+	0	1-3	8+	0	1-3	0
None	36 19	58 26	6 13		42 21	47 18	11 23		57 55	27 35	14 36	3 33	74 38	22 56	4 100	93 33	7 22	100 100
One	46 25	41 19	8 20	5 50	47 20	45 15		8 33	45 24	35 24	20 29		93 29	7 11		96 31	4 11	
Two	53 29	37 17	5 13	5 50	28 16	60 28	6 14	6 33	38 8	50 14		13 33	83 11	17 11		94 20	6 11	
Three	27 13	57 24	15 33		44 22	44 17	11 23	2 11	30 8	40 14	30 21		83 22	17 22		71 15	29 56	
Four	38 13	50 15	13 20		35 22	46 22	16 41	4 22	22 5	44 14	22 14	11 33						

[a] Row percent (top), column percent (bottom).

or non-Native spouses. The differences between the visiting and sharing (as recipients) behavior of mixed racial couples in comparison with non-Native couples is marked (Table 13). In the 2 days prior to being interviewed, the mixed (non-Native/Native) couples are twice as likely as non-Native couples to have dined with relatives and are twice as likely as non-Native couples to have eaten subsistence foods provided by persons from households other than their own. Marriages between Natives and non-Natives foster the practice of Native customs of visiting, dining, and sharing.

Table 13

RECEIPT OF SUBSISTENCE FOOD AND DINING WITH RELATIVES BY ETHNICITY OF SPOUSE (IN PERCENT), NON-NATIVE RESPONDENTS, PRETEST-POSTTEST SAMPLE (*N* = 112), 1987-1990

	NO. MEALS WITH RELATIVES		SOURCE OF SUBSISTENCE FOOD IN MEALS		
Ethnicity/Couple	None	1-3	Self	Other, Same HH	Other HH
Non-Native	88.5	11.5	55	17.5	27.5
NonNative/Native	76.5	23.5	35	12	53

VIII. THE STRUCTURE OF TRADITIONAL CULTURE IN THE PANEL

VIII.A. Introduction

The panel comprises 170 respondents of whom 88 are Natives and 82 are non-Natives. In the second report in this series (Social Indicators Study II [Jorgensen 1993]), we test for the significance of differences between panel responses and responses of pretest and posttest over the entire corpus of AOSIS questions. The results of those tests allow us to reject the proposition that the responses to any of the variables employed in the panel analysis here are reactive. Hence, in this section we seek to determine whether concluding hypotheses advanced to account for similarities and differences in the pretest and posttest hold for the panel. If they do, we can reasonably infer that differences between pretest and posttest results reflect change in the target population because we have reduced the threat to validity inherent in specification error (ecological fallacy). We will also establish a valid base from which to measure change, empirically, while specifying the most sensitive indicators of change to traditional customs (as defined here).

Table 14 provides summary statistics for the three waves of the panel.[36] The topics are identical to those listed in Table 1. We will focus on those items whose distributions were significantly different in the pretest and posttest responses (Table 1) by comparison with first wave and third wave panel responses to those same items (Table 14).

We noted a significant change between the pretest and posttest samples in the proportions of respondents employed in the public and in the private sectors of the economy. In the pretest, the private sector accounted for the majority of employed persons (39% to 37% for the public sector). In the posttest, the sectors changed places, with the public sector providing 39 percent and the private sector providing 33 percent. The percentage of unemployed/retired/unemployable respondents increased from 24 percent in the pretest to 28 percent in the posttest. We posited a downturn in the economy that lagged behind the plummeting of oil prices. The public sector, we averred, is less vulnerable to rapid changes so is more stable than the private sector, at least over the short term. The panel reflects the same reversal of positions, from 41-percent private and 35-percent public in the first wave to 47-percent public and 35-percent private in the second wave. Unemployment among panel respondents, however, actually decreased from 24 percent to 18 percent.

It is likely that panel respondents survived through the second and third waves either because their employment was secure (whether public or private), or because they were predominantly unemployed or retired Natives who could not or did not seek employment beyond the villages in which they were initially interviewed. The higher proportion of employed persons in the third wave (over the first) suggests that unemployed persons left the villages at higher rates than employed persons.

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[36] Two points about the composition of the panel and the time period for each wave should be repeated. The panel is a random sample of respondents selected from the pretest sample for the Schedule A villages, interviewed in 1987, and for the Schedule B villages, interviewed in 1988. The panels for the two schedules constituted one-third proportions of the pretest samples during the second wave of interviewing (i.e., during the first reinterviews). Some panel respondents could not be located during the second wave, and others could not be located during the third wave. Therefore, the panel of respondents interviewed in every one of the three waves is 170, or a 31-percent sample of the pretest sample (N = 548).

Table 14

CONTRASTS AMONG FIRST, SECOND, AND THIRD WAVES OF THE COMBINED A AND B PANEL, 32 AOSIS VARIABLES MEASURING RESPONDENT CHARACTERISTICS AND TRADITIONAL CUSTOMS (1987-1988, 1988-1989, 1989-1990), *N* = 170

	FIRST WAVE (1987-1988)	SECOND WAVE (1988-1989)	THIRD WAVE (1989-1990)
ETHNICITY			
Native	82%	84%	80%
Non-Native	18%	16%	20%
AGE			
Mean	42.8	43.4	44.2
SEX			
Male	50%	49%	49%
Female	50%	51%	51%
EDUCATION COMPLETED			
Some High School	42%	42%	44%
Some College or Beyond	32%	32%	29%
SOURCE OF EMPLOYMENT			
Unemployed/Retired	24%	22%	18%
Public Sector	35%	42%	47%
Private Sector	41%	36%	35%
EMPLOYMENT			
Median Months Employed	6.4	4.6	6.9
Persons Employed ≥ 4 Months	63%	52%	63%
Persons Employed ≥ 10 Months	40%	38%	36%
INCOME			
Median	$21,910	$23,655	$26,070
Mean	$29,750	$31,000	$33,000
Income ≥ $50,000	16%	21%	22%
HOUSEHOLD SIZE			
Mean	2.92	2.97	2.96
3 Persons or More	72%	75%	77%
6 Persons or More	29%	27%	25%
HOUSEHOLD TYPE			
Single-Conjugal Pair-Nuclear	78%	75%	74%
Stem-Joint-Denuded-Mixed	22%	25%	26%
LENGTH OF RESIDENCE			
Less than 6 Years	15%	16%	12%
More than 10 Years	75%	23%	44%
LAND MAMMALS			
Percent Hunters	44%	26%	39%
Days Hunting	10'	8	12
SEA MAMMALS			
Percent Hunters	33%	21%	29%
Days Hunting	74'	44.1	38.8

Table 14 (continued)

	FIRST WAVE (1987-1988)	SECOND WAVE (1988-1989)	THIRD WAVE (1989-1990)
CAMPING			
Percent Campers	48%	35%	45%
Days Camping	14.2,	19.7	23.1
FISHING			
Percent Fishers	49%	44%	60%
Days Fishing	19.8,	32.6	29.2
SUBSISTENCE FOOD YESTERDAY			
Yes	67%	63%	63%
SUBSISTENCE FOOD DAY BEFORE YESTERDAY			
Yes	66%	66%	58%
EITHER DAY WAS FOOD FROM OTHER HOUSEHOLD			
Yes	44%	33%	26%
MEALS WITH RELATIVES IN OTHER HOUSEHOLDS IN PAST TWO DAYS			
1 or More	50%	47%	54%
4 or More	13%	8%	12%
SUBSISTENCE MEAT AND FISH IN ANNUAL DIET			
50 Percent or More	56%	56%	54%
SPEAK NATIVE LANGUAGE AT HOME			
Most of the Time or Always	43%	41%	42%
THINK ABOUT GAME AVAILABLE IN THE PAST 5 YEARS			
Decreased	35%	28%	35%
Increased	37%	26%	18%
THINK ABOUT FISH AVAILABLE IN THE PAST 5 YEARS			
Decreased	51%	42%	29%
Increased	16%	23%	25%
DAYS IN WHICH VISITED FRIENDS LAST WEEK			
3 or More	40%	49%	45%
PUBLIC MEETINGS ATTENDED LAST MONTH			
1 or More	43%	48%	49%
VOTE IN MOST RECENT CITY COUNCIL ELECTION			
Yes	72%	72%	71%
VOTE IN MOST RECENT VILLAGE CORPORATION ELECTION			
Yes	64%	65%	77%

Table 14 (continued)

	FIRST WAVE (1987-1988)	SECOND WAVE (1988-1989)	THIRD WAVE (1989-1990)
HOW DO YOU FEEL ABOUT SOCIAL TIES WITH PERSONS IN OTHER VILLAGES			
No Satisfaction	6%	5%	6%
Complete Satisfaction	22%	34%	51%
HOW DO YOU FEEL ABOUT YOUR INCOME			
No Satisfaction	19%	20%	20%
Complete Satisfaction	7%	19%	31%

[a] Days engaged in the four activities measured here (land mammal hunting, sea mammal hunting, fishing, and camping) were not collected and rated systematically for the 82 members of the first wave of the A panel (1987). As a consequence, the RDAY1-5 variables summarized here for the first wave represent the B panel respondents only.

We inferred that several respondents relocated because of the need to find work or because they could not find work. Some of the latter almost surely returned to villages in which resided relatives who could provide support. Some panel members, regardless of the factors that pushed them from the villages in which they resided when first interviewed (or reinterviewed), could not be located for reinterviews during the third wave. The high rate of unemployment in the posttest sample reflects the downturn more accurately than does the panel because the panel requires continuity of residence in the same place; the posttest sample does not. The random-sampling procedure employed in the selection of posttest respondents picks up long-term residents as well as recent migrants in an equiprobable fashion.

The posttest differs from the pretest sample in that a smaller percentage of respondents have resided in the village more than 10 years and a larger percentage of respondents have resided in the village less than 6 years. The evidence suggests considerable population movement. The panel, to the contrary, appears to be stable because it measures only those persons whose residence was stable from 1987 through 1990. Only those persons interviewed in all three waves are included.[37]

[37] We sought to locate every panel respondent in each of the two reinterview waves. Some respondents who were reinterviewed in the second wave were not located during the third wave, and a few respondents who were not located in the second wave were located and re-interviewed in the third wave. Responses from these persons were used in Social Indicators Study II (Jorgensen 1993) to test for testing artifacts (reactivity), but they were not employed to determine longitudinal and (continued...)

The stability of length of residence in the village is best measured from the second wave to the third wave.[38] The percentage of panel respondents who have lived in the villages less than 6 years decreases, while the percentage of those who have resided in the villages more than 10 years increases.

Although relative dominance in source of employment changes in the third wave of the panel and in the posttest from the 1987-1988 measures, income increased at about the same rate for posttest and panel respondents. In several places, we have claimed that income is a strong predictor of household size and composition among Natives. As incomes decrease, particularly if the sources of the income are unstable, household sizes tend to increase and household structures (composition of relatives and nonrelatives) tend to become nonnuclear arrangements of a wide variety of types. That claim is contradicted if we restrict our analysis to the entire panel without contrasts, or even if we test for differences in the *Mixed:Native* contrast. But if we control our panel for race/ethnicity, the relations among income, household size, and household type hold, more or less as predicted, for Natives and for non-Natives.

Among non-Native respondents in the first and third research waves, only three among 30 households are *not* single person, conjugal pair, or nuclear family (two are single parents, one is coresiding with siblings). In addition, not one of the three nonnuclear households earns less than $20,000. Thus, non-Natives fit the "Western" model for household organization. Among Native respondents, in the first wave 25 percent and in the third wave 30 percent of households are not single person, conjugal pair, or nuclear family. Fifty percent of Native nonnuclear households in the first wave and 66 percent in the third earn less than $20,000. Natives, then, do not fit the "Western" model. As for non-Native household size, in both the first and third research waves, only 3 of 30 households have more than five

[37](...continued)
over-time correlations. Responses from persons who were not reinterviewed in both the second and third waves are not included here.

[38] During the initial analysis of 1987 pretest data, length of residence beyond 10 years was inaccurately recorded. We were unable to rectify the mistake for the panel respondents.

members. Small households denote the "Western" model. Among Native households, 36 percent in the first wave and 29 percent in the third wave have more than five members.

Controlling for race/ethnicity, Table 15 reports the numbers on household type and household size by income into a form that is quickly comprehended: raw numbers (#) followed by percentages. For convenience, we classify all households that are not single persons living alone, conjugal pairs, or nuclear families as "nonnuclear" households. A slight increase in nonnuclear forms (from 24% to 31%), complemented by a slight decrease in households with more than 5 members (from 36% to 28%), occurs among Native respondents between the first and third waves.

Table 15

HOUSEHOLD SIZE AND HOUSEHOLD TYPE BY INCOME, CONTROLLING FOR RACE/ETHNICITY, FIRST AND THIRD WAVES OF THE COMBINED PANEL (N = 170), 1987-1990

HOUSEHOLD TYPE AND SIZE	FIRST WAVE						THIRD WAVE					
	INCOME $0 - $20K		INCOME $20K - $40K		INCOME $40K +		INCOME $0-$20K		INCOME $20K-$40K		INCOME $40K +	
	(F)	%	(F)	%	(F)	%	(F)	%	(F)	%	(F)	%
Non-Native Single, Conjugal, Nuclear	(3)	10	(13)	46	(9)	10	(3)	10	(12)	41	(11)	38
Single parent, Stem, Remnant, Composite, etc.	(0)	0	(1)	3	(2)	7	(0)	0	(2)	7	(1)	3
Native Single, Conjugal, Nuclear	(46)	39	(22)	19	(19)	16	(45)	37	(21)	17	(20)	16
Single parent, Stem, Remnant, Composite, etc.	(20)	17	(5)	4	(4)	3	(26)	21	(7)	6	(4)	4
Non-Native 5 or Less Persons per HH	(2)	7	(14)	48	(10)	34	(2)	7	(14)	48	(10)	34
More than 5 Persons per HH	(1)	3	(0)	0	(2)	7	(1)	3	(0)	0	(2)	7
Native 5 or Less Persons per HH	(43)	37	(16)	14	(15)	13	(52)	42	(18)	15	(19)	15
More than 5 Persons per HH	(21)	18	(12)	10	(9)	8	(19)	15	(11)	9	(5)	4

Between the first and third waves, there is no change in proportions of nonnuclear households or in household sizes larger than five for non-Natives.

Native households are sufficiently interesting to warrant brief assessment. Among Natives, by far the largest proportions[39] of nonnuclear households in all waves occur among households whose incomes are less than $20,000 (1:2.3 in the first wave, 1:1.8 in the third wave). The largest proportion of households with more than five persons in all waves occurs among households earning between $20,000 and $40,000 (1:1.3 in the first wave, 1:1.6 in the third wave), but no income level sinks below a ratio of 1:3 (third wave, households earning greater than $40,000 annually). So household size often increases with income, but large households and the greatest proportion of nonnuclear households occur among households with the lowest incomes. Inasmuch as 58 percent of Native household incomes are less than $20,000, the large proportion of nonnuclear households earning less than $20,000 increased between the first and third waves, as did the proportion of nonnuclear households. The indication is that household structure and size among Natives are rather volatile, responding to economic exigencies. Non-Native households are less apt to expand or splinter when economic hardships hit. Rather, non-Natives are apt to migrate from Alaska or from the village.

The differences between respondents when controlling for ethnicity are as dramatic within the panel as within and between pretest and posttest samples. If we do not control for ethnicity, or do not control for village type but assess panel respondents in general (Table 14), the univariate distributions are similar to those determined in the uncontrolled pretest and posttest samples (Table 1). For the panel without controls, income, in general, increased between the first and third waves, nuclear (single person and conjugal pair) households decreased, nonnuclear forms of households increased, and household size increased only slightly. It is likely that important consequences from changes in income, length of residence in the village, and public- and private-sector sources of employment are being hidden by the heterogeneity of the sample, much as differences between Natives and non-Natives in household size, household type, and income were hidden. As in our analysis of the pretest and posttest samples, we will analyze the univariate

[39] The proportions are expressed as ratios of nonnuclear household types to single person, conjugal pair, and nuclear types.

distributions for the most powerful theoretical contrast within the panel--*Mixed:Native* village respondents (not Native:non-Native respondent contrasts).

VIII.B. *Mixed:Native* Contrasts, Three Waves of the Combined Panel

The comparisons of univariate distributions for the *Mixed:Native* theoretical contrasts in Table 16 demonstrate patterns very similar to the *Mixed:Native* contrasts of the pretest and posttest samples in respondent ethnicity, age, sex, and education. *Mixed* and *Native* panel respondents are similar to *Mixed* and *Native* posttest respondents in length of residence in the village, but the categories in the variable were altered twice, making absolute comparability impossible. A few small problems recur within variables over-time, such as changing the proportions of male to female respondents in the second and third waves for *Native* village residents, and the third wave for *Mixed* village respondents. These and similar problems in education completed, ethnicity, and age are distracting but explainable. Percentages rather than raw frequencies are provided in Table 16. Without exception, the illogical variation in panel respondent characteristics (ethnicity, age, sex, education completed) is caused by missing information. For example, 41 percent of the respondents in *Native* villages were female during the first wave, but 46 percent were female during the third. The difference is caused by missing information--some interviewers failed to record the respondent's sex during one (or two) of the waves. Because the samples are small (*Native* $N = 88$, *Mixed* $N = 82$), two or three instances of missing information on a variable can cause percentage differences for attributes of these variables between research waves.

The significant differences between *Mixed:Native* contrasts for pretest and posttest samples are very similar to the significant differences between those contrasts for the first and third waves of the panel. They occur in public-/private-sector employment where there is a reversal of proportions of private and public employment between the first and third waves. There is less unemployment in the panels (accounted for above). *Mixed* panel respondents worked slightly fewer months yet earned more than their counterparts in the posttest, but the direction of changes for the panel and pretest-posttest contrasts for these variables are the same.

Table 16

CONTRASTS BETWEEN *NATIVE* AND *MIXED* SUBSAMPLES, THREE WAVES OF THE COMBINED AB PANEL, 32 AOSIS VARIABLES MEASURING RESPONDENT CHARACTERISTICS AND TRADITIONAL CUSTOMS, (1987-1990), *NATIVE N* = 88, *MIXED N* = 82

	NATIVE WAVE 1 1987-1988	MIXED WAVE 1 1987-1988	NATIVE WAVE 2 1988-1989	MIXED WAVE 2 1988-1989	NATIVE WAVE 3 1989-1990	MIXED WAVE 3 1989-1990
ETHNICITY						
Native	96.6%*[a]	64%	97.7%*	68%	96.6%*	61%
Non-Native	3.4%	36%	2.3%	32%	3.4%	39%
AGE						
Mean	44.0	41.4	45.1*	41.7	46.8*	41.5
SEX						
Male	59%*	40%	57%*	40%	54%*	43%
Female	41%	60%	43%	60%	46%	57%
EDUCATION COMPLETED						
Some High School	49%*	35%	50%*	33%	52%*	37%
Some College or Beyond	15%	50%	12%	53%	12%	48%
SOURCE OF EMPLOYMENT						
Unemployed/Retired	31%	16%	30%	15%	21%	16%
Public Sector	34%	37%	40%	44%	43%	50%
Private Sector	35%	48%	31%	42%	36%	34%
EMPLOYMENT[b]						
Md Mos Employed	3.8*	9.6	1.9*	9.6	4.2*	8.9
≥ Four Months	51%	77%	37%	65%	53%	74%
≥ Ten Months	30%	51%	21%	52%	26%	46%
INCOME						
Median	$15,020	$38,460	$13,420	$37,980	$17,375	$42,270
Mean	$21,200*	$38,960	$22,470*	$39,630	$23,460*	$42,750
Income ≥ $50,000	2.4%	30%	8.6%	33%	7.4%	38%
HOUSEHOLD SIZE						
Mean	3.18*	2.67	3.24*	2.68	3.20*	2.72
3 Persons or More	81%	63%	83%	66%	83%	71%
6 Persons or More	39%	19%	39%	15%	34%	13%
HOUSEHOLD TYPE						
Single-Conjugal Pair -Nuclear	76%	81%	66%*	84%	69%*	81%
Stem-Joint-Denuded-Mixed (Composite)	24%	19%	34%	16%	31%	19%
LENGTH OF RESIDENCE						
≤ Five Years	9%*	21%	9%	25%	8%*	16%
> Six Years[c]	91%	79%	91%	75%	92%	84%
> Ten Years	88%	62%	25%	22%	54%	34%

Table 16 (continued)

	NATIVE WAVE 1 1987-1988	MIXED WAVE 1 1987-1988	NATIVE WAVE 2 1988-1989	MIXED WAVE 2 1988-1989	NATIVE WAVE 3 1989-1990	MIXED WAVE 3 1989-1990
LAND MAMMALS[4]						
% Hunters	49%	40%	25%	28%	39%	38
Days Hunting	29	25%	8*	7	13	10
SEA MAMMALS						
% Hunters	52%*	13%	33%*	8%	47%*	10%
Days Hunting	70*	80	44*	27	38*	29
CAMPING						
% Campers	52%	44%	29%	43%	51%	38%
Days Camping	14	14	23*	13	19*	18
FISHING						
% Fishers	48%	49%	39%	49%	66%	55%
Days Fishing	20	16	29*	23	31*	23
SUBSISTENCE FOOD YESTERDAY						
Yes	83%*	50%	81%*	44%	81%*	44%
SUBSISTENCE FOOD DAY BEFORE YESTERDAY						
Yes	77%*	54%	78%*	52%	75%*	40%
EITHER DAY FOOD FROM OTHER HOUSE						
Yes	47%	41%	29%	38%	24%	29%
MEALS WITH RELATIVES IN OTHER HOUSES PAST 2 DAYS						
One or More	60%*	39%	57%	36%	62%	46%
SUBSISTENCE MEAT AND FISH IN ANNUAL DIET						
≥ 50%	74%*	37%	78%*	32%	75%*	33%
SPEAK Native LANGUAGE AT HOME						
Most of the Time or Always	58%*	21%	59%*	21%	55%*	23%
THINK ABOUT GAME AVAILABLE PAST 5 YEARS						
Decreased	47%	26%	31%	25%	40%	31%
Increased	20%	50%	17%	36%	12%	24%
THINK ABOUT FISH AVAILABLE PAST 5 YEARS						
Decreased	58%	45%	42%	43%	27%	31%
Increased	10%	20%	26%	20%	19%	31%

Table 16 (continued)

	NATIVE WAVE 1 1987-1988	MIXED WAVE 1 1987-1988	NATIVE WAVE 2 1988-1989	MIXED WAVE 2 1988-1989	NATIVE WAVE 3 1989-1990	MIXED WAVE 3 1989-1990
DAYS VISITED FRIENDS LAST WEEK Three or More	38%	42%	50%	48%	42%	48%
PUBLIC MEETINGS ATTENDED LAST MONTH One or More	44%	41%	50%	46%	52%	47%
VOTE IN RECENT CITY COUNCIL ELECTION Yes	76%	67%	76%	67%	70%	73%
VOTE IN RECENT VILLAGE CORP ELECTION Yes	65%	63%	72%	57%	77%	79%
SOCIAL TIES WITH PERSONS IN OTHER VILLAGES No Satisfaction Complete Satisfaction	2% 25%	9% 20%	3% 35%	8% 34%	5% 57%	7% 44%
FEELINGS ABOUT INCOME No Satisfaction Complete Satisfaction	33%* 7%	5% 7%	23% 16%	17% 22%	26% 24%	13% 39%

[a]Tests of significance of difference for the variables here are based on the *Native:Mixed* theoretical contrast. The significance of differences between contrasts on the nominal variables (dichotomous) are determined by the test for proportions. Differences between contrasts on ordinal variables are determined by the Kolmogorov-Smirnof two-sample test. Significance of differences for contrasts on the interval variables are determined by the *t*-test.

[b]Employment data are available for 6 months only during first-wave research

[c]During the first wave, residence categories were 1 year or less, 2-5 years, 6-20 years, and 21 years and longer. In subsequent waves, the 6-20 category was split into 6-10 and more than 10.

[d]Days spent hunting land mammals and/or sea mammals, and/or fishing, and/or camping during first-wave research are available for B panel respondents only (1988).

Household sizes; household types; the percentage of persons engaged in fishing, camping, hunting sea mammals, and hunting land mammals; and the days spent in these tasks follow the same pattern in panel and pretest-posttest contrasts. A greater percentage of respondents in *Native* villages than *Mixed* engage in and allocate more time to the traditional subsistence activities. The differences in hunting land mammals and fishing are modest, but consistent. The differences in sea mammal hunting and camping are more marked. Large proportions of residents in *Native* and *Mixed* villages hunt land mammals and fish. An unexplained puzzle in pretest and first-wave responses (the latter represent a subset of the former) is the large number of days in which respondents reported that they hunted land mammals and sea mammals and the few days they reported fishing. It may be that fishing, a relatively inexpensive and highly efficient means (setnetting and river seining in particular) of acquiring resources increased, whereas the more expensive and less efficient means of acquiring resources decreased as employment and welfare transfers of several kinds decreased.

The presence of subsistence food in meals, the receipt of subsistence food from persons in R's household or beyond, and the meals eaten in relatives' homes during the 2 days prior to being interviewed is similar for panel and pretest-posttest samples. Significantly higher proportions of respondents in *Native* villages than in *Mixed* villages have eaten subsistence foods and have dined or snacked in relatives' homes. Although the differences are not significant, more respondents in *Mixed* villages received food from persons in their own households and other households and also visited persons in other households than did respondents in *Native* villages during the third wave, reversing the proportions in the first wave (and in the pretest).

As Table 17 demonstrates, these reversals from the first to the third wave reflect increased contributions of subsistence foods to Native households and increased visiting by non-Natives in *Mixed* villages. The increased contributions may be from persons within the village, but it is also highly likely that relatives in *Native* villages also contributed in response to economic exigencies. Increased visiting among non-Natives may be a function of having lived 2 years longer in the village and sharing more time with friends (by the time of third wave, 84% of *Mixed* village panel respondents had lived in the villages for more than 6 years, and 34% for more than 10 years).

Further similarities with pretest-posttest results are that respondents in *Native* villages have greater proportions of meat and fish (naturally occurring resources

Table 17

DAYS VISITING FRIENDS OR RELATIVES AND SUBSISTENCE FOOD PROVIDED BY PERSONS OTHER THAN THE RESPONDENT BY RACE/ETHNICITY, *MIXED* VILLAGES, FIRST AND THIRD WAVES OF THE COMBINED PANEL, 1987-1988, 1989-1990 (Percents)

Days Visited Friends	FIRST WAVE		THIRD WAVE		Subsistence Food From	FIRST WAVE		THIRD WAVE	
	Native	NonNat	Native	NonNat		Native	NonNat	Native	NonNat
None	9	22	12	15	Self	18	36	15	60
1 or 2	37	48	36	48	Same HH	41	18	52	10
3 or More	54	30	52	37	Other HH	41	46	33	30

gained through harvests or sharing) in their annual diets, greater proportions of Native languages spoken at home, and greater proportions attending public meetings.

Some modest differences occur between panel waves and pretest-posttest responses on voting in village corporation and city council elections and feelings about social ties with persons in other villages. Larger differences obtain in feelings about income. Although the differences are not significant, several panel items merit further discussion because we can assess changes in them over-time. This will assist our comparisons.

Native and *Mixed* respondents increased their participation in village corporation elections, perhaps as a response to worsening economic conditions, or the specter of worsening conditions, following the Exxon Valdez oil spill in March 1989. Reports of complete satisfaction with social ties maintained with persons in other villages increased between each wave, as did feelings of complete satisfaction with income. The latter increased by more than fivefold for *Mixed* respondents and threefold for *Native* respondents between the first and third waves. At the same time, feelings of no satisfaction with income more than tripled for *Mixed* respondents during the second wave, then dropped some in the third. One-third of *Native* village respondents reported no satisfaction with their incomes during the first wave. That fraction dropped to about one-fourth during the second wave and increased again during the third. The feeling about income variable passed our reliability and validity tests. Thus, it appears to have acceptable construct validity and not to be reactive. The responses, therefore, may reflect increasing satisfaction during more difficult economic times with a job whose remuneration was not completely satisfying during somewhat better economic times. *Native* village respondents in panel and pretest-posttest samples consistently have high proportions of persons unsatisfied with their incomes. The discrepancy between incomes in *Native* and *Mixed* villages is so great as to warrant little further discussion about probable causes of dissatisfaction.

In comparing the posttest-pretest patterns with the patterns of the panel's first and third waves about the availability of naturally occurring resources, we looked at the similarities and differences between *Mixed* and *Native* respondents at two points in time. We also looked at the similarities and differences between *Mixed* respondents in the pretest-posttest samples and those in the panel and at the similarities and differences between *Native* respondents in the pretest-posttest samples and in the panel. This analysis yields three comparisons. There is one exception (statistically insignificant) in attitudes about the availability of game during the preceding 5 years between the pretest-posttest and first and third waves of the panel. The exception is a difference between posttest and third-wave panel respondents in *Native* villages. Panel respondents more frequently thought game availability had decreased and less frequently thought game had increased (see Table 18).

There is but one exception as well among attitudes about the availability of fish during the preceding 5 years between the pretest-posttest and third-wave panel respondents. The exception is a difference between posttest and third-wave panel respondents in *Mixed* villages. Significantly, more posttest respondents than panel respondents thought fish availability had decreased, and fewer posttest respondents thought fish availability had increased (*K-S test P <.01*) (see Table 18). This is a direct consequence of increasing the proportion of respondents in *Mixed* villages in

Table 18

COMPARISONS OF POSTTEST AND PANEL (THIRD WAVE) RESPONSES ABOUT THE AVAILABILITY OF GAME AND FISH (Percents)

Attitudes About Game Availability	*NATIVE*		Attitudes About Fish Availability	*MIXED*	
	Posttest	Panel Third Wave		Posttest	Panel Third Wave
Decreased	29	40	Decreased	56	31
Stayed Same	49	48	Stayed Same	28	38
Increased	22	12	Increased	16	31

the posttest sample. We had undersampled the large villages, such as Dillingham and Kodiak, in the pretest so as not to swamp the *Native* villages. After the Exxon Valdez spill, we increased the sampling proportion of Kodiak and Dillingham to capture responses influenced, perhaps, by the spill. It is evident that a significantly larger proportion of posttest respondents than panel respondents in *Mixed* villages thought that the availability of fish had decreased. *Comm Fish:Noncom Fish* contrasts for third-wave panel and posttest respondents yielded even more extreme differences: 57 percent of posttest respondents as opposed to 27 percent of panel respondents thought fish availability had decreased. In *Comm Fish* villages, 15 percent of posttest and 18 percent of the panel respondents thought fish availability had increased. Nevertheless, on one important measure panel respondents in *Comm Fish* villages veered considerably from *Mixed* village responses: 18 percent of *Comm Fish* panel respondents as opposed to 31percent of *Mixed* panel respondents thought fish were more available in 1989-1990 than 1984-1985 (see Table 18). These are definite consequences of occupation and the importance of commercial fishing in the economy.

The differences between posttest-pretest responses and responses from the first and third waves of the panel are, for the most part, modest. Some differences, in particular the difference between panel and posttest respondents on the availability of fish, are accounted for by the increased proportion of non-Native respondents in commercial-fishing villages in the posttest sample and by the selection over 3 years for the most stable (least transitory) respondents in the panel. Even upon controlling for *Comm Fish:Noncom Fish* in panel and posttest, more posttest respondents than panel respondents thought that fish availability had decreased. A second factor that influenced the posttest responses was the Exxon Valdez oil spill, which occurred as posttest and third-wave panel research was being completed among Schedule A villages but before the final research was conducted in Schedule B villages in 1990.

We have demonstrated structural similarities between the pretest and the posttest configurations of traditional customs and activities. Upon exercising controls for village types--*Mixed:Native* and *Comm Fish:Noncom Fish* in our examples--we demonstrated marked and highly consistent differences between (1) villages that have well-developed infrastructures, regular commercial transportation, a large variety of services, a relatively complex occupational structure with both public and private sectors, and large populations in which more than 25 percent of the residents are non-Natives and (2) villages that have modest infrastructures, limited services, very small private economic sectors, and small populations in which more than 75 percent of the residents are Natives. When the private sectors of these large villages are dominated by commercial fishing (*Comm Fish*), we noted differences between responses from those villages and from *Mixed* villages. Regardless of village type, the strongest contrasts always occur between Natives and non-Natives (referred to throughout as race/ethnic or ethnic/race contrasts).

It would be redundant to analyze the structure of traditional customs and activities for theoretical contrasts. We can safely assume that the differences between *Mixed:Native* and *Comm Fish:Noncom Fish* in the pretest and posttest samples hold for three waves of the panel. In the following, we focus on the general structure of traditional customs and activities in each of the three waves without regard to theoretical contrasts.

VIII.C. The Structure of Traditional Customs in the Panel

Structure in the First Research Wave: Figure 10 solves the relations among 24 traditional AOSIS variables in three dimensions. The TRADITIONAL EXTRACTORS region comprises two areas--Sea Mammal Extractors to the right and General Extractors to the left--and occurs in the front center of the box. The region of HIGH PRIVATE INCOME is positioned in the left-rear quadrant. The configuration is highly similar to the configuration for the pretest sample (Fig. 4).[40] The few differences are of little consequence. We recognize two closely relatedareas, each a cylindrex, within the TRADITIONAL EXTRACTORS region.[41] The modulating facet for the entire region and within each cylindrex is the directness of the relation to subsistence activities. Participation in the hunting of a variety of sea mammals (B, CACT2) is fitted into the Sea Mammal Extractors area, which encompasses most traditional customs and activities other than subsistence-extraction pursuits themselves. Participation in hunting a variety of land mammal species (A, CACT1), in harvesting a variety of fish species (D, CACT5), and in frequent camping excursions (C, CACT4) are fitted into the General Extractors area.

The General Extractors cylindrex fits participation in traditional subsistence activities (middle radex) with the days engaged in those activities (E, RDAY1; F, RDAY2, G, RDAY4; H, RDAY5) (lower radex). Pushed toward the periphery of the General Extractors cylindrex are the measures of subsistence food received from other households (K, A31) and meals eaten in the houses of relatives of friends in the community (L, A32). These items are dependent upon subsistence extraction, but they are not the same as extractive activities.

The Sea Mammal Extractors cylindrex fits together participation in the hunting of a wide variety of sea mammals (closest to the A, C, and D of the General Extractors area) most closely with subsistence food in meals the previous two days

[40] The matrix of gamma coefficients (Table 10) from which the figure was derived appears in the appendix. Thirteen percent of the 300 Γs $\geq$,50.

[41] The TRADITIONAL EXTRACTORS region in the pretest configuration (Fig. 4) forms a single cylindrex, although the positions of the areas within that cylindrex--Sea Mammal Extractors to the right and General Extractors to the left--are nearly identical to the figure here for the first wave of the panel.

COORDINATES IN 3 DIMENSIONS

Variable	Plot	Dimension 1	2	3
CACT1	A	.22	.46	-.47
CACT2	B	.55	.01	-.42
CACT4	C	.50	.45	-.50
CACT5	D	.36	.57	-.60
RDAY1	E	-.46	-.72	-.35
RDAY2	F	-.17	-.76	-.38
RDAY4	G	-.54	-.43	.35
RDAY5	H	-.49	-.44	-.45
A28	I	.91	.04	-.03
A30	J	.93	.31	-.00
A31	K	-.41	-1.01	.15
A32	L	.48	.44	.70
A33	M	1.00	-.08	.14
A38	N	.58	-.07	.81

Variable	Plot	Dimension 1	2	3
O2	O	-1.04	.43	-.17
O3	P	.18	.92	.02
O22	Q	.53	-.33	.30
O25	R	.78	-.50	.10
O28	S	-1.62	.24	.15
O29A	T	-1.51	.05	.11
E29	U	-.80	.33	.51
RHHTYPE	V	.25	-.82	.68
PPEMP	W	-.11	1.04	.52
RHHSIZE	X	.52	-.41	-.65
C6N	Y	-.64	.26	-.51

Guttman-Lingoes' Coefficient of Alienation $K = .157$

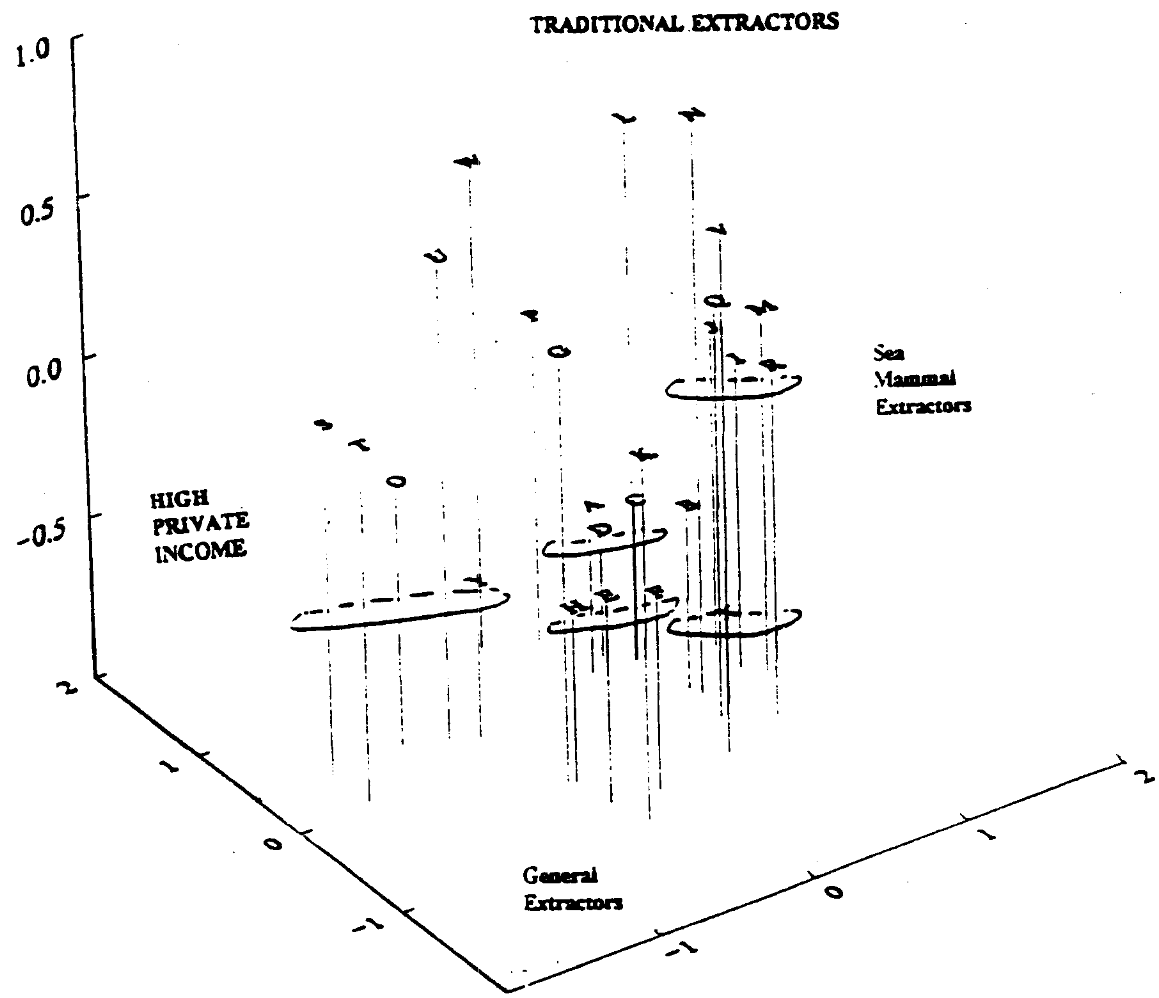

FIGURE 10. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 25 VARIABLES, N = 170, TOTAL PANEL SAMPLE, FIRST WAVE, 1987-1988

(I, A28; J, A30), next with the percentage of naturally occurring food in the diet (M, A33) and then with other traditional customs and activities more distantly related to extraction, including increasing household size (X, RHHSIZE), duration of residence in the village (R, D25), nonnuclear household types (V, RHHTYPE), voting in the most recent village corporation election (Q, D22), and speaking Native languages most of the time at home (N, A38).

The HIGH PRIVATE INCOME region to the left separates increasing income, increasing satisfaction with that income, private sources of income, increasing months employed, and non-Natives and non-Native spouses together into two simplexes; income is the bridge between them. Although many of the highest earners are in the public sector and most of the persons who earn high public or private incomes are non-Natives, some Natives earn high incomes but not sufficiently high to pull the income variables into the TRADITIONAL EXTRACTORS region. The configuration for the first wave, then, is not only highly similar but almost identical to the general pretest configuration (Fig. 4). Some differences between the two may stem from selective forces operating on the panel. That is to say, data from respondents who were not reinterviewed in either the second or the third research wave (or both) are not included in the analysis of the first-wave responses (or configurations for any other wave).

<u>Structure in the Second Research Wave</u>: The first wave of reinterviews was administered to panel respondents in Schedule A villages during 1988 and to respondents in Schedule B village in 1989.[42] Figure 11 provides the SSA configuration in three dimensions for the first wave of reinterviews (hence, wave two, or the second wave of interviews among persons interviewed during the pretest and subsequently selected for our sample).[43]

[42] The usefulness of this research strategy is explained in Social Indicators Study II (Jorgensen 1993). We wished to know whether panel responses, in general, were similar (not significantly different) from responses of initial interviews. In that fashion, we could determine whether reactivity was a threat to validity within the panel, while controlling the threat to specification error caused by using pretest-posttest samples without replacement.

[43] Twenty-two percent of the 300 gamma coefficients (Γ) in the matrix from which this configuration was derived $\geq$.50. The matrix appears in the Appendix.

COORDINATES IN 3 DIMENSIONS

Variable	Plot	Dimension 1	2	3
CACT1B	A	.26	.76	-.19
CACT2B	B	.30	.26	.11
CACT4B	C	.02	.74	.10
CACT5B	D	-.21	.67	.36
RDAY1B	E	.54	.59	-.08
RDAY2B	F	.48	.13	.18
RDAY4B	G	.38	.54	.35
RDAY5B	H	-.05	.47	.56
BA28	I	.66	-.07	.27
BA30	J	.65	-.03	.57
BA31	K	-.59	-1.42	.10
BA32	L	.50	-.87	.10
BA33	M	.74	-.43	.50
BA38	N	.71	-.51	.23

Variable	Plot	Dimension 1	2	3
BD2	O	-1.15	.02	-.15
BD3	P	-.53	.68	.00
BD22	Q	.36	-.29	-.88
BD25	R	.41	-.82	-.75
BD28	S	-1.59	-.20	.14
BD29A	T	-1.58	-.28	-.20
BE29	U	-.63	-.78	.73
BRHHTYPE	V	.77	-.42	-.49
BPPEMP	W	-.57	.49	-.45
BRHHSIZE	X	.51	.12	-.69
BC6N	Y	-.42	.64	-.41

Guttman-Lingoes' Coefficient of Alienation K = .136

TRADITIONAL EXTRACTORS

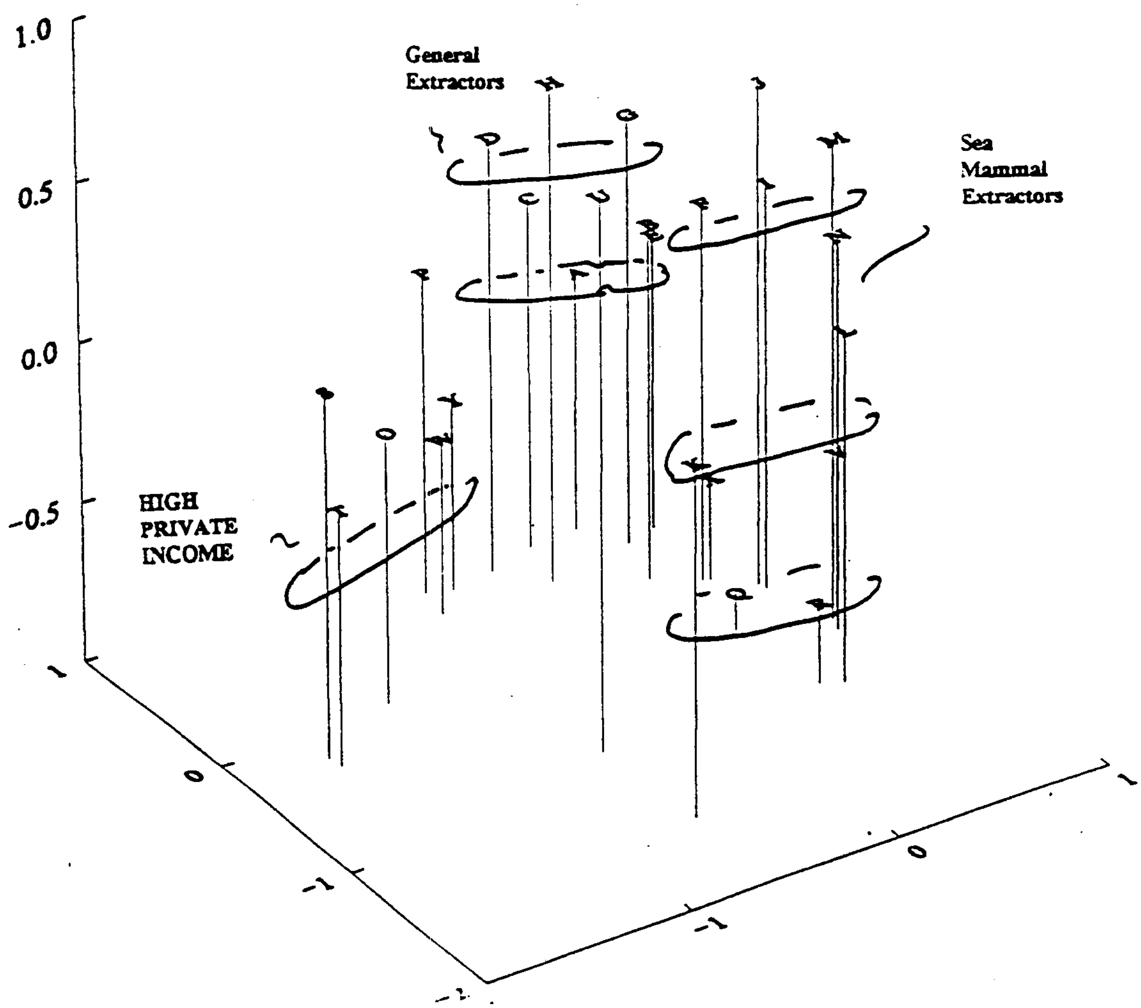

FIGURE 11. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 25 VARIABLES, N = 170; TOTAL PANEL SAMPLE, SECOND WAVE, 1988-1989

The 3-D configuration for the second wave is very similar to the configuration for the first wave. The major difference is that the traditional subsistence activities form a cylindrex comprised solely of subsistence-extraction activities. Thus, in the second wave, with the exception of the measure of cumulative days allocated to hunting sea mammals (F, RDAY2), the traditional activities dependent upon, but not themselves extractive pursuits, are fitted into a second cylindrex.

We refer here to the TRADITIONAL EXTRACTORS region, which comprises two areas: Sea Mammal Extractors toward the center front[44] and General Extractors toward the center back. Cumulative days spent hunting sea mammals (F, RDAY2) in the Sea Mammal Extractors area is the bridge to participation in hunting a wide variety of sea mammals (B, CACT2) and cumulative days hunting land mammals (E, RDAY1) in the General Extractors area.

The Sea Mammal Extractors area is rather more complex than the General Extractors area. In the General Extractors area, most measures of participation in subsistence activities (A, CACT2; B, CACT2; C, CACT4; D, CACT5) are fitted into a lower circumplex. Measures of cumulative days engaged in those activities (E, RDAY1; G, RDAY4; H, RDAY5) are fitted into a higher circumplex. There are two exceptions: participation in fishing and cumulative days spent fishing (D, CACT5; H, RDAY 5) and participation in hunting land mammals and cumulative days hunting land mammals (A, CACT1; E, RDAY1). Those pairs of measures are closely related, internally.

The Sea Mammal Extractors cylindrex comprises three levels of circumplexes. At the top, days hunting sea mammals is fitted with the increasing presence of subsistence food in meals during the previous 2 days and with an increasing percentage of subsistence food in the annual diet (F, RDAY2; I, A28; J, A30; M, A33). At the middle level are fitted two more measures dependent on subsistence extraction: increasing amounts of subsistence food (naturally occurring resources) in recent meals provided by persons in other households and increasing number of

[44] Notice in Figure 11 that the positive quadrants on the right--front and back--are only half the size of those on the left. Thus, the entire distribution represents small distances among the points.

meals eaten in the houses of relatives or friends. Also at this level is one traditional custom closely linked to extraction, sharing, and consumption of naturally occurring resources: speaking one's Native language at home most of the time (K, A,31; L, A32; N, A38). At the base of the cylindrex are several measures that reflect aspects of traditional customs most removed from subsistence extraction and consumption of naturally occurring resources. These are nonnuclear household types, increasingly large households, increasing length of residence in the village, and voting in recent Native village corporate elections (V, RHHTYPE; X, RHHSIZE; Q, D22; R, D25).

The HIGH PRIVATE INCOME region is similar to the first wave's high-income region (Fig. 10). The difference is that income satisfaction (U, E29) is an outlier in the second wave and commercial fishermen/businessmen is fitted into the region (P, D3). The relation was reversed in the first wave. The outlier position of the measure of income satisfaction is an obvious consequence of increasing satisfaction and decreasing dissatisfaction with incomes in both the public and private sectors and among Natives and non-Natives (see Sec. VI.B above).

Increasing income (O, D2) forms a simplex with non-Native respondents and non-Native spouses (S, D28; T, D29A) and serves as a bridge to the simplex on the right, which includes private-sector dominance in income, increasing months of employment, and respondents who are either commercial fishermen or own their own businesses (W, PPEMP; Y, C6N; P, D3).

<u>Structure in the Third Research Wave</u>: The configuration in Figure 12 is very similar to the SSA configuration for the posttest sample (Fig. 7), much as the configuration for the first wave of the panel (Fig. 10) is very similar to the SSA solution for the pretest sample (Fig. 4).[45] The similarities between panel and posttest confirm our analysis of panel stability, reliability, and validity (Social Indicators Study III [Jorgensen 1993]), suggesting that differences between the first and third waves of the panel and differences between pretest and posttest samples are real and not products of bias or chance. Unlike the posttest solution, there are

[45] The matrix of gamma (γ) coefficients from which the SSA configuration in Figure 12 is derived appears in the Appendix as Table 12. Nineteen percent of the γs $\geq$.50.

COORDINATES IN 3 DIMENSIONS

Variable	Plot	Dimension 1	2	3
CACT1C	A	-.42	.57	.27
CACT2C	B	.77	.29	-.03
CACT4C	C	.06	.57	.12
CACT5C	D	.11	.74	.04
RDAY1C	E	-.39	.53	.40
RDAY2C	F	.76	.34	.12
RDAY4C	G	.14	.55	.17
RDAY5C	H	.25	.69	-.09
A28C	I	.84	-.11	.02
A30C	J	.85	-.10	.21
A31C	K	-.22	-1.37	-.03
A32C	L	.80	-.20	-.40
A33C	M	.87	.12	.21

Variable	Plot	Dimension 1	2	3
D2C	O	-1.14	-.07	.11
D3C	P	-.38	.68	-.25
D22C	Q	-.21	-.84	-.85
D25C	R	.10	-.57	.94
D28C	S	-1.52	.00	.17
D29AC	T	-1.35	-.27	-.26
E29C	U	-.86	-.58	.94
RHHTYPEC	V	.51	-.87	-.33
PPEMPC	W	-.38	.25	-.77
RHHSIZEC	X	.40	-.09	-.61
C6NC	Y	-.62	.23	-.51

Guttman-Lingoes' Coefficient of Alienation K = .121

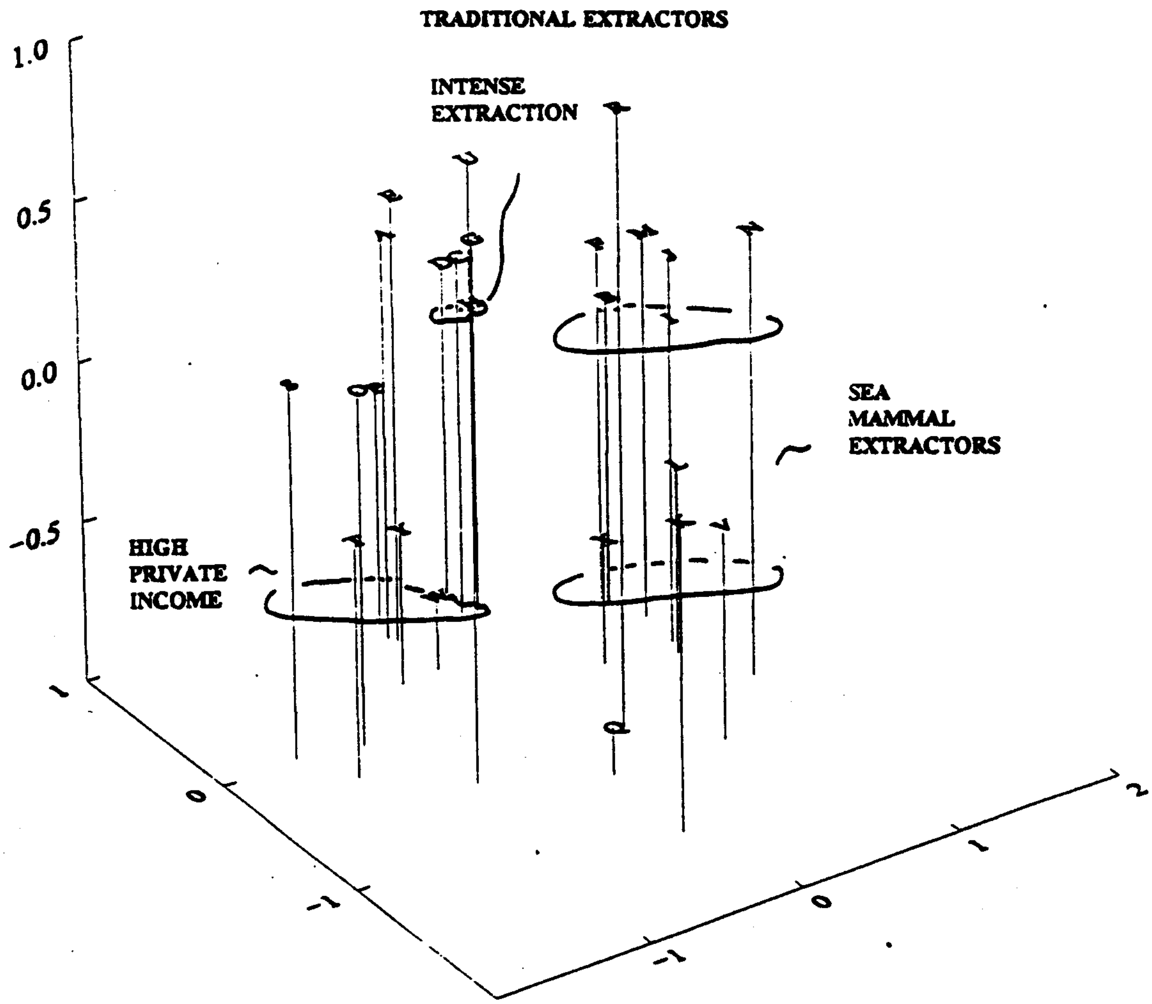

FIGURE 12. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA SOLUTION (3-D), 25 VARIABLES, N = 170, TOTAL PANEL SAMPLE, THIRD WAVE, 1989-1990

three regions in Figure 12: HIGH PRIVATE INCOME, INTENSE EXTRACTION, SEA MAMMAL EXTRACTORS. In the posttest, although Intense Extraction and Sea Mammal Extraction are more distant from one another than in the configurations for the pretest or for the first and second waves of the panel, the two areas are sufficiently closely fitted in the hyperspace of Figure 7 to form a single region (TRADITIONAL EXTRACTORS). We will return to a discussion of this difference.

Two simplexes form the HIGH PRIVATE INCOME region in the left-front quadrant. Increasing income (O, D2) is the bridge between the two. On the left, non-Native respondents, non-Native spouses, and satisfaction with income form a simplex with increasing income (S, D28; T, D29A; W, E29). On the right, the dominance of private over public income, increasing months employed, and being a commercial fisherman or owning a business form a simplex with increasing income (W, PPEMP; Y, C6N; P, D3). The differences between the first and second waves in fitting the variables measuring satisfaction with income (U, E29) and being a commercial fisherman or owning a business (P, D3) is resolved in the third wave by fitting both variables into the HIGH PRIVATE INCOME region. In addition, we see that participation in hunting a wide variety of land mammals and spending many days per year in that activity are fitted into the right side of the region. The placement of these two measures within the HIGH PRIVATE INCOME region confirms the analysis above that Natives in *Mixed* and *Native* villages, and many non-Natives as well, participate in land mammal hunting and that the participation increases with income and duration of residence in a community. The stability of the panel, selecting for long-term residents, is reflected in the fitting of the land mammal-extraction variables into the HIGH PRIVATE INCOME region. Also as we observed above, participation in fish extraction increases with income among Natives in *Mixed* and *Native* villages and also among non-Natives if they have Native spouses. The effect of fitting the variables into the HIGH PRIVATE INCOME region is to pull the fish extraction and camping variables toward the left into the INTENSE EXTRACTION region.

The INTENSE EXTRACTION region located in the center rear comprises a very tight distribution of four subsistence activities variables--participation in the harvesting of a wide variety of fish, participating in several camping and camp maintenance tasks, cumulative days camping, and cumulative days spent fishing (D, CACT4; E, CACT5; G, RDAY4; H, RDAY5).

In the center front is the SEA MAMMAL EXTRACTORS region, which forms a cylindrex of two radexes. The axis of the cylindrex is uses to which naturally occurring resources are put. The peripheries, with the exception of the variables measuring participation in sea mammal harvests (of many species) and cumulative days spent harvesting sea mammals, are defined by the modulating effect, which is proximity to resource use. The items around the peripheries of the two radexes become more distant the less directly related they are to the consumption of the resources procured through harvests of naturally occurring resources. The most closely related items are sharing--either eating with or receiving food from others.

In the lower radex, the axis is formed by meals eaten in households other than the respondent's. Fitted around the periphery are receiving food from persons in the respondent's household or in other households, large and nonnuclear households, and voting with high frequency in Native village corporation elections (L, A32; K, A31; V, RHHTYPE; X, RHHSIZE; Q, D22). In the upper radex, eating subsistence food in meals during the previous 2 days and an increasing percentage of naturally occurring foods in the respondent's diet form the axis around which are fitted participation in the hunting of a wide variety of sea mammals and spending a large number of days doing so, speaking a Native language at home most of the time, and long-term residence in the village (I, A28; J, A30; M, A33; B, CACT2; F, RDAY2; N, A38; R, D25).

The distance between the HIGH PRIVATE INCOME region and the SEA MAMMAL EXTRACTORS region reflects the zero and negative correlations that obtain between the members of the regions. The SEA MAMMAL EXTRACTORS region reflects traditional Native customs. It also reflects low incomes, high unemployment, and considerable sharing of resources. Consumption, followed by sharing, assume central places in the cylindrex.

The distance between the HIGH PRIVATE INCOME region and the INTENSE EXTRACTION region reflects that all Natives hunt land mammals, extract fish, and camp and that they do so often. But as income and duration of residence in the village increases, Natives and many non-Natives increase their participation in hunting and fishing.

IX. INDICATORS OF TRADITIONAL CUSTOMS AND ACTIVITIES

IX.A. Native:Non-Native Contrasts

The most powerful contrast in the traditional customs and activities is between Natives and non-Natives. Knowledge that a person is not a Native is the best indicator that they do not engage in subsistence-extraction activities, that subsistence foods were not eaten in the previous 2 days, that subsistence foods constitute small proportions of the annual diet, that few meals are eaten with relatives in other households, and that ties with persons in other villages are satisfactory or less than satisfactory.

The power of race/ethnicity is further evinced when the respondent has a Native spouse. In those cases, the best prediction, still, is that no meals were eaten in relatives' homes during the preceding 2 days. Nevertheless, mixed racial couples are twice as likely as non-Native couples to have eaten meals in relatives' homes and twice as likely as non-Native couples to have received subsistence foods from persons in other households. Indeed, the best predictor of the source of subsistence foods for some of the meals eaten in the previous 2 days by mixed couples is someone other than the respondent (12% from someone in R's household, 53% from someone in a different household).

The factors of age, duration of residence in the village, and participation in resource-extraction activities, taken jointly, mitigate some of the generalizations above. The manner in which these factors coalesce to alter the generalizations about non-Natives are not obvious. If non-Natives are between the ages of 35 and 59, have lived in the village for more than 10 years, engage in hunting several species of land mammals *and* fishing for several species of fish *and* establishing camps for several extraction activities each year, the likelihood is from 40 percent to 50 percent, depending on the activity, that the respondent has eaten at a relative's home, or received food from a person in a household other than the respondent's, or gained more than 50 percent of the meat and fish in the annual diet from naturally occurring resources. Controlling for the factors just mentioned, then, a small percentage (6%, or 5 of 87) of middle-aged non-Native respondents have acquired some of the subsistence and sharing customs of Natives.

Income is another important factor in non-Native participation in traditional subsistence activities. Sixty-two percent of non-Natives engage in at least one of the following activities: hunting several species of land mammals, harvesting several species of fish, or camping. In general, as income increases beyond $20,000 annually, so does the proportion of persons who extract resources. As income increases beyond $40,000, the proportions of persons engaged in two or three activities increases. In no income category does the proportion of persons engaged in two or more activities exceed 41 percent of non-Native respondents. Interestingly, the proportions of persons who engage in all three activities are greatest among non-Natives who earn less than $20,000 (28%) and next greatest among those who earn more than $50,000 (21%) annually. Incomes greater than $50,000 annually, controlling for age (35 to 59) and duration of residence in the village (over 10 years) are the best predictors of non-Native participation in subsistence activities,[46] including receiving resources from others in the past 2 days and eating in relatives' homes. The prediction of participation in all three activities (41%) increases from 36 percent to 47 percent if we control for residence in *Comm Fish:Noncom Fish* villages and source of employment (public or private sectors). Long-term, high-earning, public-sector-employed residents of villages in which noncommercial fishing does not dominate the local economy are more likely than

[46] There are 69 percent in at least one activity, 41 percent in at least two activities, and 21 percent in at least three activities.

long-term, high-earning, private-sector employees and employers of commercial-fishing villages to engage in two or more subsistence activities (47% to 36%).

Non-Natives do not participate in traditional activities at rates comparable to Natives, although many of the factors that increase participation are now known, to wit: mixed marriages (Native and non-Native), long-term residence in a village (more than 10 years), middle-age (35-59), high income (over $50,000), and employment in the public sector. Even if we exercise all of the controls, the best prediction is that if a person is a non-Native, he/she participates in one or less subsistence activity, eats few subsistence foods, does not eat at the home of relatives, and does not receive subsistence foods from others. The reasons for public-sector differences from those in the private sector appear obvious, although nontrivial. This issue will be explored as a concluding hypothesis in the final chapter.

Regardless of whether Natives reside in small, homogeneous villages with modest infrastructure and services or large, heterogeneous villages with well-developed infrastructures, a variety of public services, and a relatively complex local economy of public and private sectors,[47] participation in the hunting of several sea mammal species and doing so for 45 days or more per year are consistent indicators of many traditional activities and customs, including the frequent hunting of several species of land mammals, the extraction of several species of fish, the establishment of several camps throughout the year to procure these resources, and the maintenance of equipment that makes camping and extraction successful. Non-Natives do not harvest sea mammals, in part because most sea mammals are protected by Federal law and in part because sea mammal commodity byproducts, such as oil, skins, fur, and ivory, are the only interests of non-Natives in sea mammals. The commodity value is the only reason for which sea mammals would be harvested by non-Natives.[48]

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[47] The homogeneous:heterogeneous contrast analyzed in this chapter is *Native:Mixed*. The other homogeneous:heterogeneous contrast in the study is *Periphery:Hub*. The *Comm Fish:Noncom Fish* does not qualify as a contrast between heterogeneous and homogeneous. Even though all *Comm Fish* villages are heterogeneous, some of the *Noncom Fish* villages--such as Bethel, Nome, and Barrow--are also large, complex, and heterogeneous.

[48] It is likely that commercial setnet fishermen kill seals and sea lions found eating fish trapped in the nets. It is not known how many seals may be killed annually by non-Native and Native fishermen in these situations.

Sea mammal hunting also is a good indicator that subsistence foods comprise more than 50 percent of all foods consumed in the annual diet and that they are therefore regularly eaten at home. They are also frequently eaten at the homes of relatives and friends within the village. Additionally, hunting sea mammals is a powerful indicator that some of the subsistence resources eaten recently by the respondent have been contributed by persons within the respondent's household and some by persons in other households (sharing).

Natives who are actively engaged in sea mammal hunting also are apt to speak their Native language at home most of the time, to visit friends frequently during the week, to vote in city council and village corporation elections, and to feel that their social ties with persons in other communities are satisfactory.

Hunting a wide variety of sea mammals and land mammals on a frequent basis, fishing regularly for several species of fish, and relocating to camps away from the village on a regular basis are not necessary to predict with considerable accuracy that persons gain a large percentage of their diets from naturally occurring resources, frequently dine and snack with relatives in their relatives' homes, visit friends and relatives frequently, speak Native languages at home most of the time, attend public meetings often, and exercise the political franchise during city and village corporation elections. If you know a person is a Native, unemployed, unemployable, or retired and earning less than $17,000 per year (household income in 1989-1990 dollars), you will be correct more than 75 percent of the time--whether or not the person participates in subsistence-extraction activities--predicting that the person practices all of the above.

There are definite differences between high- and low-income earners among Natives. If the Native is a high earner, the household is likely to be nuclear and larger than four persons. Households of low earners are likely to be any of several kinds of nonnuclear households (e.g., single-parent, composite, stem). The low earners are more apt to be receivers of resources (food, meals) than extractors and donors, particularly if the respondent is elderly or if it is a female-headed household. Respondents in high-earner households, unless they are very elderly, are much more apt to engage in several subsistence activities and much more apt to be donors of resources than are low earners. Thus, income and age influence Native participation in subsistence-extraction activities, but consumption and sharing of naturally occurring resources occur among almost all Natives

There are differences between Natives in large, heterogeneous villages and those in small, homogeneous ones. Age, sex, income, and length of residence influence Native participation in various traditional customs in the large, heterogeneous villages, as is amply described above. In general, Natives in the largest villages are better educated, employed for more months of the year, and earn greater incomes than their counterparts in the small villages. They are less apt to have had subsistence food as parts of their meals the preceding 2 days, less apt to gain 75 percent of their sustenance from naturally occurring resources, less apt to dine and snack regularly with relatives, less apt to have received subsistence food from persons in households other than their own, and less apt to speak their Native language at home most of the time than is the case for their congeners in the small, homogeneous villages. Nevertheless, the best prediction for all of the above is positive, i.e., that each of these practices is engaged in by Natives residing in *Mixed* (and *Hub* and *Comm Fish*) villages. Furthermore, Natives in large villages are as likely to have attended public meetings, voted in village corporation and city elections, and visited with friends and relatives in the past week as are Natives in small villages. The differences between Natives and non-Natives in the large villages are much greater than the differences between Natives in *Mixed* and *Native* villages, or between Natives in *Comm Fish* and *Noncom Fish* villages. Finally, as income increases, Natives in complex villages increase their participation in subsistence-extraction activities and the consumption and sharing activities that accompany them.

IX.B. Change as Inferred from Pretest-Posttest Comparisons and Comparisons of Waves of the Panel

The posttest demonstrates a definite economic downturn from the pretest that is confirmed by the first and third waves of the panel. In the total samples, as well as in the *Mixed* and *Native* contrasts, there is an increase in the percentage of unemployed, unemployable, and retired persons in the posttest and third-wave responses, even though the panel has undoubtedly selected for respondents with stable employment over the past 4 years. There is a drop in private-sector employment and a decrease in long-term residence in both sets of comparisons, suggesting economically induced migration.

It is suggested that during a short period--2 to 3 years in this instance--public-sector employment is more stable than private-sector employment. In village Alaska following the first research wave, the public sector provided a greater proportion of employment and accounted for higher average incomes than the private sector.

The evidence is not solid, but it appears that declining income influenced single persons (living alone), conjugal pairs, and nuclear families among non-Natives and Natives to relocate following the pretest, while also causing formation of several nonnuclear households among Natives.

A cluster of strongly related traits including high income, satisfaction with income, the attitude that game is more plentiful now than 5 years earlier, voting in city council elections, and frequent attendance at public meetings occur in *Mixed* villages in the posttest but not in the pretest. This change appears to reflect the shift to dominance of high earners in the public sector over high earners in the private sector in the posttest sample. We surmise that more public- than private-sector earners participate in village affairs and also reside in villages year-round.

In *Mixed* villages as well, Native households with high incomes increased their extraction rates (activities and days given to them), and elders benefitted from the sharing of resources most likely harvested by these high earners. These probably are indicators of the activation of Native ethics in response to economic exigencies. Earning more to harvest more so as to give it away is not a Western, Protestant ethic practice. The increase in participation in extraction activities and income was sufficient to separate the several traditional subsistence variables from the variables comprising intense extraction in configurations for the third wave of the panel (Fig. 12) and for the total sample and *Mixed* and *Native* subsamples (Figs. 7-9) of the posttest.

More non-Natives participated in land mammal and fish extraction in the posttest than the pretest. This change may be a function of the loss of single persons and conjugal pairs as the private sector continued to plunge on the one hand and the persistence of families employed in the public sector on the other. The larger, higher earning non-Native households, whose respondents are employed in the public sector, and households with mixed non-Native-Native marriages, were the most active extractors of naturally occurring resources among non-Natives in the posttest.

CHAPTER 3
ANALYSIS OF THE WESTERN MODEL IN VILLAGE SOCIETY

I. INTRODUCTION

The most convenient way to launch the following analysis is to offer a rationale for the chapter title. Here we address the widely held thesis that villages (or communities, societies, or nations) can be transformed from underdeveloped to developed social and economic entities through the introduction and joint implementation of several factors in the underdeveloped society. I am not referring to a single thesis but rather to a family of theses[49] about economic development, all of which define the steps that must be taken to transform the economy and society from underdeveloped to developed, but with no two theses necessarily agreeing on all of the steps or the order in which they are taken. There is agreement on several basic factors. For brevity's sake, we will focus on the agreements--but not until we provide brief surveys of some prominent, if aging, hypotheses of the sociology of underdevelopment. We also will give some attention to theses that propose that underdevelopment was created from conditions of undevelopment. The two genres of theses about the causes and consequences of underdevelopment yield hypotheses that are tested with our social indicators systems.

II. THE ECONOMY AND SOCIOLOGY OF UNDERDEVELOPMENT

About a decade following the conclusion of World War II, economists, sociologists, social psychologists, and anthropologists became engaged with the question of social and economic underdevelopment in Asia, South Asia, Africa, Oceania, the Caribbean, and Latin America. A large portion of these vast areas of the globe were emerging from a century or so of colonial subjugation. Areas such as Latin America, which had few colonies, were characterized by foundering economies

[49] Hundreds of books and thousands of articles have been written on the political economy of economic growth from underdevelopment to development. There are, consequently, many models of economic development from underdevelopment and many variations on those models. Among the most popular have been the models that focus on the diffusion of the attributes of development from developed societies to underdeveloped ones; models that focus on the slow transition of traditional (nonmarket) economies to market economies--introducing a market economy while also maintaining a traditional, undeveloped economy (dual economies in which the two coexist until the underdeveloped-traditional economy is replaced); and models that promise transition from underdeveloped to developed economies through stages, each stage supervening on the prior stage. The Alaska Native Claims Settlement Act of 1971 is an example of policy based on the assumption of development economics. A brief introduction to some of the most prominent of the development-from-underdevelopment models will follow.

controlled by local oligarchs. The social systems in the colonies, former colonies, and oligarchies alike were disproportionately organized into the few who were rich and powerful and the many who were poor and powerless. Many of the most powerful persons who influenced political and economic decisions in these areas, which came to be known as the Third World, did not reside in the places over which they exercised power--they represented multinational trusts, holding companies, and corporations based in other (Western) nations.

Revolutionary wars, civil wars, political coups that replaced elected governments, and coups by military juntas that replaced military juntas that had gained power through coups of their own were commonplace throughout the Third World. The Third World was undemocratic and unstable. Large Western nations, from the U.S. to the U.S.S.R., and from the erstwhile great colonial powers--Great Britain to France, were concerned about the causes of the instability and the threats posed by the instability. Western governments provided military and economic aid and collected information with the goal of stabilizing Third-World nations.

It is in the context of Third-World turmoil that underdeveloped, poor nations came to be a principal concern of many scholars who sought to explain why nations were underdeveloped and to identify the factors necessary to develop them. Although many research centers for the analysis of economic development and social change were created, not many were more visible than the Research Center for Economic Development and Culture Change at the University of Chicago. The Center publishes one of the most distinguished and often-cited journals on the sociology of development, Economic Development and Culture Change; and two of its editors in the 1950's and 1960's, Manning Nash and Bert Hoselitz, are among the most distinguished of the scholars of the period.[50]

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[50] There are many notable contributors to the economic sociology of development. It will not be possible to list them all here or to show similarities and differences among them. Interested readers may wish to work their way through several issues of Economic Development and Culture Change, Bert F. Hoselitz's 1960 Sociological Factors in Economic Development (Glencoe: The Free Press), Wilbert Moore's and David Feldman's 1960 Labor Commitment and Social Change in Developing Areas (New York: Social Science Research Council), Daniel Lerner's 1958 The Passing of Traditional Society: Modernizing the Middle East (Glencoe: The Free Press), Everett Hagen's 1962 On the Theory of Social Change (Homewood: Dorsey Press), and David McClelland's 1961 The Achieving Society (Princeton: Van Nostrand). Each of these scholars and scores of their students and contemporaries have continued to contribute to the sociology of development, following the theses originally propounded by these scholars.

Manning Nash (1963) defined three modes proposed by social scientists for solving the problems of economic development.[51] Nash identifies an "index method" in which developed economies are compared with underdeveloped ones. In Hoselitz's (1960) scheme, ideal types are constructed for each economy so that the typical components of each can be contrasted. Development can then be planned by transforming the components of the underdeveloped economy to those of the developed economy. Perhaps the most famous of the index method models is Walt Whitman Rostow's The Stages of Economic Growth.[52] It is Rostow's position that the typical components of an underdeveloped traditional society are original, i.e., no stages preceded their current stage of development. In this view, all developed societies were once underdeveloped. Rostow's model proposes that traditional societies (Stage 1) are transformed by destroying traditionalism and adopting the preconditions (Stage 2) for take-off to democratic capitalism development (Stage 3). Take-off, he avers, occurs through increasing rates of investment and growth.

Nash (1963) defines a second mode as "acculturation." Anthropologists have concerned themselves with culture change for a century and with acculturation as a means by which change occurs for about half a century. Acculturation refers to several types of change, including psychological, technological, religious, and so forth. In some applications, acculturation is explained as the consequence of two cultures meeting on some common ground in which there is an exchange of features between the two, and in which the two come to be more similar. In practice, however, most acculturation studies compare two societies in contact, one dominant and one subordinate, such as American Indians subjugated on reservations by the white-controlled Federal agencies that attend them and the white communities that surround them.

Change (acculturation) is seen to spread from the dominant to the subordinate society. The changes can be (a) religious, forsaking shamans or rainmaking

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[51] Andre Gunder Frank's 1967 ("Sociology of Development and Underdevelopment of Sociology," Catalyst Summer No. 3: 20-73) provides an interesting and spirited critique of the modes identified by Manning.

[52] Walt Whitman Rostow's 1962 The Stages of Economic Growth, A Non-Communist Manifesto (Cambridge: Cambridge University Press).

ceremonies in favor of Christianity; (b) economic, shedding extractive or horticultural economies for market economies; (c) social, preferring nuclear family households over stem (3-generation) or extended (3 or more generations with 2 or more siblings and their spouses in the parental generation) family households; (d) political, replacing nominal or hereditary authority with rational-legal political and judicial systems; or (e) psychological, changes in affective orientations so that personal achievement and the achievement of one's immediate lineal kinspersons through delayed gratification and future orientations replace stasis orientations and the affective orientation toward wider networks of kinspersons and friends with whom resources are shared. Or, the changes can represent some combination of elements from among the several listed here.

Nash's (1963) "acculturation" assumes diffusion. In diffusion, culture elements are either inherited from a mother culture by daughter cultures, or they are borrowed. For Nash, diffusion of capital, technology, knowledge about the uses of technology, and knowledge about the way in which the market operates diffuse from the centers of the world's developed countries to the Third World. The acculturation-diffusion model explains the diffusion of culture elements from developed countries to underdeveloped countries, thereby substituting political units for cultural units. In order for the underdeveloped country to adopt and take full benefit of the elements that are available from the developed countries, the underdeveloped country must accommodate itself to the culture of the developed countries. The argument is that the availability of technology, knowledge to operate the technology, capital, knowledge of capital investment, political sovereignty, democratic capitalism, and the like are not sufficient to cause development in an underdeveloped country.

As for the index method, there are many variants of the acculturation-diffusion mode. All members of the acculturation-diffusion mode share a common assumption, namely that underdeveloped societies in contact with developed ones and in the throes of change are dual economies. The assumption is that two economies are operating side-by-side in the same underdeveloped society. The dual nature of the economies is not a function of technology, knowledge, and capital alone but also is shaped by cultural factors (social, political, religious, psychological). The culture of the underdeveloped country has inhibited full diffusion because it is not fully acculturated. Most proponents of acculturation-diffusion theories argue that ideologies and institutions of political and social liberalism must be diffused in conjunction with technology and capital if development is to occur.[53] It is incumbent on practitioners of this model to account for the cultural impediments to change on the part of the underdeveloped society, and to facilitate the diffusion of beneficial factors for change through the acculturation process.[54]

Nash (1963) refers to the third mode--a "psychological" one--as generating hypotheses much smaller in scale than those that address whole countries and continents (the index and acculturation approaches). He also saw them as the most current (in the mid-1960's), if not the most promising, because they predicted the future rather than retrodicted the past; and they provided a full accounting of the political, social, and cultural context of development. Among the many contributors to this mode, which has become one of two dominant theories of underdevelopment and development, is David McClelland. His 1961 essay, "A

[53] Dual economies and mixed economies have gained recent popularity among some students of the contemporary economies of Native peoples in arctic and subarctic regions (for example, see Robert J. Wolfe's 1984 essay "Commercial Fishing in the Hunting-Gathering Economy of a Yukon River Yup'ik Society" In Ernest S. Burch's [guest editor] Inuit Studies, Supplementary Issue 8:159-184, and the collection of essays in Steve J. Langdon's [editor] 1986 Contemporary Alaskan Native Economies, Lantham, Maryland: University Press of America, Inc.). The major works in the delineation of the theories of dual economies are J. H. Boeke's 1953 Economics and Economic Policies of Dual Societies (New York: Institute of Pacific Relations) and Benjamin Higgins' 1956 "The 'Dualistic Theory' of Underdeveloped Areas," Economic Development and Culture Change 4(2).

[54] In fact, acculturation is a nebulous concept that is almost always used tautologically. See, for example, Voget (1968), in which he criticizes David Aberle's (1966) appositive treatment of the Peyote religion among the Navajo. Voget (1968) does not define acculturation, but he argues that Aberle's analysis of the religion and the Navajo participation in it fail to analyze the "image or model" by which individuals perceive and contrast themselves in relation to others. Voget does not explain how a social scientist defines, let along measures, the image and model to which he refers. See the exchange between Jorgensen (1969) and Voget (1969) over the protean concept, acculturation, and also see Aberle's (1982) retrospective comment. At the time Manning Nash and the contributors to Economic Development and Culture Change were expounding acculturation models, acculturation was sometimes used to account for a process, sometimes used to account for a consequence of relations between "cultures in contact," and sometimes used as a methodology. A group of eminent scholars headed by Homer Barnett grappled with the concept in the early 1950's to no avail (see Barnett et al. 1954). The problem has always been one of defining the aspects of the two (or more) societies that come into contact prior to contact, then measuring the changes that occur to each (or all), then accounting for why some aspects change and why others do not. It is frequently the case that the factors that are thought to inhibit or to facilitate change are ideational, i.e., persons who share a culture share a set of conceptions, knowledge, prescriptions, and proscriptions that cause them to accept some changes accommodate some changes in their own particular way, and reject other changes. The sets of ideational features are not defined or measured. A student of mine once referred to acculturation as occurring by osmosis through the semipermeable membranes to the cultures in contact. He might have added that the process was directed by the invisible hand of the market.

Psychological Approach to Economic Development,"[55] has currency in the 1990's, in part because it is compatible with the free-market theories of the 1980's and 1990's that have dominated political economic discussions and policies in the United States, Great Britain, and Canada, and have dominated discussions and the planning of free-trade policies in the Western Hemisphere. It extolls initiative, knowledge, ambition, and hard work; and it blames victims, including the cultural ideas and practices that they share.

McClelland's psychological approach specifies several factors as social requisites for economic development to occur, including but not restricted to entrepreneurship, high need-achievement motivation, universalist orientation, access to capital, and future orientation. Unlike Max Weber, whose classic formulation of the "spirit of capitalism" is ultimately pinned to social structure (the vehicle of inner worldly activism coupled with fears of predestination triggered the "spirit"), McClelland pinned his theory of economic development to individual motivation. Yet economic development occurs to societies, not to individuals. So McClelland's (1961:205) thesis is that "a society with a generally high level of *n* Achievement [need achievement] will produce more energetic entrepreneurs who, in turn, produce more rapid economic development." He rejected the notion that the environment of social and economic institutions determined persons' behavior, i.e., that persons adapted to social and economic institutions. McClelland argued that values, motives, or psychological forces determine the rate of social and economic development.

The psychological mode, according to Nash (1963:4), allows scholars to assess the variety of traditional societies and seek out sources of resistance among them. Inasmuch as the sources of resistance are psychological, perhaps best understood as psychological behavior peculiar to the traditional cultures being assessed, researchers can determine why a society has not modernized and how that modernization can be accomplished.

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[55] David McClelland's 1961 "A Psychological Approach to Economic Development," Economic Development and Culture Change 12(3).

Before focusing on the agreements among the various modes through which economic development of traditional societies is explained, I wish to put a second question to the side. It is often assumed, as in the index and acculturation-diffusion modes, that traditional, Native economies were underdeveloped at earliest European contact and either stayed that way or did not progress very far up the development ladder. This assumption is vague at best and also patently false. The economies of Alaskan Eskimos, Aleuts, Athapaskans, and Eyaks were not underdeveloped in 1867 when Seward purchased Alaska. The Natives had been in contact with traders, merchants, and whalers with whom they had traded and for whom they had trapped, supplied food, and provided various labor services (often as chattel), and to whom they had relinquished territory. Czarist Russia had expropriated Native territory, as did the U.S. Government. Economies that had been undeveloped in the mid-17th century became integrated into the peripheries of a hierarchical worldwide economic system. Their bases were subsistence; but they began selling, among other things, some goods for gain to Russian merchants. Although slow to develop, some Natives were relocated by the Russians and treated as chattel; others sold their labor initially to whalers and whaling operations and later to run traplines for fur traders.

By the late 19th century the Native economies of Alaska had become underdeveloped from their prior undeveloped states. Underdevelopment is a consequence of expropriation, exploitation, domination, and dependency--a process that began with the Russians and accelerated under U.S. domination (for analyses, see Oswalt 1989; Jorgensen 1990). Here we understand underdevelopment to be a direct consequence of the political economy of development, not the pristine state of Native economies in Alaska.

II.A. The Western Model of Economic Development

Let us focus on the similarities among political economic theories of development with respect to the conditions necessary for development to occur. The political economics of development from underdevelopment assume that, all things being equal, underdeveloped societies must be democratic, i.e., members of those societies must have the political franchise and must be able to choose among candidates and programs (initiatives, acts, policies). Persons in underdeveloped societies must be given access to education and must be educated. Underdeveloped societies must be provided with some infrastructure (private buildings for productive capacity, public buildings to serve the public good, transportation to facilitate business and the public good, water works, waste-disposal systems). Underdeveloped societies must be provided services to facilitate health care. And persons in underdeveloped societies must be provided skills and resources to enter a market economy and accumulate capital that, when invested, serves as a multiplier for profits and for growth, ever renewed. The transformation is to a democratic, capitalist society.

The model is accompanied by several assumptions about the behavior of persons and the constitutions and practices of family-households. It is convenient to refer to these assumptions, which form a rather well-defined set, as the Protestant Ethic, or the Work Ethic.[56] The Protestant Ethic, regardless of whether a person is Protestant, or Christian, or atheist, implies that persons develop knowledge and skills; that they work hard to earn monetary rewards from those skills; that they save and economize scarce resources; that they delay gratification; that they withhold resources from frivolous requests (and from impecunious friends and relatives) so as to maximize the benefits that will accrue from those resources; and that they invest some of the benefits that accrue from those resources into the educations of their children, so that those children also will acquire skills and knowledge, work hard, and invest the proceeds from that work.

The Protestant Ethic is a model for single persons living alone to acquire skills, save, invest wisely, and delay gratification before perhaps marrying and forming a conjugal pair or a nuclear family. If persons live alone, as conjugal pairs, or as

[56] The genesis of the Protestant Ethic, according to Max Weber in The Protestant Ethic and the Spirit of Capitalism, was from fears of predestination, as articulated by John Calvin and the Pietists. An inner-worldly activism of Protestants caused them to develop the gifts that God had granted them as they engaged in a hopeless quest to determine whether they were called, and if called, whether they were chosen. Whereas any number of gifts could be developed--from singing to preaching, the accumulation of wealth (wealth that was soon invested and reinvested), for its own sake, was the activity from which capitalism grew. The notions of predestination and inner-worldly activism are not relevant to our use of the Protestant Ethic, but the economic and ethical practices and social forms that accompanied and were subsequently nourished by capitalism in an obvious feedback relation are.

nuclear families, obligations are to persons within the household and not beyond. Skills are to be developed for the person and not necessarily for the benefit of others. Good education, good health, good income, and exercise of the political franchise should complement the single-person, conjugal-pair, and nuclear-household arrangements.

Earlier I (Jorgensen 1990:215) compared the average household sizes among three coastal Alaskan villages with the average household sizes for the entire U.S. from 1955 to 1982. The averages for the three villages decreased from about 5.5 from the period 1955 through 1972, to about 4.1 in 1982 (10 years after passage of ANCSA). The average U.S. household size decreased from 3.3 to 3.1 between 1955 and 1972 and decreased again to 2.7 in 1982. The average U.S. household was about 60 percent as large as the households in the three villages during the 1950's and 1960's, and about 66 percent as large in the early 1980's. Native-household sizes remained the same for two decades, while the average U.S. household sizes declined. But with the flow of funds from ANCSA, Alaskan Native households also decreased in size. It is unlikely that the correlation is spurious.

The question is whether Native households will continue to decrease in size at a higher rate than U.S. households in general, which the Western model predicts, or whether--if the future is like the past--the wrong factors have been fitted into the Western model as it applies to Natives. Is the decrease in the size of Native households a function of the increase in entrepreneurship, savings, delay of gratification, and investment in one's nuclear family, or is it a function of the distribution of public-sector funds and of public-sector growth that trickles down to Natives? If the future is like the past, it may be that Native households will increase in size as public-fund transfers are curtailed. It is the cultural practices, particularly the obligations and responsibilities shared by kinspersons and friends--regardless of the roofs under which they reside--that seem to account for fluctuations in Native-family-household organization.

The Protestant Ethic does not complement the traditional Native practices of sharing goods, labor, and cash (see Chapters 2 and 4). To save, delay gratification, and invest solely in one's nuclear family to the exclusion of others would cut against the grain of Native life. Perhaps these empirical arts are the images and models of acculturation referred to by some development economists. Visiting, sharing resources, sharing labor, and sharing meals occurs so frequently among persons residing in different houses, particularly among kinspersons but not restricted to kinspersons (elders, in particular, benefit from gifts from nonrelatives) that it is simply the expected behavior in which Native people engage. Sharing need not be prompted by one person's need and another person's ability to help. According to our observations of daily practices within villages, persons visit and share with people in need and people not in need. It is difficult, if not unimaginable, for a Native person or a Native family to withhold resources from persons in need. The accumulation of capital and the maintenance of traditional ethical practices are not easily accomplished.

Persons, couples, and families seek privacy and prefer living in separate houses when they can maintain them. But Native houses are seldom households. The domestic functions normally associated with households--providing clothing, shelter, food, some aspects of child rearing and many aspects of enculturation, from learning how to extract resources to learning how to share them--are very frequently accomplished by relatives living in two or more houses. Relations among Natives do not appear to be the same as relations among non-Natives, and household structures and ethical practices do not seem to be the same either.

If the Western model of economic development is to work in Alaskan villages, Native employment, health, and incomes should improve as they acquire educations; they should reside as single persons, conjugal pairs, or nuclear families; and their sharing can be convivial but not self-defeating, i.e., there must be delaying of gratification and withholding of resources (economizing) to maximize personal and family benefits.

Since 1887, the Federal Government has engaged in several major social-engineering projects for America's Indians, Eskimos, and Aleuts, most of them occasioned by the expropriation of Native land for commercial purposes (railroads, mining, oil) but rationalized by plans to transform Natives from underdeveloped, tribal people to independent families in developed economies.[57] The largest such project since mid-century is the Alaska Native Claims Settlement Act (ANCSA) of 1971. As with the General Allotment Act of 1887, which preceded ANCSA by 84 years (see McNickle 1949), interested persons, corporations, and companies lobbied their representatives in State and Federal Governments for access to resources over which Natives held claims by occupancy and use (for about 5,000 years in this case). Oil impelled the passage of ANCSA (see Berry 1975; Jorgensen 1990). And again as with the General Allotment Act, ANCSA was passed and enacted, ostensibly for Alaskan Natives, by the U.S. Congress. It was not a treaty agreed upon between two sovereigns, such as the sovereign village of Shishmaref and the sovereign U.S. (nor between the sovereign U.S. and the "domestic, dependent nation" of Shishmaref, to borrow from the words of Justice John Marshall in 1829).

Under ANCSA, Congress determined the amount of land to be granted to Natives, mandated that the land granted to Natives would be assets of their village and regional corporations, and provided funds that also were to be assets of the shareholder corporations. In one fell swoop Native villagers, as shareholders, became co-owners of for-profit corporations that they would direct in a democratic fashion by exercising their franchise and electing boards with chairs. They had then received money, land, shareholder corporations, and the franchise (re the corporations) to oversee their corporate concerns. Few Alaskan Natives possessed the skills or business acumen normally required to manage the sustained growth of village and regional for-profit corporations.

By the late 1970's the state had constructed K-10 or K-12 public schools in most villages. Community colleges were established in several hub communities.

[57] This topic also is too large to address here, but the highlights of the most massive social-engineering projects are (1) the General Allotment Act of 1887 (also known as the Dawes Severalty Act), in which Indian reservations were allotted in severalty, unallotted land was placed in the public domain, and allottees were encouraged to convert their allotments to fee simple and relocate to cities, thereby gaining citizenship; (2) the Indian Reorganization Act of 1934 (also known as the Wheeler-Howard Act), in which tribes were incorporated (but not as shareholders), constitutions were ratified (sometimes charters also were ratified), and tribal officials were elected to manage tribal assets and other affairs of the tribe, although any or all of their decisions could be vetoed by the Secretary of Interior; and, in the instant case (3) the Alaska Native Claims Settlement Act of 1971, in which for-profit regional and village shareholder corporations were mandated, claims to resources were extinguished and village economies were expected to successfully integrate into the world market.

Training programs of many kinds were sponsored by regional nonprofit corporations. Bureau of Indian Affairs on-the-job training programs were subscribed by Natives and attended at various locales in Alaska and the lower 48 states. And Natives comprised relatively large proportions of students at the various campuses of the University of Alaska.

Through a variety of State and Federal programs, health services of several kinds were provided to villagers within their villages. Clinics were built and staffed in some villages, with new hospitals in a few of the largest hubs. Water delivery and waste-removal facilities were developed or improved, public and private buildings constructed, electric lighting installed, and community wash and shower houses built. Many docks were improved. Airports, runways, and air service to villages, particularly the large hubs, were improved. Satellite communications for telephone, television, and radio were established. Within a decade following passage of ANCSA, many of the factors considered necessary by development economists to promote social and economic growth from underdevelopment to development were in place.

Let us turn our attention to the respondents' educations, health, incomes, employment, household organizations, political behavior, and visiting practices. Do the correlations among these factors fit the Western model for persons and households within developing political economies? If not, what accounts for the differences and what are the consequences for village and regional economies?

By 1990, when we completed the final research wave among villages north of the Gulf of Alaska, scores of village for-profit corporations had been dissolved; 8 of 13 regional corporations were insolvent and struggling (one was reorganizing from bankruptcy); and the 13th showed a cumulative negative return on the owners' equity (see Robinson, Pretes, and Wuttunee 1988; Jorgensen 1990).

The foundering of Native corporations was exacerbated by the plunge in oil prices in the mid-1980's and the diminution of State transfers triggered by the price drop; but the political economic forces that caused the foundering are greater than the plunge in oil prices and the diminution of State and borough revenues derived from oil. Federal transfers of various kinds, but particularly welfare, also decreased during the Reagan and Bush administrations, placing added demands on Native corporation resources.

It is more likely that most Native corporations are struggling because they have been undercapitalized, *and* because their populations have been undertrained and undereducated (and youthful), *and* because the villages are located long distances from markets, *and* because they are dependent on naturally occurring resources (such as fish, walrus ivory, peltries) for access to markets, *and* because they have inadequately developed infrastructures, *and* because they exercise meager political influence in the State and in the nation. Is it also likely that Native corporations have struggled because Natives have not adopted the Protestant Ethic; not forsaken their ties to kinspersons, elders, and persons in need; not become educated; not worked hard; not saved; and not delayed gratification?

The questions in the AOSIS questionnaire do not facilitate full assessment of whether the Western model accounts for the transformation of Alaskan Natives from persons and households whose educations, skills, incomes, health, and political behavior are characteristic of persons and households in underdeveloped societies, or whether they characterize the attributes of developed societies. The questionnaire does provide several questions that indicate whether and in what ways Natives, and non-Natives, fit the Western model. The model predicts that successful households will be small and independent; and one or both partners (husband and wife) will have good health, be highly educated, be fully employed or self-employed, earn high incomes, exercise the political franchise, and make infrequent visits outside the village (the expense is high relative to the benefits). Although the model, as generally employed, does not predict unsuccessful adaptations, it follows that nonnuclear arrangements other than conjugal pairs or single persons living alone (single parents with children, stem households, remnant households, composite households, sibling households, and the like) indicate lack of success, as do large households, low educational attainment, scanty employment, unemployment, modest and low incomes--whether earned or unearned, poor health, failure to exercise political franchise, and traveling outside the village when most of these other attributes characterize the traveler.

II.B. An Alternative Model of Dependency: From Undevelopment to Underdevelopment

An alternative hypothesis about Native organization (such as interdependent households), Native activities (such as harvesting naturally occurring resources, visiting, and exercising the political franchise), and Native ethics (such as the sharing of labor, resources, and cash) draws old and young, employed and unemployed, healthy and impaired into Native networks that are communitarian, not individualistic, in nature. Education, employment, high incomes, good health, and political involvement need not generate Protestant-Ethic behavior, particularly when the alternative is communitarian behavior.

The three modes of economic development classified by Nash have not gone unchallenged in the past 40 years. Notable is the work of Paul Baran (1957), Gunnar Myrdal (1957), and Eric R. Wolf (1982) on the underdeveloped world; Andre Gunder Frank (1967a) on Latin America; Immanuel Wallerstein (1974) on Western Europe; and Sidney Mintz (1985) on the Caribbean. David Aberle (1966, 1983) and Philip Reno (1982) have focused attention on the Navajo Indians of the American Southwest, and I have focused attention on American Indians of the Rocky Mountains and Great Basin (Jorgensen 1972, 1978a,b, 1984, 1986a,b) and Alaskan Eskimos (Jorgensen 1990).

The family of alternative models to which I refer are often called "dependency" theories. The proponents of these hypotheses contend that the relationship between currently underdeveloped countries, tribes, or villages and developed countries within the same historical process affected not only the export enclave in the underdeveloped countries,[58] as is accepted by all of the theories in Nash's taxonomy, including the dual- or mixed-economy mode. The historical relationship between

[58] Export enclaves appear in the midst of underdeveloped countries, en bloc, to extract or manufacture commodities for export. Oil exploration teams, well drilling teams, teams to construct and maintain oil rigs, teams to build and maintain pipelines, and teams to house, feed, and otherwise service the oil producers form the export enclaves. Goods and services flow to the enclave from the developed countries so as to maintain the enclaves. Commodities destined for the market flow from the enclaves to the developed countries.

the underdeveloped and the developed countries within the same historical process changed the social fabric, i.e., the economic, social, political, and religious organizations and practices of the peoples whose countries, tribes, villages, or reservations are now underdeveloped, just as in the developed countries (Frank 1967b:39).

Dependency theories focus on the histories of underdeveloped countries. For our purposes, a theory of dependency focuses on the history of Alaska and the way in which aboriginal trade networks were intercepted by precapitalist Russian traders and became drawn into the periphery of a world mercantilist system.[59] By the late 19th century some Alaskan Natives had been engaged in commercial whaling operations, some were trappers and traders in a worldwide fur market, and some provisioned and provided services to non-Natives who ran commercial operations near or on Alaska's shores. Following the Seward purchase of Alaska, Native land and resources were expropriated by the U.S. and Alaskan Natives came to be increasingly dominated by the Federal Government.

Natives were not underdeveloped at first European contact. Alaska's Natives had an extractive mode of production with flourishing trade contacts throughout the interior and coastal regions and west across the Bering Strait to Siberia. They had a proficient technology and great knowledge about its uses for the procurement of wild resources and for the production of by-products from those resources. Their human productive capacities were used to sustain life--labor was not a commodity, nor were the wild resources they extracted or the by-products from those resources commodities, even though some by-products made their way through relay networks for goods produced far away. Extraction was organized by family, sex, and age. Distribution required sharing within and among households. Consumption mirrored distribution. Subsistence economics, economic organization, social organization, and polity can be separated for analytical purposes; but they were embedded in a single nexus in aboriginal Alaska.

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[59] A brief treatment of the political economic dependency of Alaskan Natives in and around what are now the villages of Unalakleet (Norton Sound), Wainwright (Chukchi Sea), and Gambell (St. Lawrence Island) appears in Jorgensen (1990:133-202).

The transformations from the extractive mode of production were not linear and not without reversals. As whaling and trapping-trading operations waxed and waned, Natives were incorporated into the peripheries of capitalist markets. Federal schools built in many villages provided some menial public-sector employment starting before the turn of the century; and here and there Natives gained some income from reindeer herds (most were purchased by the Federal Government but were soon owned by Christian missionaries), small-scale commercial fishing operations, and export enclaves that formed during gold booms. Natives did not own or control any of the commercial operations that were created in their regions, nor did they hold the political franchise to allow them to vote on Federal policies affecting them, or have access to capital to create commercial operations of their own by which they could enter the market. And they were located long distances from market, bereft of transportation or communication to market and political centers.

During World War II and thereafter, defense policies and Federal actions taken to develop the infrastructure of Alaska to accommodate energy-resource extraction drew Native villagers most deeply into public-sector dependencies. Men were conscripted, or volunteered, to serve in the territorial guards. Small bases were built during World War II, and soon after the war DEW-Line bases and other communication bases were built throughout Alaska. Most jobs went to non-Natives, and the few that were available for Natives were completely dependent on public-sector funds.

In the past 25 years in particular, some Natives have become engaged in the private sector as petty entrepreneurs or as employees. The portion of Natives engaged in the private sector is tiny in comparison to the extent of the role of the public sector in Native life. Aboriginal lands have been expropriated for military bases, then returned in recognition that any claims the Natives might make to still greater amounts of lands, water, or other resources were extinguished by ANCSA. Their rights to harvest naturally occurring resources on which their subsistence lives are based, as they have been for millennia, also were extinguished. Control over and regulation of those resources have been appropriated by Federal and State Governments. Welfare payments and Government transfers of funds and services are of crucial importance in Alaska's villages as supplements to resources procured from the environment and to job and sales income.

I recently wrote:

> The Natives of the Alaskan arctic and subarctic have few avenues to the market. The naturally occurring, renewable resources and the by-products from them that are available to Eskimos to sell on the market are regulated by state and federal governments. The naturally occurring, nonrenewable resources in the vicinity of Eskimo villages that can be or are sold on the market--specifically, oil, gas, and coal--are owned either by the state or federal governments or by regional corporations. In the former case, natives are restricted in their access to the resources that provide the bases for their existence. In the latter, multinational corporations are encouraged to extract the resources that benefit the growth of those corporations and, presumably, the growth of the national, state, and regional economies but not the economic and social well-being of the natives. This presumption is part of the "trickle-down" theory, which holds that capital accumulation by a corporation, will also entail the demands for more services and goods for that corporation, which, in turn, will create openings for persons and companies to supply those goods, and so forth (Jorgensen 1990).

Some Natives invest their modest capital and assume risks to hunt walrus, extract ivory tusks, and make ivory carvings, run traplines, prepare peltries, fish commercially, operate small repair shops, and the like. There are tiny openings for entrepreneurs.

Our Solomon Four Group design with embedded panels allows us to detect changes among the factors used here to indicate personal and household features. Responses to the KIP provide a second data set and a second methodology by which we can evaluate the Western model while analyzing Native and non-Native educations, employment, health, and political behavior in complex and simple villages.

III. RELATIONS AMONG EDUCATION, HEALTH, EMPLOYMENT, INCOME, HOUSEHOLD ORGANIZATION, AND POLITICAL ACTIVITY: THE PRETEST

III.A. The Total Pretest Sample

The analysis of traditional activities in the preceding chapter firmly demonstrated structural differences between the more complexly organized villages in which more than 25 percent of the residents are non-Natives and in which private sectors of local economies are better developed, and the simpler villages with less infrastructure, less developed private sectors, and larger proportions of Native respondents (more than 75%). In testing the multivariate hypotheses pertaining to education, health, employment, income, household organization, and political activity, we include measures of *Mixed:Native* and *Commercial Fish:Noncommercial Fish* villages. We also include some personal (sex, age, race/ethnicity, race/ethnicity of spouse) and demographic (place of birth, most recent residence, length of residence in village) characteristics of respondents that will account for a considerable amount of variation in several key variables under consideration in the Western model (i.e., education, health, employment, income, household organization, political activity).[60] To avoid unnecessary redundancy, see Tables 1 and 14 (Chapter 2) for univariate distributions and theoretical contrasts of many of the variables employed here.[61]

In this part of the analysis we introduce several variables not analyzed in the preceding chapter and not included in either Tables 1 or 14. Table 19 lists 12

[60] The AOSIS variables analyzed here are the respondents' SEX, AGE, PPEMP (private or public employment), HHTYPE (type of household), HHSIZE (size of household), COMFISH (residence in a commercial fishing village or not in a commercial fishing village), RACEVIL (residence in a village with more than 75% Natives or less than 75% Natives), TOTACT (participation in subsistence activities--hunting land mammals, hunting sea mammals, camping, fishing), B1 (personal description of health), B3 (report about longstanding illness or injury), B8 (ability to bite and chew on hard foods), B9 (personal limitations because of illness or injury), C1 (years and levels of education), C6N (months of employment in or near the village), C12 (employment outside the village), C12M (months of employment outside the village), D2 (total annual income), D3 (self-employment as a commercial fisherman or in some other business), D4 (smallest income needs to make ends meet for a month), D6 (cognitive assessment of whether his/her household is financially better off, the same as, or worse off than it was 5 years earlier), D8 (number of rooms in the house), D19 (voting activity in the most recent city council election), D24 (community of birth), D25 (length of residence in the village in which interviewed), D26 (community of most recent residence prior to the respondent's current residence), D27 (number of visits in the past year to friends and relatives outside the community in which the respondent currently resides), D28 (race--Native or non-Native), D29 (current marital status), D29A (spouse's race--Native or non-Native), E50 (cognitive attitude about whether the search for oil will create more jobs for residents of the region), E52 (affective attitude about whether the search for offshore oil is a good or bad idea).

[61] Tables 2-1 and 3-2 tally the variables RSEX, RAGE, PPEMP, RHHTYPE, RHHSIZE, C1, C6N, D2, D19, D25 from among the variables listed in the preceding note.

Table 19

CONTRASTS BETWEEN PRETEST AND POSTTEST SAMPLES, AND BETWEEN *MIXED:NATIVE* CONTRASTS WITHIN THOSE SAMPLES, 12 AOSIS VARIABLES MEASURING RESPONDENT HEALTH, RESIDENCE HISTORY, VISITING PRACTICES, ATTITUDES ABOUT INCOME AND OIL, 1987-1988 AND 1989-1990[a]

	PRE 1987-1988 (*N* = 548)	PRE MIXED (*N* = 264)	PRE Native (*N* = 284)	POST 1989-1990 (*N* = 308)	POST MIXED (*N* = 170)	POST Native (*N* = 138)
R'S HEALTH						
1 = Very Poor	0%	0%	0%	1.6%	1.8%	1.4%
5 = Very Good	29.0%	48.0%	21.0%	28.9%	34.7%	21.7%
Md [1 thru 5]	4	4*	4	4	4	4
SUFFER FROM INJURY/ILLNESS						
1 = A Lot	6.4%	5.6%	7.2%	9.3%	9.6%	9.0%
3 = Not at All	58.3%	65.1%	52.2%	68.8%	68.9%	68.7%
Md [1 thru 3]	3*	3*	3	3	3	3
BITE AND CHEW HARD FOODS						
1 = Not at All	3.0%	2.3%	3.6%	3.9%	2.4%	5.8%
3 = Very Easily	74.0%	82.0%	66.1%	75.5%	81.5%	68.1%
Md [1 thru 3]	3	3*	3	3	3	3
ILLNESS/INJURY PREVENT ACTIVITIES						
No	80.5%	83.6%	77.5%	78.8%	79.9%	77.4%
Yes	19.5%	16.4%+	22.5%	21.2%	20.1	22.6%
MINIMAL INCOME REQUIRED/MONTH						
1 = <$500	17.0%	8.5%	24.8%	14.7%	13.7%	15.9%
6 = >$2500	11.0%	16.5%*	4.5%	13.7%	20.2%*	5.3%
Md [<500 thru >2500]	$1,085	$1,415	$850	$1,220	$1,580	$960
HOUSE FINANCES NOW/5 YRS AGO						
1 = Worse Off	26.0%	22.0%	30.0%	23.0%	26.0%	20.0%
3 = Better Off	48.0%	57.0%	40.0%	53.0%	51.0%	55.0%
Md [1 thru 3]	2	3*	2	3	3	3
NUMBER OF ROOMS IN HOUSE						
1 = Less than 3	12.0%	11.0%	13.0%	13.0%	11.0%	15.0%
4 = 7 or More	15.0%	23.0%	7.0%	25.0%	30.0%	20.0%
Md	4.3*	4.7*	4.0*	4.85	5.45*	4.10

Table 19 (continued)

	PRE 1987-1988 ($N = 548$)	PRE MIXED ($N = 264$)	PRE Native ($N = 284$)	POST 1989-1990 ($N = 308$)	POST MIXED ($N = 170$)	POST Native ($N = 138$)
R'S BIRTHPLACE						
1 = Beyond Alaska	25.3%	44.9%	7.1%	35.7%	57.1%	9.4%
4 = Here	37.0%	25.5%	47.7%	38.3%	20.0%	60.9%
Md [1 thru 4]	3*	2*	3	2	1*	4
R'S RESIDENCE BEFORE MOVING HERE						
1 = Beyond Alaska	20.0%	34.6%	5.8%	25.8%	39.1%	9.5%
4 = Here	35.0%	21.7%	46.7%	31.0%	12.4%	54.0%
Md [1 thru 4]	3*	2*	3	2	2*	4
NUMBER OF VISITS OUTSIDE THE VILLAGE LAST YEAR						
1 = 0	18.0%	15.4%	20.5%	20.8%	20.8%	20.7%
3 = 3 or More	37.4%	34.6%	39.9%	33.0%	29.8%	37.0%
Md [1 thru 3]	2	2	2	2	2	2
WILL SEARCH FOR OIL CREATE JOBS FOR LOCAL RESIDENTS						
No	41.7%	41.3%	42.3%	45.3%	46.9%	43.4%
Yes	58.3%	58.7%	57.7%	54.7%	53.1%	56.6%
IS OIL SEARCH GOOD OR BAD IDEA				Missing	Missing	Missing
1 = Bad	15.5%	18.6%	12.5%			
3 = Good	30.6%	52.2%	31.9%			
Md [1 thru 3]	2	2	2			

'Asterisks (*) denote *Pretest/Posttest* and *Mixed/Native* contrasts significant at $P \leq .05$. *Pretest/Posttest* contrasts are designated in the first column. *Mixed/Native* contrasts for the **pretest** sample appear in the second column and for the **posttest** sample in the fifth column. Significance of differences for *Mixed/Native* contrasts of nominal dichotomous variables is based on the test for the difference between proportions; the Kolmogorov-Smirnov 2-independent-sample test is used for ordinal variables. Variables discussed in this chapter that are not listed in this table are listed in Table 1 (Chapter 2).

variables that do not appear in Chapter 2. They measure respondents' reports of their health, their cognitive attitudes about their household finances, the sizes--in number of rooms--of their homes, their places of birth and residences, the number of visits they made to friends and relatives outside the village during the past year, and their cognitive attitudes about the search for oil offshore in their area. The reader may find it useful to refer to Table 19 and Table 1 in various places in the following analysis. Table 19 lists key features of the univariate distributions for each of the 12 variables and does so for the total pretest sample (N = 548), the total posttest sample (N = 308), and the *Mixed:Native* contrast subsamples for pretest and posttest. Tests for the significance of difference of distributions between total pretest and total posttest samples, and between the *Mixed:Native* subsamples within each sample, warrant some discussion before pursuing the multivariate analysis.

Differences between the pretest and posttest samples appear to be functions of two factors, one obvious and the other less obvious.[62] The obvious factor is that the sample size in *Mixed* villages was increased from 48 percent of the total pretest sample to 56 percent of the total posttest sample. The other is that the posttest sample has been drawn from *Mixed* villages that were subject to some population instability as private-sector employment withered. Self-reported health, acceptable functioning of teeth and jaws, reports of injuries that prevented respondents from normal activities, minimal income required for a month, and the condition of household finances are similar for the two samples. In fact, for most of those measures there was improvement, although not significant, between pretest and posttest.

The median number of rooms in respondents' homes increased significantly in the posttest sample--a function of the increased number of respondents drawn from the large commercial fishing villages of Kodiak and Dillingham in the posttest. Household sizes in *Native* villages showed less dramatic change, although the percentage of houses with seven or more rooms increased. This increase is accounted for by the increased proportion of Bristol Bay and Kodiak respondents in the posttest sample. Both regions are successful commercial fishing areas. Some Natives and non-Natives occupy large houses, even in *Native* villages. There also are significant differences between pretest and posttest in the variables that measure respondents' birthplaces and most recent residences. These differences also are functions of the larger proportions of respondents in the *Mixed* villages, especially those in the commercial fishing areas (Bristol Bay, Kodiak, Aleutian-Pribilofs). The

[62] There are fewer significant differences between the *Mixed* and *Native* subsamples in the posttest than in the pretest sample. This is in part a function of sample size (the pretest sample is 56% larger than the posttest sample). It also is in part a function of the weak test of significance employed to test the differences of the ordinal variables (Kolmogorov-Smirnov 2-independent-sample test).

number of respondents born outside Alaska increased from 25 percent in the pretest to nearly 36 percent in the posttest, whereas the number of persons whose last residences before moving to the village were outside Alaska increased from 20 percent in the pretest to nearly 26 percent in the posttest. Non-Native persons migrate to Alaska for employment. The posttest demonstrates considerable inmigration to *Mixed* villages, with a suggestion of outmigration from *Native* villages (note the high proportion of respondents in the posttest *Native* subsample who were born in the village and whose most recent residence prior to their current residence was in the village).

Visiting outside the village decreased slightly but not significantly between posttest and pretest. In both samples residents of *Native* villages made more visits than residents of *Mixed* villages. This interesting measure provides a perspective on the complex issues of Native customs and the maintenance of kinship and friendship networks that we pursue below, as well as a perspective on the conflicts between Protestant-Ethic individualism and the communitarian-familial ethics that are obvious in Native practice.

Two final measures are of the type frequently used by public-opinion pollsters interested in assessing public opinion on crucial topics about which the public is often ignorant.[63] The first asks whether respondents think the search for oil offshore will create jobs for local residents. In the pretest and posttest, and among *Mixed* and *Native* subsamples, large majorities of respondents think that the search for oil

[63] The topics about which the American public is generally ignorant but about which U.S. foreign policy, for example, is critical, include the colonial history of, e.g., Viet Nam, and the genesis of the revolutionary and subsequently civil war; the history of British protectorates in the Middle East; and the creation of national boundaries and subsequent disputes--including over oil prices--that eventuated in President Bush's Desert Storm war. In these and many other situations, U.S. citizens are regularly polled at random and asked to provide their cognitive attitudes about whether they are in favor of this or that option, whether they think this person or that person best understands or can best resolve a problem, whether these people are getting too much or too little of this or that. A most interesting set of questions address economic development: if A happens, will B result? If oil exploration occurs, will jobs be created and positions filled by local residents? An interesting feature of questions such as these, particularly when they address issues of economic development and particularly if those questions are posed to residents of western North America--especially rural western North America, is that majorities of persons are almost always optimistic that development will bring prosperity and jobs, regardless of the negative consequences of boom-bust cycles through which they have lived (see Little 1978 for an appositive treatment of the phenomenon). In the past decade a spate of risk-assessment literature has demonstrated that information to the contrary does not dissuade persons from choosing alternatives that are demonstrably false. Often those who make the choice are ignorant, as in the abundant examples of the causes of foreign problems in which the U.S. has intervened (Viet Nam, Santo Domingo, Grenada, Panama, Iraq-Kuwait-Saudi Arabia); and often they choose the option that favors development in the face of information that demonstrates that in similar circumstances development has not occurred as their choice suggests.

in their area will create jobs for local residents. Oil companies have proved that this is not the case and, in representations at public hearings prior to lease sales and oil exploration, have informed locals that they will not get jobs in the highly technical oil industry, which will be serviced from distant ports and cities and which will be staffed by trained crews from the American Southwest and the Gulf of Mexico.

Large majorities of respondents in pretest and posttest samples and in the *Mixed* and *Native* subsamples of those samples think that the search for oil will bring employment to local residents. This assumption is unfounded, even as a multiplier, for the vast majority of villages from Kodiak to Kaktovik that may be located near future offshore oil development. It is of interest to determine the characteristics of respondents who think that oil development will create jobs for local residents and the characteristics of respondents who think the converse. All of the pretest and about half of the posttest interviews occurred prior to the Exxon Valdez oil spill. In addition, only one person in the posttest sample gained employment as a consequence of the spill; but that was matched by one person in the sample who lost employment because of the spill. One person reported a financial loss with inadequate compensation from Exxon because of the spill, but three persons reported compensation from Exxon that was more than adequate for losses sustained from the spill. These respondents had little basis for their opinions that jobs would accrue to local residents from the search for oil spilled by the Exxon Valdez in March 1989.

In answering the question about whether--all things considered--the search for oil offshore in their area is a good, a mixed, or a bad idea, a majority of pretest respondents thought it was more a good idea than a bad idea. A majority of respondents in *Mixed* villages thought it was a good idea. The question had to be revised after 1988 and was not used for the posttest. It is highly likely that a large majority of respondents would have reported that it was either a mixed (good and bad) or a good idea. This question also warrants some further attention.

Figure 13 provides an SSA configuration in three dimensions of the Western model for persons and households. The regions within the hyperspace are so similar

Variable	Plot	Centrality	D1	D2	D3
RSEX	A	102.944	52.303	85.517	26.220
RAGES	B	113.779	-89.463	-22.809	53.484
PPEMP	C	104.609	20.059	-65.429	86.157
RHHTYPE	D	103.576	-84.888	36.216	-1.424
RHHSIZE	E	79.317	-57.379	-.531	-40.125
COMFISH	F	102.888	-63.549	10.297	-68.866
RACEVIL	G	94.382	99.999	.788	29.447
TOTACT	H	80.249	7.819	-65.052	-51.860
B1	I	87.538	95.637	2.896	-15.434
B3	J	90.228	73.377	23.708	-56.194
B8	K	88.188	85.304	-16.151	-43.329
B9	L	111.329	-60.163	-10.722	87.519
C1	M	89.280	97.385	-16.517	-13.409
C6N	N	78.735	65.103	-56.748	-20.932
C12	O	93.063	84.495	-50.627	33.649
C12M	P	99.424	40.090	-34.648	91.380
D2	Q	87.846	90.116	-25.304	-28.668
D3	R	81.695	49.034	-65.295	40.374
D4	S	96.833	-1.331	79.715	46.805
D6	T	102.911	40.454	51.958	81.482
D8	U	94.840	84.573	50.206	-18.583
D19	V	80.848	-40.852	29.624	53.704
D24	W	81.518	4.684	75.837	-7.545
D25	X	98.758	-42.979	-68.041	-53.109
D26	Y	95.901	-36.852	78.588	3.357
D27	Z	114.339	-48.068	-99.999	27.218
D28	a	111.363	99.999	-13.709	-13.050
D29	b	93.720	-12.021	72.217	-46.927
D29A	c	105.303	-18.395	-2.284	-99.999
E50	d	65.412	1.671	-59.971	-33.123
E52	e	81.828	-23.483	-79.215	-6.623

Guttman-Lingoes' Coefficient of Alienation $K = .150$

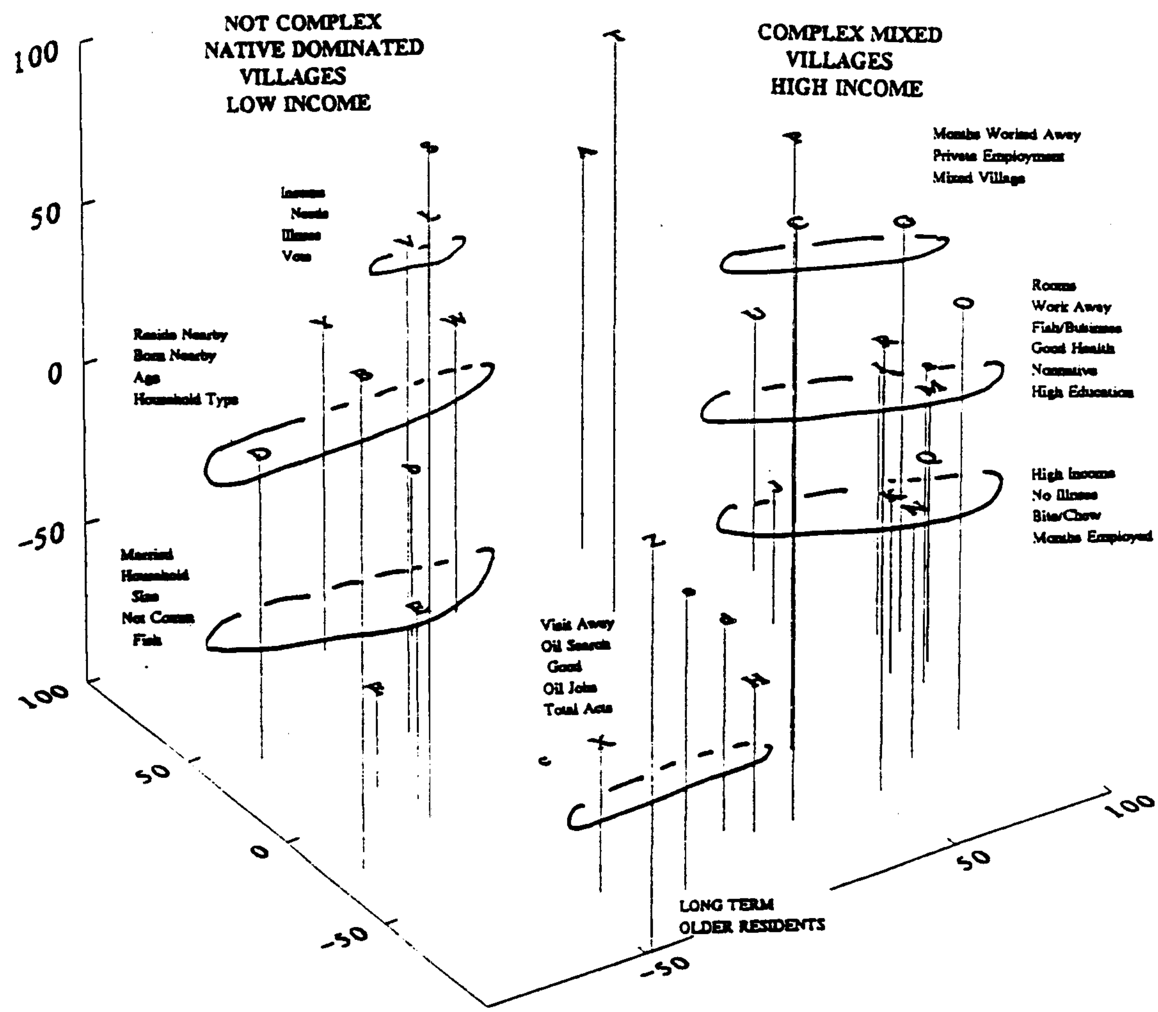

FIGURE 13. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 31 VARIABLES, N = 548, TOTAL PRETEST SAMPLE, 1987-1988

to the regions derived from the traditional activities and customs variables in the several configurations in the preceding chapter as to demonstrate a consistent structure within villages and consistent structural differences between the more complex and less complex villages. The left-rear quadrant fits several variables into a conex that reflects the structure we recognize as being dominated by Natives whose incomes are low and who reside in the smaller, less complexly organized, *Native* villages. The region is labeled NOT COMPLEX, NATIVE DOMINATED VILLAGES, LOW INCOME.

Several variables in the right-front quadrant of Figure 13 are fitted into a cylindrex that essentially reflects the opposite of the conex on the left. The COMPLEX, MIXED VILLAGES, HIGH INCOME region is dominated by non-Natives and high-income-earning Natives who reside in the large and relatively complex *Mixed* villages. The area shown in the center-front of the hyperspace is discussed below.

The NOT COMPLEX...LOW INCOME cylindrex on the left fits variables on three planes, and each plane has at least one variable whose centrality is very high.[64] The items with highest centrality are, at the base, household size (E, RHHSIZE); on the middle plane, place of birth in or near the village (W, D24); and at the top of the conex, high incidences of voting in recent village corporate elections (V, D19).

Increasing age (X, D25) and nonnuclear household types (D, RHHTYPE), located on the periphery of the middle plane, are joined on the periphery by two other items with relatively high centrality--the variables that measure currently married respondents (b, D29) and place of prior residence (Y, D26) and the variable that measures place of birth (W, D24).

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[64] "Centrality" is the nonmetric analog of "communality" in linear analysis. The centrality index "....indicates how central a given point is in a configuration of n points whose centroid...has been shifted or translated by the linear rescaling implicit in the $\{y_{ia}\}$ of [the configuration]" Lingoes and Roskam 1979 (orig. 1973):466. The centrality index is defined as:

$$C_i = \frac{200}{d_{\max}} \left(\sum_{a=1}^{m} x_{ia}^2 \right)^{1/2} \quad (i = 1,2, \ldots , n),$$

Household size increases with marriage and with residence in the less complex villages (lower plane). At the top of the conex, the likelihood that respondents voted in the most recent city council election (V, D19) is fitted with debilitating illnesses or injuries (L) and with increasing amounts of income required to meet monthly needs (S, D4).

To interpret the relations within the conex, we must recognize that several variables fitted in the COMPLEX...HIGH INCOME cylindrex are correlated either negatively or near zero with items in the NOT COMPLEX NATIVE-DOMINATED...region. These variables include increasing employment, increasing income, increasing educational accomplishment, nuclear (and single and conjugal-pair) households, reports of good health, absences from injury, increasing proportions of non-Natives, and residence in *Mixed* villages. It is evident that the two regions do not simply distinguish large, complex villages from small, simple ones. There are undoubtedly hundreds of cases in the PRE measures in the NOT COMPLEX...LOW INCOME region that are drawn from residents in large, complex villages; but they are Native cases. There are differences between village types, but low-earning Natives in *Mixed* villages are very similar to Natives in *Native* or *Noncom Fish* villages. The regions separate large and small villages but also separate low-income Natives, wherever they reside, from high-income Natives.

Let us return to an interpretation of the relations in the NOT COMPLEX...LOW INCOME conex: a preponderance of Natives in the small, Native-dominated villages and also the low-income Natives in *Mixed* villages are married. As the ages of respondents increase, the likelihood that they were born and reared in the community in which they currently reside is high; and the likelihood that household types in which they reside, in addition to nuclear, are stem, denuded-nuclear (single parent with children); remnant (three generations, e.g., with no conjugal pairs present); joint (siblings with or without spouses but with children); and composite or mixed (2 or more generations comprising collaterals, lineals, affines in various combinations).

The region is characterized by a high incidence of debilitating injuries and illnesses (L, B9) that, among younger persons, restrict employment, and among younger and older persons can restrict the number and types of subsistence activities in which they engage while increasing the amounts of money they require to meet monthly expenses (S, D4). It is the case, of course, that as persons age beyond their 50's, debilitating illnesses or injuries are more common. Modest educations, modest employment, nonnuclear-household arrangements, and injuries aside, long-term residents of a village exercise their franchise (as we learned in the analysis of traditional customs and activities).

Inasmuch as we addressed the topic in the previous chapter, the analysis here does not include AOSIS variables that indicate interhousehold sharing and visiting, with the exception of visits with persons outside the respondent's village. It is clear that Native respondents frequently eat meals with relatives in homes other than their own, frequently receive subsistence foods from persons in households other than their own, and frequently visit persons in households other than their own. The generalization holds for persons with the smallest incomes, for the most elderly persons, and also for Natives with the highest incomes (see Tables 11 and 12). In addition, the fewer the types of subsistence activities in which Natives engage, regardless of age, the greater the proportion of meals that they eat with persons in other households and the greater the proportion of food eaten that is harvested by others. Native-kinship relations and Native obligations to elders link persons residing in several houses into resource-sharing networks.

The cylindrex on the right, COMPLEX...HIGH INCOME, fits variables into radexes on three planes. Within each radex there is a marked distance between items on the periphery to the left and those to the right. As inspection of the matrix of coefficients (Table 13W in appendix) demonstrates, the items on the right are more highly and positively correlated internally and more negatively correlated with items in the NOT COMPLEX...LOW INCOME region than are items on the left peripheries of the radexes.

The radex on the lowest plane fits three items with high centrality in the right-center--increasing income (Q, D2), increasing months of employment (N, C6N), and the ability to bite and chew hard foods (B8, K)--and fits the absence of illness or injury (J, B3) on the periphery. The middle plane fits increasing education (M, C1), good to excellent health (self-reported) (I, B1), and self-employment as a commercial fisherman or in some other business (R, D3), with non-Native respondents (a, D28), persons who worked away from their home villages (O, C12), and increasing numbers of rooms in respondents' houses (U, D8) on the periphery. The radex on the highest plane fits respondents' residences in *Mixed* villages (G, RACEVIL) in the right-center, with high rates of employment in the public sector (C, PPEMP) and an increasing number of months in which respondents were employed away from the village (P, C12M) on the periphery.

The structures of, and the distances between, the two major regions demonstrate that the high positive correlations in one are predominantly negative or zero in the other. Inspection of Table 13W (appendix) confirms the generalization. It will be instructive to demonstrate the differences between the two regions by assessing correlations between four variables in one region with four variables in the other. These variables represent a range from those with high centrality (B1, C1, D2, D24) to those with rather low centrality (D25, D28, RHHTYPE). Table 20 demonstrates that self-reported general health (B1), educational attainment (C1), income (D2), and race of respondent (D28) correlate negatively with household type (RHHTYPE), place of respondent's birth (D24), length of residence in the village (D25), and place of last residence before moving to the current residence (D26). The interpretation is that non-Native respondents, in particular but not exclusively, report excellent health, high incomes, and so forth. They are less apt to be married, residing as single persons living alone. If married, they reside as conjugal pairs or in nuclear-family households. They are less apt to have voted in recent city council elections, were not born or reared near the villages in which they were interviewed, nor was their most recent previous residence nearby, nor have they lived in the village in which they currently reside for a very long time.

Table 20

MATRIX OF PEARSONIAN CORRELATIONS OF EIGHT AOSIS VARIABLES, FOUR FROM THE NOT COMPLEX AND FOUR FROM THE COMPLEX REGIONS IN THE PRETEST SAMPLE, FIGURE 13[a]

	RHHTYPE	D24 (Where Born)	D25 (Length Reside)	D26 (Last Reside)
B1 (Health)	-.103	-.191	-.102	-.208
C1 (Education)	-.108	-.329	-.268	-.319
D2 (Income)	-.101	-.316	-.169	-.315
D28 (Race/Ethnicity)	-.192	-.756	-.527	-.677

[a]The large N (548) on which these correlations are based reduces sampling error considerably. Coefficients of .08 (r) are significant at $P = .05$, and coefficients of .11 are significant at $P = .01$.

A cursory inspection of the two regions could suggest that respondents exhibiting the attributes of the COMPLEX...HIGH INCOME region represent successes as expected by the Western model--an educated, healthy, employed, high-earning population. It is, however, a youthful population that is heavily, but not exclusively, represented by non-Natives. It also is a highly mobile population with a large number of single persons and conjugal pairs. The non-Natives among them, according to the measures available to us in the AOSIS instrument, are less apt to share or to visit with friends and relatives than are Natives (see Chapter 2). This behavior fits the Protestant-Ethic/Work-Ethic expectation that persons will economize scare resources (save, delay gratification) so as to maximize benefits (invest, accumulate more capital, educate one's children).

Upon cursory inspection, the respondents who exhibit the attributes of the NOT COMPLEX...LOW INCOME region represent persons who have not observed the Protestant Ethic. Educational attainment, employment, and income are low; health is often poor. Although marriage rates are high, household types are frequently large and arranged into composite types rather than conjugal pairs or nuclear families. Minimal income needs are reported to be high. It is not a fortuity that these attributes are, for the most part, characteristic of Natives residing in small, simple villages that have very modestly developed private-sector economies--

economies dependent on public-sector business (groceries, dry goods, transportation, housing for persons gainfully employed in the public sector or recipients of transfers from the public sector).

A deeper analysis, as we have seen in the preceding chapter, demonstrates that Natives with high educations, regular employment, substantial incomes, and good health tend to be youthful but also engage in subsistence activities and share the benefits of their extraction efforts with kinspersons and friends, especially elders, within the community and in more distant communities as well. The villages are home to Natives, spaces in which they make their livelihoods and places in which they will retire. Non-Natives are temporary residents; they migrate to Alaska for work and leave when the work is completed or the jobs are discontinued. Even if they reside in villages for 30 years, non-Natives relocate from villages upon retirement. Among married non-Native commercial fishermen, particularly those with school-aged children, it is a common practice to leave after each fishing season (often relocating in the State of Washington) and return for the next fishing season. Local political franchise is not always exercised.

It is incontrovertible that the COMPLEX...HIGH INCOME region fits together the relations that are complementary to the Protestant Ethic of the Western model. The region also distinguishes non-Natives from Natives in the Natives' land. The communitarian features of Native life, the continuity of residence, and the exercise of political franchise in Alaskan villages--regardless of education, health, employment, and income--distinguish Natives from non-Natives and distinguish them in the practice of ethics predicted by the Western model. This is more fully demonstrated in a later section.

The items in the center-front of the hypersphere are fitted between the high-income, *Mixed*-village region to the right and the low-income, *Native*-village region to the left. They include increasing length of residence in the village (X, D25), increasing frequency of visits to friends or relatives in distant communities (Z, D27), and participation in increasing numbers of types of subsistence activities (H, TOTACT). Two items that measure respondents' affective and cognitive attitudes about the consequences of oil exploration (d, E50; e, E52) also are wedged into the area, although they correlate negatively with one another and correlate in complex ways (negative and positive) with other members of the area.

The reasons for the positioning of these items can be extrapolated from the analysis of total activities, length of residence, and income in Chapter 2. When we exercise controls for health and age, Natives engage in many subsistence activities whether they enjoy large or small incomes. Native participation in subsistence activities also increases as income increases (decreasing for the very old and infirm). Participation increases for Natives who are married to non-Natives and increases for *some* non-Natives, particularly if they work in the public sector or if they have resided in villages for more than 11 years.

Three of the five variables in the area correlate positively with some variables in each of the two larger regions--NOT COMPLEX...LOW INCOME and COMPLEX...HIGH INCOME. The highest correlations with subsistence activities in which persons engage (H, TOTACT) and length of residence in the village (X, D25) are size of household (E, RHHSIZE), being born in or near the village (W, D24), and recently residing in or near the village (Y, D26) (in the NOT COMPLEX...LOW INCOME region). Large households have more persons available to harvest resources and more persons capable of providing funds from employment to underwrite the costs of engaging in subsistence pursuits. Indeed, months employment (N, C6N) and self-employment in fishing or some other business (R, D3), which correlate highly and positively with increased participation in subsistence activities (but near zero with D24, D25, D26), are positioned toward the left-front of the COMPLEX...HIGH INCOME region. Many Natives, but almost all non-Native respondents, have many months of employment, particularly in the public sector, and/or are self-employed as commercial fishermen or in some other businesses. The differences are that Natives are employed for fewer months and earn fewer dollars, whether in the public or private sectors.

This area captures employed Natives in large and complex villages, employed and unemployed Natives in small, simple villages, and some non-Natives. Attitudes about the consequences of oil exploration were so mixed that respondents who were self-employed as commercial fishermen or in some other business, and respondents who engaged in the greatest number of subsistence activities, were most apt to think that the search for oil would *not* provide jobs for residents of the region (r = -.120, r = -.164, P<.01 <.0001) (d, E50); yet the respondents also thought that the search for oil, all good and bad things considered, was a *good* idea (r = .128, P = .01, r = .055) (e, E52). As income increased, respondents were split on whether oil exploration would create jobs for residents of the region (r = .010) but thought that the search for oil, all things considered, was *bad* for the region (r = .16, P<.0001). Responses to E50 and E52 after the Exxon Valdez spill in March 1989 provide interesting contrasts by income, ethnicity, and occupation for the special sample of villages affected by the spill.[65]

The final item, frequency of visits to friends and relatives in distant communities during the past year (Z, D27), correlates strongly and positively with total number of subsistence activities in which a person engages; nonnuclear-household types; large-household sizes; residence in small, simple villages; months of employment; and more modestly but positively with increasing income and increasing length of residence in the village. It correlates negatively with non-Natives and non-Native spouses. This variable represents employed, younger, and middle-aged Natives, many of whom reside in large, complex villages, are gainfully employed, and can afford to visit relatives in distant villages, most likely coordinated with subsistence pursuits and likely the villages in which the respondent or the respondent's spouse resided before relocating to the current village. Whereas non-Natives save and do not make frequent trips to visit persons away from the village, Natives traditionally engage in such trip activity.

Variables within this area correlate with certain aspects of both regions, but especially with employed Natives in the COMPLEX...HIGH INCOME region. The

[65] The reference here is to the pretest-posttest with embedded panel research design implemented in Kodiak, Alaska Peninsula, Cook Inlet, and Prince William Sound villages following the spill in summer 1989 (pretest), and subsequently restudied in 1990 (some panel villages only) and 1991 (posttest and panel reinterviews).

relations to the NOT-COMPLEX...LOW INCOME region are amply described above.

As in the analysis of traditional customs and activities, much is gained by contrasting responses in *Native* villages with responses in *Mixed* villages. A specific interest will be to determine whether Natives and non-Natives in *Mixed* villages, whose educations and health are approximately equal, also are equal in employment, income, visiting away from the village, household type and size, and other factors that are predicted by the Western model.

<u>Theoretical Contrasts of the Pretest Sample: Native:Mixed</u>: Division of the total pretest sample into *Native* and *Mixed* subsamples yields marked differences in the SSA configurations we obtained for each.[66] Figures 14 and 15 each yield two regions--one labeled LOW INCOME NATIVE, the other HIGH INCOME NON-NATIVES-NATIVES. Each configuration also presents a closer fitting of points within the HIGH INCOME NON-NATIVE-NATIVE region than within the LOW INCOME NATIVE region.

In Tables 1 and 19 we saw that the distributions of almost every variable in this analysis have significantly different distributions for the *Mixed* and *Native* contrasts. Differences in Table 1 are discussed in Chapter 2; differences in Table 19 have not been discussed. Here we see that respondents of *Mixed* villages report better health, less suffering from illness or injury, less loss of activities from illness or injury, greater ability to bite and chew hard foods, requirements for larger monthly household incomes, better household finances now than 5 years earlier, houses with larger numbers of rooms, and more favorable attitudes about the search for oil being a good idea than do respondents in *Native* villages. Respondents in *Native* villages are significantly more likely to have been born and to have most recently resided in the village in which they were interviewed, and visited relatives and friends outside the village more frequently in the preceding year than did respondents in *Mixed* villages. In the posttest comparisons, there is only one reversal of relations obtained

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[66] We drop four variables from the corpus of variables analyzed in the total pretest sample (Fig. 13): RSEX was an outlier, E52 on the respondent's affective attitude about the good or bad effect of oil exploration did not behave well, and RACEVIL and COMFISH are redundant.

Variable	Plot	Centrality	D1	D2	D3	Variable	Plot	Centrality	D1	D2	D3
RAGES	A	122.557	-86.758	68.874	25.374	D3	O	92.657	-2.024	-79.841	-1.526
PPEMP	B	101.835	-47.635	-63.895	19.005	D4	P	76.366	73.351	36.169	32.542
RHHTYPE	C	113.550	-90.025	31.219	-47.424	D6	Q	113.681	95.048	91.535	-15.694
RHHSIZE	D	67.118	4.789	-15.911	-70.667	D8	R	44.328	5.398	44.194	17.472
TOTACT	E	71.030	31.798	-26.330	-68.217	D19	S	89.701	-11.186	88.849	25.492
B1	F	83.376	94.463	-12.717	-20.836	D24	T	87.272	-10.424	14.428	73.359
B3	G	96.379	96.479	37.322	-54.500	D25	U	103.473	-31.734	30.800	-100.000
B8	H	69.290	83.435	8.827	-21.942	D26	V	68.513	-43.861	-18.200	-29.037
B9	I	125.150	-100.000	3.916	38.399	D27	W	88.599	-15.876	27.963	71.188
C1	J	82.777	93.204	-11.810	6.080	D28	X	106.251	13.236	68.133	-99.420
C6N	K	73.935	59.705	-37.363	-44.140	D29	Y	76.367	-48.609	10.326	-51.917
C12	L	91.169	61.907	-56.851	29.440	D29A	Z	84.348	3.697	91.499	-31.674
C12M	M	111.323	8.081	-100.000	-17.989	E50	a	103.810	100.000	30.387	46.624
D2	N	69.252	74.310	30.225	20.453						

Guttman-Lingoes' Coefficient of Alienation K = .187

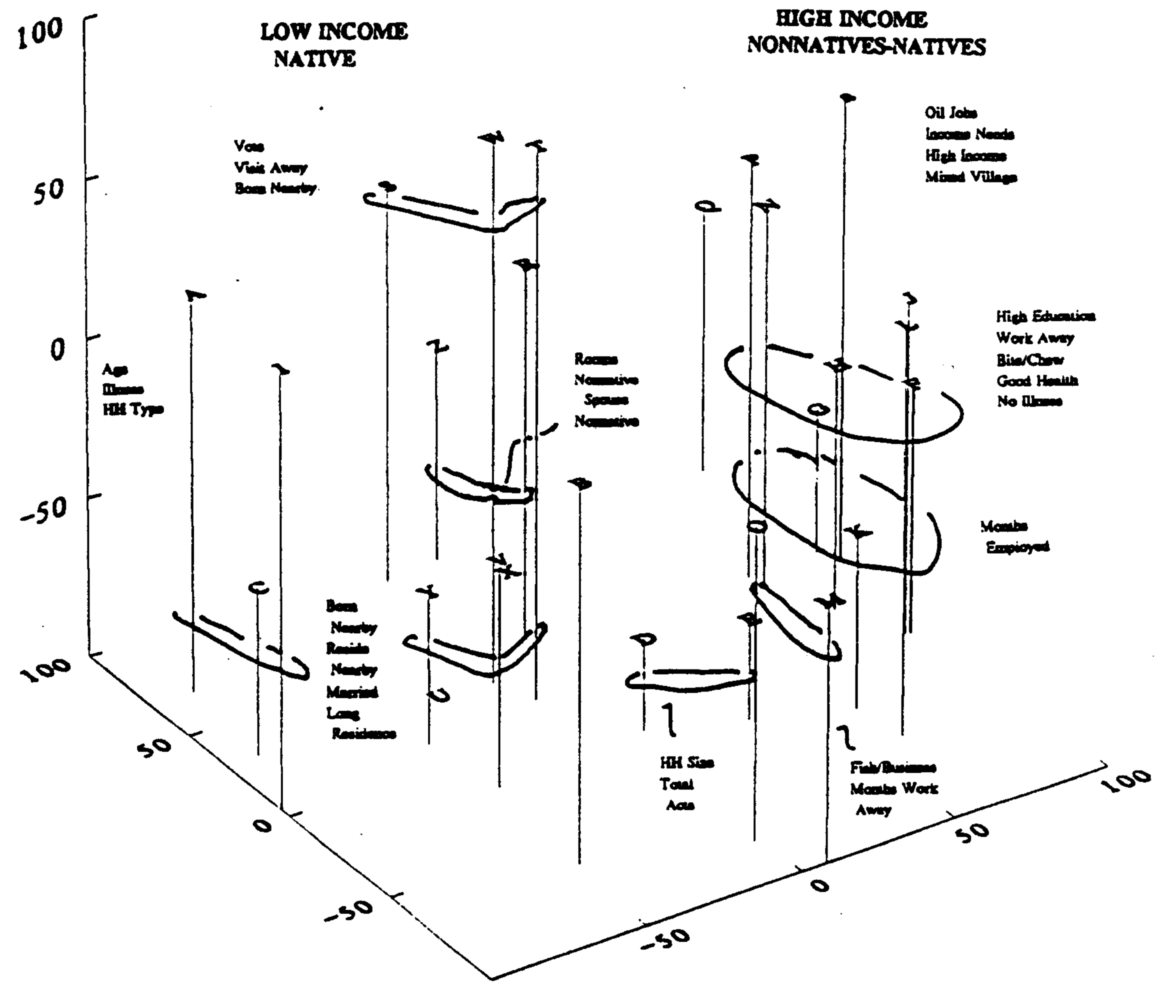

FIGURE 14. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 27 VARIABLES, N = 284, NATIVE SUBSAMPLE OF THE PRETEST SAMPLE, 1987-1988

Variable	Plot	Centrality	D1	D2	D3
RAGES	A	124.886	85.552	20.194	-91.642
PPEMP	B	113.002	26.930	74.430	20.732
RHHTYPE	C	111.161	79.588	-92.405	-41.292
RHHSIZE	D	90.680	38.547	-99.800	-45.762
TOTACT	E	72.123	3.834	-35.355	50.045
B1	F	93.723	-99.999	-20.187	-25.800
B3	G	90.123	-69.698	-67.738	27.677
B8	H	94.021	-96.190	-43.847	.860
B9	I	111.829	97.483	15.709	-22.119
C1	J	84.653	-89.663	-25.567	-36.728
C6N	K	88.872	-85.843	-7.846	15.569
C12	L	96.744	-60.555	40.147	25.922
C12M	M	103.222	-10.853	76.780	-35.548
D2	N	79.316	-76.330	-53.634	-45.472
D3	O	92.560	-50.128	55.457	-8.235
D4	P	83.065	-57.109	-73.504	-65.525
D6	Q	94.516	-63.077	-99.999	-8.224
D8	R	61.102	-26.387	-33.111	-77.870
D19	S	89.706	12.107	12.097	-99.999
D24	T	34.588	24.210	-18.975	-35.105
D25	U	115.984	99.999	-64.497	3.019
D26	V	76.249	24.569	-73.297	29.768
D27	W	51.071	15.451	13.331	4.574
D28	X	118.544	88.527	-27.931	50.133
D29	Y	89.221	42.381	-98.215	-5.003
D29A	Z	81.104	-61.790	-18.354	-63.720
E50	a	102.955	-92.217	-36.021	-76.705

Guttman-Lingoes' Coefficient of Alienation K = .185

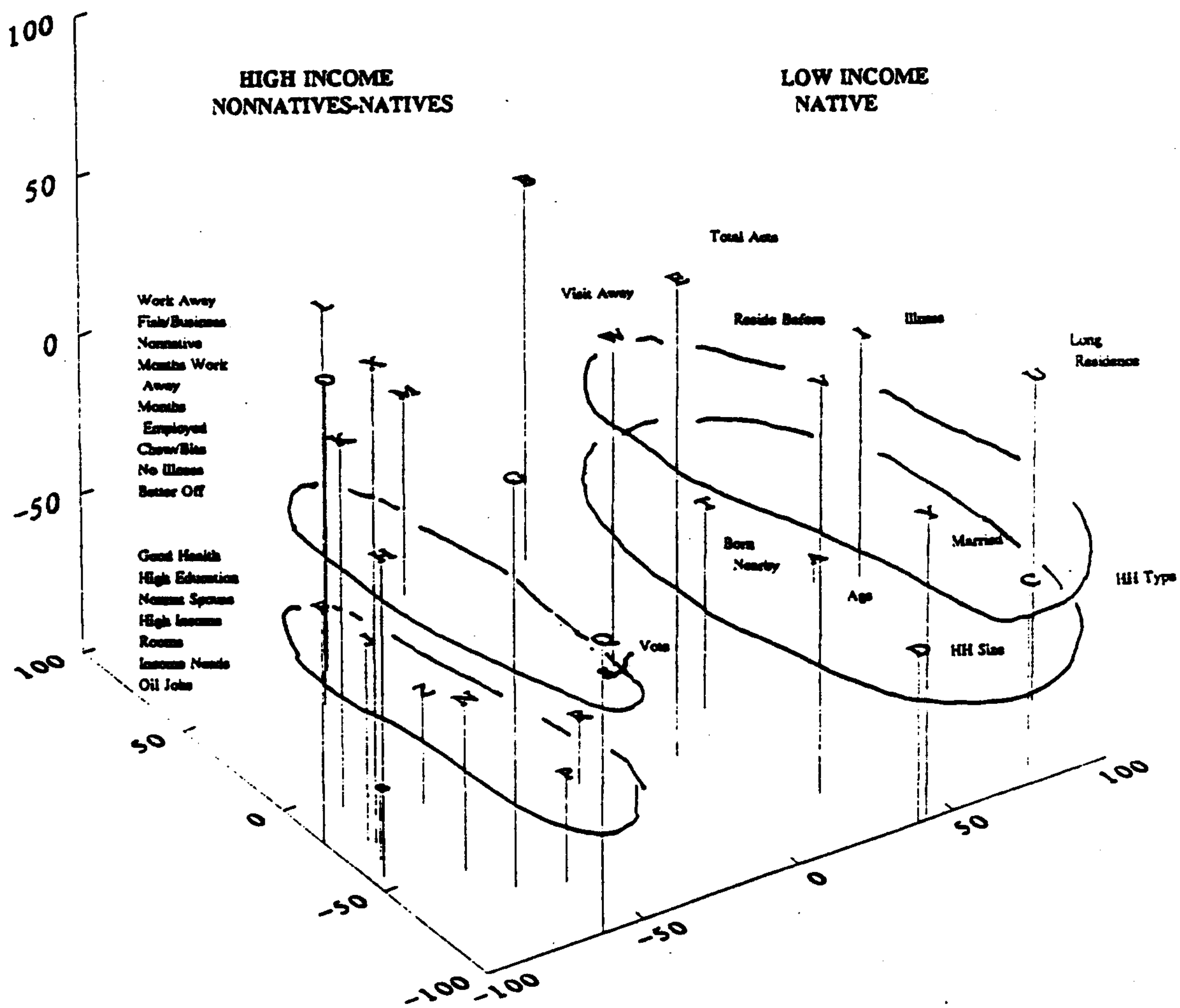

FIGURE 15. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 27 VARIABLES, N = 264, MIXED SUBSAMPLE OF THE PRETEST SAMPLE, 1987-1988

in the pretest contrasts. In the posttest comparisons, more residents of *Native* villages reported that they were better off and fewer reported that they were worse off than the respondents in *Mixed* villages. It is possible that the psychological-emotional consequences of the economic downturn were harder felt in the more complex villages.

***Native* Villages and the Western Model**: Similar to our analyses of *Native:Mixed* contrasts in the preceding chapter, *Native* villages, although simple in infrastructure, services, and economic development, yield a complex configuration in their social, economic, and political structure. That complexity is surely caused by the wide ranges of ages, low amounts of employment, Native customs of sharing--including accordion-like household structures that allow for changes of personnel as exigencies require, and the cone-shaped distribution of incomes that characterizes larger portions of the population in *Native* than in *Mixed* villages. In focusing on respondents and their households, the simpler villages yield complex configurations.

Figure 14 for *Native* villages demonstrates a relatively compact HIGH INCOME region in the right-center, and a loose LOW INCOME NATIVE region comprising several areas in the left half of the configuration. The areas separate Natives in *Native* villages by age and health: the simplex on the far left fits three points, all with high centrality, i.e, each of the points has high centrality with the other variables in the configuration. *Native* villages are characterized by high incidences of nonnuclear-household types (C, RHHTYPE), respondents of a wide range of ages from 18 to 87 (A, RAGES), and a large number of persons whose injuries or illnesses increase as their age increases (I, B9). Because these items correlate highly and positively with one another but also with other variables in the configuration, each has high centrality and the area is pushed toward the side of the configuration.

In contrast, at the right-front of the LOW INCOME NATIVE region are located variables measuring household size (D, RHHSIZE) and the number of subsistence activities in which the respondent engages (E, TOTACT). Elderly and infirm persons from many of the nonnuclear households--such as single parent with children, or female siblings with children, or denuded stem families in which three generations reside but in which there may be but one adult male--cannot engage in so many activities or engage in subsistence activities so often as can persons in large households. We see that as household size increases, so does participation in a wide variety of subsistence activities. To the right and in front of the household-size subsistence-activity area is an area comprising participation in self-employed commercial fishing or some other business (O, D3) with months in which the respondents worked away from the village in the past year (M, C12M).

The empirical relations among the three areas (let us refer to them as age-infirm, large households-subsistence, self-employed fisherman-months away) fit our expectations: elderly and infirm people and persons residing in denuded nuclear households seldom are self-employed, seldom work away from the village, and seldom engage in a wide variety of subsistence activities. Persons in large households may well co-reside in composite or stem-nonnuclear households; but some person or persons within the household may be self-employed, most probably as a commercial fisherman, and the household has sufficient members and cash to engage in a large number and wide variety of subsistence activities.

Between the three areas on the far left and in the left front is an interesting structure: a simplex on two planes (one positioned higher [on the third dimension] in the hypersphere than the other). Fitted at the higher lever are persons born in or near the region (T, D24), voting in city council elections at high rates (S, D19), and making visits to relatives and friends outside the village (W, D27). Fitted at the lower level are married respondents (Y, D29), respondents who are long-term residents of the current village (U, D25), and respondents whose most recent residence prior to their current residence was in or near the village in which they currently reside (V, D26). The two planes are linked through the strong, positive relations among the variables for voting (S, D19) and length and place of residence (T,D24, D25, D26).

This simplex represents continuity of place and exercise of the political franchise for Natives. The measure of visiting friends or relatives away from one's home village selects for married, long-term, Native residents who possess sufficient incomes and sufficient good health to make the trips. Income alone does not preclude elderly, youthful, or unemployed persons from traveling. If someone in the household can fund a trip for someone else in the household, trips can be taken. Infirmity, however, precludes trips, with the exception of flying to a hospital in Bethel, Nome, or Anchorage for medical attention. Patients who travel to distant communities are often accompanied by other household members.

Whereas many Natives demonstrate continuity of place, few among them have sufficient incomes for frequent travel. Among those who travel, more are currently married than are single, divorced, or widow/widower.

The angle from which the configuration in Figure 14 is viewed is not optimal for seeing the relations among non-Native spouses (Z, D29A), non-Native respondents (X, D28), and number of rooms in respondents' houses (R, D8). This simplex, fitted to the right of the simplex, which denotes continuity of place and exercise of the political franchise for Natives, is interesting. If we focus on rooms in the house (R, D8) (see Table 14W in appendix), we see that the number of rooms increase with income (N, D2), with current marriage (Y, D29), and with increasing household size (D, RHHSIZE). The fitting of non-Native respondents and spouses with number of rooms demonstrates the complexity of *Native* villages in which the number of rooms in a house are influenced not by income alone but also by need. Married couples with large households can often gain access to large houses through public programs that have constructed new housing in many villages and provided those houses for villagers even if their incomes are modest. It is the case that Natives married to non-Natives tend to have more rooms in their houses (and to earn higher incomes) than Natives married to Natives. In addition, non-Natives married to non-Natives have large houses and higher incomes than either Native couples or mixed Native-non-Native couples.[67] Thus, some Native households, many non-Native-Native households, and most non-Native households have houses

[67]As is demonstrated in Chapter 2, most non-Natives in *Native* villages are employed in the public sector and earn high incomes. These employees often benefit from several public-sector perks, including adequate housing (e.g., for school teachers and administrators, some regional administrators, some health care and police personnel).

with several rooms. To reiterate, because Natives--even with low incomes--often have access to large houses, these items are fitted between the HIGH INCOME NON-NATIVE-NATIVE and LOW INCOME NATIVE regions.

The LOW INCOME NATIVE region separates Native features into several clearly recognizable and interpretable areas. Infirmity increases with age, as do sundry forms of small, nonnuclear household types. Respondents who exercise the franchise are married, have lived in the village for long periods--perhaps since birth, and may be any age from 18 to 87. Respondents who engage in a large number of types of subsistence activities are healthy, youthful to middle-aged, frequently members of large households, and frequently employed (or someone in the household is employed or self-employed). Travel to visit friends and relatives away from the village is predominantly a practice of Natives who are employed, including self-employed, and married. Commercial fishermen, by dint of occupation, have occasion to visit friends and relatives away from their home villages. In *Native* villages, high incomes are not necessary to engage in subsistence activities, whereas low incomes, controlling for age and health, predict that respondents will engage in many subsistence activities.

The HIGH INCOME NON-NATIVE-NATIVE region represents the features of non-Natives and the highest earners among Natives. The relations within the cylindrex are familiar. We interpret the middle radex thusly: respondents who report good to excellent health (F, B1) report that they can bite and chew hard foods easily (H, B8) and that they are free from debilitating illnesses or injuries (G, B3). Knowing this allows us to reduce large proportions of error in predicting high educational attainment (J, C1) and vice versa. Knowledge that a person worked away from the village in the past year (L, C12) also allows us to reduce large proportions of error in predicting health (good) and education (high).

In the lowest radex, prediction of the cumulative months during which respondents were employed increases with knowledge of health and education; and in the highest radex, knowledge of income (N, D2) reduces error in predicting the smallest income that respondents think they need each month to meet expenses (P, D4).

The variable that measures cognitive attitudes about whether the search for oil will create jobs for local residents is fitted on the periphery of the topmost radex (a, E50) of the cylindrex. We recall from Table 19 that the majority of respondents think that exploration for oil will create jobs for locals. Here we can analyze those responses more closely. That variable is correlated positively with the measure just outside the radex of whether respondents think they are better off now than they were 5 years earlier (Q, D6; r_{E50D6} .155, P<.01). Each of these measures has high centrality and each reduces modest amounts of error in predicting income (γ_{E50D2} .05). Thus, the fit with increasing income is very weak. The centrality of the two attitudinal variables (finances now [D6] and oil jobs [E50]) means that they correlate positively with many other variables in the configuration but not necessarily with financial success. For example, respondents under the age of 30 and ill or infirm respondents from 18 to 87 do not think they are better off but they do think the search for oil will create jobs for local residents ($\gamma_{Under30E50}$ .18; $\gamma_{B9E50RAGES}$ .75). These are likely measures of ignorance, perhaps hope.[68] Respondents who are healthy and well-educated think that they are better off, but they are split on whether the search for oil will create local jobs (near-zero negative and positive correlations, respectively). This is likely a measure of skepticism in the absence of knowledge, rather than of ignorance. Yet if we focus on self-employed fishermen (most of whom report excellent health and considerable educational attainment), the cognitive attitude (at a ratio of 2:1) is that oil exploration will *not* create jobs for locals. This may reflect fears that Native fishermen harbor about the consequences of oil development for their environments and for their businesses

[68] We have better measures of cognitive attitudes and expectations for employment, resource management, and related variables in the protocol analysis (Chapter 4). Youth and the most aged are generally more optimistic about and desirous of economic development--whatever their source and whoever controls them--than are persons between the ages of 31 and 60.

(γ_{D3E50} -.434, r -.221, P<.0001).[69] Attitudinal variables about the potential consequences of oil exploration, if not economic development in general, appear to be indicators of age, health, education, and the sector of the economy in which persons are employed, rather than a measure of knowledge about the economic consequences for local employment from the search for oil.[70]

If respondents think that they are better off now--a cognitive attitude measure, they also think that the search for jobs will create employment for local residents. ***Native***-respondent households with annual incomes between $10,000 and $30,000 (42% of Native households) are equally split on whether the search for oil will create jobs for local residents. Native-respondent households with less than $10,000 annually (34% of Native households) at a ratio of 3:2 think that jobs will be created for local residents. Respondents from Native households with annual incomes greater than $30,000 (26% of Native households) at a ratio of 2:1 think that the search for oil will create jobs for local residents. A simple summary reflects a relation discovered in the protocol analysis (Chapter 4): respondents from households with the least and the most income are optimistic about economic developments from oil.

In 1987-1988, 60 percent of ***non-Native*** respondents earned incomes greater than $30,000. Across all income categories non-Natives at a ratio of 3:2 thought that the search for oil would *not* create jobs for local residents. Almost all non-Native respondents in *Native* villages were employed in the *public* sector, and most

[69] In these villages, whose majority populations are Natives, self-employed businessmen, other than persons engaged in commercial fishing on a very modest level in terms of capital equipment, are few and far between. Disregarding the level of earnings or investments, 29 percent of Native respondents in *Native* villages were engaged in self-employed commerce in 1987-1988 (only one non-Native in *Native* villages engaged in any commercial fishing). Entrepreneurial activity as measured by self-employment in commercial fishing or any other business correlates negatively with income (r_{D3D2} -.05) and negatively with E50, suggesting that remuneration for self-employed activities is modest but that commercial fishermen think that oil operations will not improve the employment of local residents. Low-level commercial operators who might imagine that they had something to gain from oil operations replied at a ratio of 2:1 that the search for oil would not provide jobs for local residents.

[70] The relations among public/private-sector employment, months employed, and attitudes about whether the search for oil will create jobs for locals is interesting. Persons employed in the public sector think at a ratio of 4:3 that jobs will be made available. Persons employed in the private sector are differentiated by the number of months they were employed during the previous year. Those who were employed less than 9 months, predominantly commercial fishermen, thought at a ratio of 2:1.5 that the search for oil would *not* provide jobs for locals. Persons employed full-time year-around in the private sector thought at a ratio of 1.3:1 that the search for oil would create employment for locals.

were less optimistic than Natives. The public-/private-sector distinction also appears to be important in understanding attitudes about the consequences of oil developments.

The cylindrex separates relations into three radexes based on months employed (empirical count) on the bottom, personal attributes of health and education (empirical reports) in the middle, and income (empirical) and several attitudes about income and employment opportunities to earn incomes (cognitive and affective attitudes) on the top.

In 1987-1988, educated, employed Natives earning between $10,000 and $30,000, and most self-employed fishermen (whether they were making less than $5,000 or more than $50,000 annually),[71] were skeptical of the salutary employment benefits for locals from oil exploration. Their more youthful and more elderly and infirm congeners, and those among them who earned more than $30,000, were more optimistic about the salutary job benefits.

In 1987-1988 employment and income in *Native* villages were positively correlated with youth, good health, and high educational attainment. The economies of *Native* villages were dependent on the public sector. Non-Natives employed in the public sector were less optimistic about the benefits to local hiring from oil exploration than were Natives. Exercising the political franchise was not highly correlated with income or with nuclear households or months of employment or education, probably because high-earning non-Natives, as public-sector employees, had seldom resided in the villages for as many as 10 years (see pp. 92-96 in Chapter 2). The employment, income, health, and education structure of *Native* villages in 1987-1988 is the structure of wage employment based on the public sector and public-sector transfers.

The Western model does not predict that only healthy, younger persons should earn the highest incomes, nor does it predict that most jobs will be in the public

[71] Native commercial fishermen at a ratio of 2:1 thought that the search for oil would not create more local employment. Yet curiously, every Native commercial fisherman (5) earning between $30,000 and $40,000 annually thought that the search for oil would create jobs for local residents, while every Native commercial fisherman (6) earning more than $40,000 thought the converse. There is no apparent explanation for the responses of the fishermen earning between $30,000 and $40,000.

sector and that non-Natives will earn the highest incomes in that sector (see Table 1 and pp. 92-96 in Chapter 2). Chairmen of boards, chief executive officers, and managers can be elderly, can have accumulated and re-invested capital, and can be Natives. The structure of *Native* villages in 1987-1988 suggests either that the village economies are dependencies, partly subjected to the policies of Federal and State Governments and the price of oil, or that--if one waits long enough--all things being equal, *Native* villages will transform into developed economies operating in a market system. The latter is a covert tautology. Protestant-Ethic household organization, economizing practices, and political activities do not seem to be operating among Natives in *Native* villages. And the only indication of boosterism (support for jobs and development) available in the AOSIS measures suggests that unemployed and underemployed youth, the elderly, the infirm, and Native public-sector employees earning more than $30,000 think that jobs will come to locals from oil developments. The relation that accounts for the greatest reduction of error in predicting that oil searches will create employment for local residents is infirmity, exercising controls for age.

Mixed Villages and the Western Model: Figure 15, the configuration for the *Mixed*-village pretest subsample, provides two regions similar in many particulars to the configuration for the total pretest sample (Fig. 13). The HIGH INCOME NON-NATIVES-NATIVES region in the left-front quadrant (it actually occupies only half of the quadrant) forms a narrow cylindrex with points distributed on two planes. Respondents who report good health, the ability to bite and chew hard foods, freedom from debilitating injuries or illness, and high educational achievement are most apt to be employed for several months each year. Some self-employed commercial fishermen are likely to work away from their home village for several months each year. As health, education, and employment increase, respondents' incomes increase, as do the smallest amounts they require to sustain their households for a month. Rooms in houses also increase with income. These respondents are either non-Natives or Natives who earn high incomes. The non-Natives and many of the Natives have non-Native spouses.

The LOW INCOME NATIVE region is a familiar cylindrex with three planes. Items located on opposite sides of each plane are most distant, and items located closest around the peripheries are most similar. On the middle plane, persons who were born in or near the village (T, D24) are apt to reside in large (D, RHHSIZE), nonnuclear households (C, RHHTYPE). At the top level, respondents who make frequent visits to friends or relatives in distant villages (W, D27), participate in many types of subsistence activities (E, TOTACT), have recently resided in or near the village (V, D26), are married (Y, D29), and have resided in the village a long time (U, D25). Persons who suffer from illnesses or injuries that restrict activities (I, B9) also are apt to have resided in the village for a long period of time, but not to have engaged in large numbers of types of subsistence activities or to have made frequent visits to friends and relatives outside the village.

The radex on the lowest plane established the relation of age (A, RAGES) to illness, on the one hand, and to participation in subsistence activities and travel away from the village on the other. As persons age (A, RAGES), they exercise the vote (Q, D19); but as they age, they are more apt to suffer from debilitating illnesses or injuries. Thus, age and health are the modulating facets in this region. Persons who have lived in *Mixed* villages for a long time, perhaps since birth, tend to be married and to reside in large and/or nonnuclear households, vote in city elections, engage in many subsistence activities, and visit persons in distant villages. If they are elderly or infirm, they are less apt to engage in a wide variety of subsistence activities and less apt to travel. The distribution of these items suggests zeros or negative relations with the items in the HIGH INCOME NON-NATIVES-NATIVES region.

Figures 16 and 17 are 3-D configurations of the LOW INCOME and HIGH INCOME regions identified in Figure 15 of the total *Mixed* subsample. We reduce the coefficients of alienation by 11 and 6 percent, respectively, in these solutions. The variable measuring whether respondents were restricted from participating in some activities because of illness or injury (B9) is eliminated from the LOW INCOME NATIVE subsample of variables in order to demonstrate the relations

Variable	Plot	D1	D2	D3
D19	A	.58	-.61	-.47
D24	B	-.85	-.10	-.06
D25	C	-.30	-.53	-.12
D26	D	-.94	-.10	.29
D27	E	-.46	.46	-.68
D29	F	1.21	.47	.39
RHHSIZE	G	.63	.59	.26
RHHTYPE	H	.64	.18	-.50
RAGES	I	.25	-1.09	.50
TOTACT	J	-.75	.73	.39

Guttman-Lingoes Coefficient of Alienation K = .071

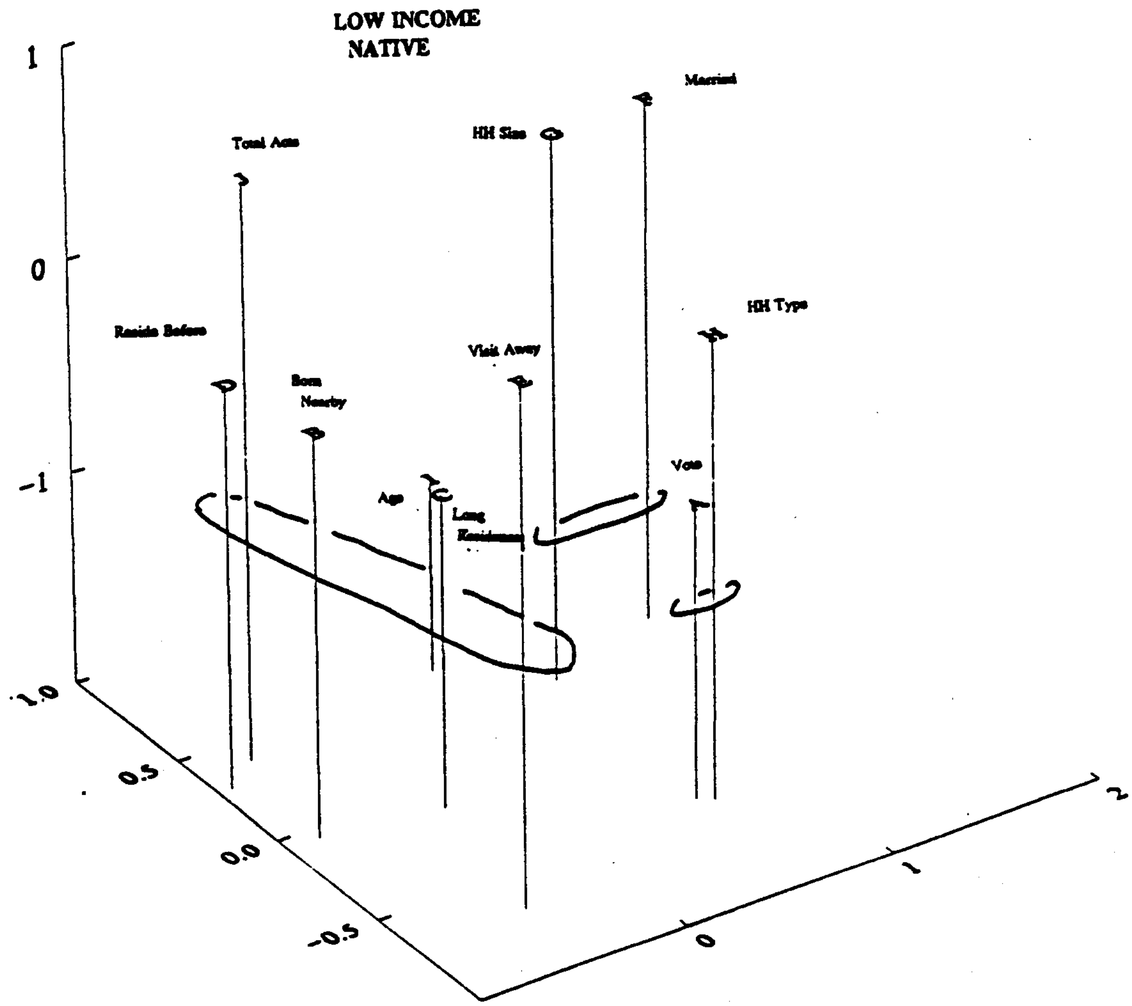

FIGURE 16. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 10 VARIABLES, N = 264, LOW INCOME NATIVE REGION, *MIXED* SUBSAMPLE OF PRETEST SAMPLE, 1987-1988

Variable	Plot	D1	D2	D3
B1	A	.09	-.68	.09
C1	B	.21	-.02	.03
D2	C	.36	.61	.08
D4	D	.78	.62	.11
D8	E	.36	.92	.68
D28	F	.77	.04	-.34
D29A	G	.87	-.44	-.27
D6	H	.39	.02	-1.06
B3	I	.07	-1.07	.69
B8	J	.39	-.37	.40
C6N	K	-.63	.13	-.29
C12	L	-1.12	-.22	-.34
C12M	M	-1.40	.15	-.14
D3	N	-1.14	.30	.37

Guttman-Lingoes Coefficient of Alienation K = .122

HIGH INCOME
NONNATIVES-NATIVES

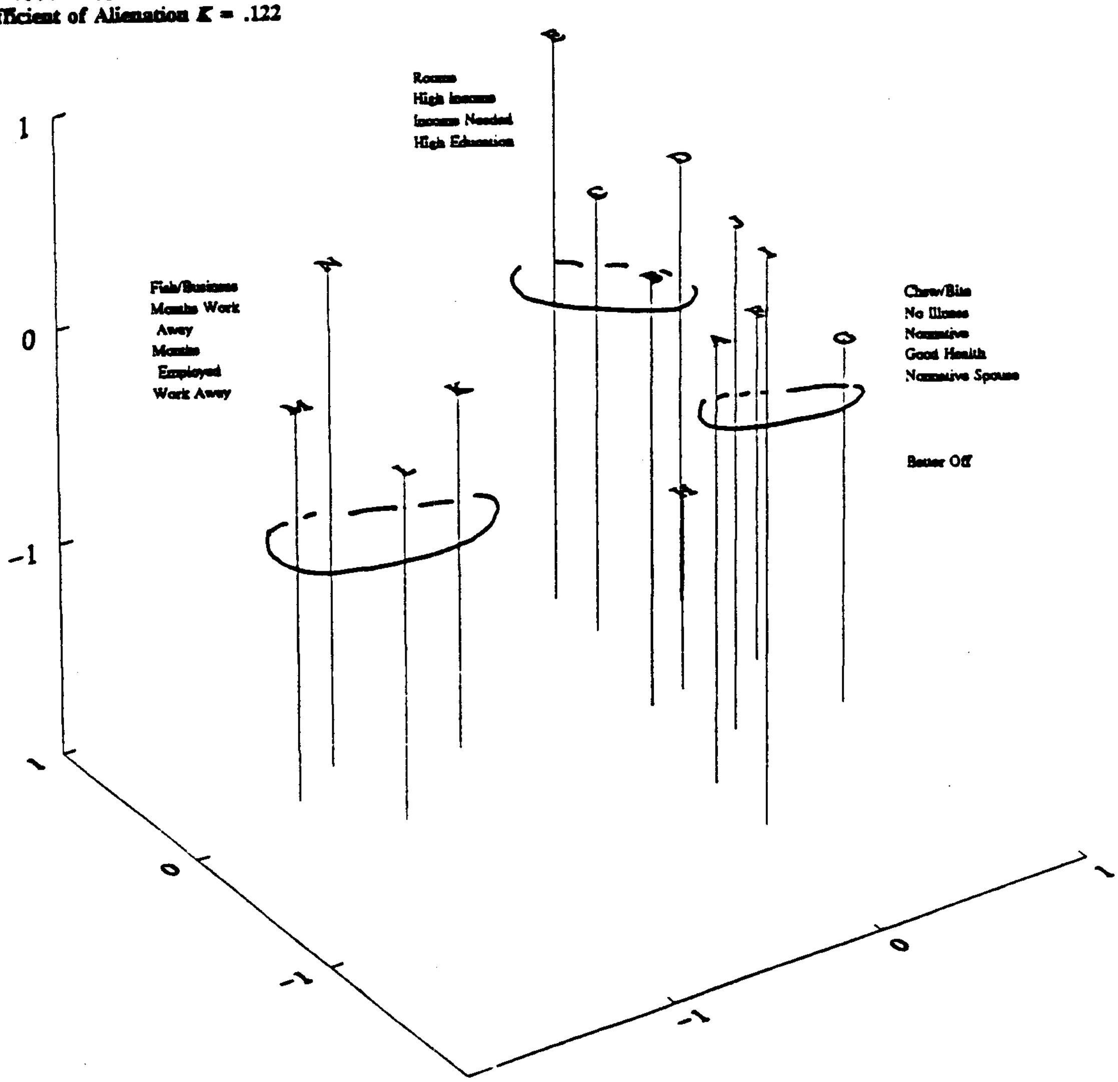

FIGURE 17. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 14 VARIABLES, N = 264, HIGH INCOME NON-NATIVE-NATIVE REGION, *MIXED* SUBSAMPLE OF PRETEST SAMPLE, 1987-1988

among continuity of place, participation in subsistence activities, and participation in visiting.

The tightest distribution of variables in Figure 15 occurs at the rear of the HIGH INCOME NON-NATIVES-NATIVES cylindrex where the items with the greatest centrality--non-Natives (X, D28) and months work away (L, C12M)--are fitted. High positive relations occur among the three variables that measure health (left periphery), the four variables that measure employment around the periphery at the rear, and the variables that measure income and attitudes about income around the periphery at the front. At the lower level, self-reported good health (F, B1) is closely fitted to high education attainment (J, C1) and to income (N, D2), claims about the smallest amount of income required by the household for a month (P, D4), number of rooms in the house (R, D8), and non-Native spouse (Z, D29A). At the higher level, non-Natives (X, D28), the ability to bite and chew hard foods (H, B8), increasing months of employment (K, C6M), self-employed commercial fishermen (or other businesses) (O, D3), employment outside the village (L, C12), months of employment outside the village (M, C12M), the cognitive attitude that the respondent is better off financially now than 5 years earlier (Q, D6), and freedom from illness or injury (G, B3) are fitted.

The complexity of the configuration is simplified in Figure 17 by eliminating the variable that measures cognitive attitudes about whether the search for oil will create jobs for local residents (E50), and by eliminating the variables fitted in the LOW INCOME NATIVE region. Here the entire HIGH INCOME NON-NATIVES-NATIVES region is fitted in the center of the hypersphere--the self-employed fishermen and employment area fitted somewhat to the left of the other tightly fitted area. In the right-center, one circumplex comprises non-Natives and non-Native spouses and self-reports of good health. Closely adjacent is a second circumplex comprising income, minimal income needs, education, and rooms in houses.

Although the variable measuring cognitive attitudes about whether respondents think the search for oil will create jobs for local residents (a, E50) is eliminated from

Figure 17 to better show the relations within the HIGH INCOME region, we return to discussion of E50. It is fitted at the bottom-left periphery of the cylindrex in Figure 15. Contrary to the *Native* configuration, infirm and elderly respondents think that oil activities will ***not*** create employment for locals; but the margin is narrow between the older persons and between the ailing persons who think that the search will or will not create jobs for locals. In addition, the attitude that jobs will be created for locals does not increase with income. Rather, the majority of respondents in every income category think that the search for oil will create jobs. The curvilinear relation in the *Native* villages in which persons with the lowest and highest incomes, but not those in the middle, were optimistic about the creation of jobs for locals from oil searches is not replicated here either.

Respondents who do not engage in subsistence activities at a rate of 4:1 think that the search for oil will create jobs. Respondents who engage in one or two types of activities are split on whether the search will create jobs. Respondents who engage in three or four types of activities at a rate of 1.5:1 think that jobs will be created. Here again, there is a modest divergence from responses in *Native* villages. Even commercial fisherman are split on whether the search for oil will create jobs for locals: 50.7 percent think that the search will and 49.3 percent think that the search will not create jobs for locals. Commercial fishermen who earn less than $20,000 annually are negative (10 to 6), but fishermen who earn over $20,000 are positive (27 to 21).

Most ***Mixed*** subsample PRE scores with E50 are between +.05 and -.09, suggesting that respondents in ***Mixed*** villages did not have firm or fixed opinions about the relations between jobs for locals and oil developments in 1987-1988, at least did not have clearly formed opinions on the basis of income, health, education, employment (at home, where the vast majority of employment occurs), or ethnicity. The few exceptions, and they are not strong as we have just demonstrated, are the coefficients between E50 and participation in subsistence activities (r -.11), debilitating injuries or illness (r -.12), self-employed commercial fisherman (r -.13), and months worked away from the village (r -.15) (this last correlates with commercial fishing or some other form of self-employment).

Cognitive attitudes about the economic consequences of the oil industry for Alaskan villagers are of interest for obvious reasons. Few of the questions in the original AOSIS questionnaire survived the reliability and validity tests, but E50--will the search for oil in this area create jobs for local residents--did. It is one of few measures that allow us to generate concluding hypotheses about differences between Natives and non-Natives and what may be underlying differences in their attitudes about economic development and the environments in which they reside. Natives, we aver, wish to earn large incomes as do non-Natives; but Natives also expect to share the benefits of those incomes widely, they expect to remain in Alaska as did their forebears, and they expect to maintain the environment in reasonable shape for their progeny. Non-Natives in Alaska seldom were preceded in Alaska by their forebears and seldom remain when their work is done. Economic developments of any kind are viewed optimistically and in keeping with what the average person might call progress, but what might best be described as change.

Let us subclassify Native and non-Natives in *Mixed* villages to see what we can learn by exercising a few controls for commercial fishermen (entrepreneurs), income, and the economic sector in which persons are employed.

Natives vs. Non-Natives in the *Mixed* Subsample: Upon subclassifying for race/ethnicity, marked contrasts help to account for the differences between the responses of commercial fishermen to E50 in the *Native* and *Mixed* subsamples. Here we focus on the *Mixed* subsample. Fifty-seven percent of Native commercial fishermen think that the search for oil will *not* create employment for local residents; among those earning over $40,000 annually from their businesses, the rate is 3:1 that the search for oil will *not* create jobs for locals. As income increases among Native commercial fishermen, the attitude that the search for oil will create jobs for locals is strongly negative.

Among non-Native commercial fisherman, 62 percent think the search for oil *will* create employment for local residents. The 19-percent difference between the attitudes of non-Native and Native fishermen is significant at .0001. In addition, as non-Native commercial-fishermen incomes increase beyond $50,000, the rate is 3:1 that the search for oil *will* create employment for locals. This is an exact opposite of Native responses. Native commercial fishermen in *Mixed* villages are similar to Native commercial fishermen in *Native* villages: they earn less than non-Natives and are negative about the consequences of oil development for local employment.

Optimistic attitudes about the consequences of oil development in 1987-1988 were not equally distributed among Native and non-Native self-employed persons--overwhelmingly commercial fishermen. Entrepreneurship alone is not sufficient to provoke attitudes that are favorable to growth, or attitudes that are cognizant about consequences from oil development elsewhere in Alaska. Among the 548 respondents in the pretest sample, six were employed in oil or oil-related industries. Three of those respondents were Native and three were non-Natives. Among the 308 respondents in the posttest sample, three were employed in oil or oil-related industries. One percent of the total pretest-posttest sample is gainfully employed in the industry that generates 85 percent of all Alaska revenues. Oil-industry jobs are not created for locals by the search for oil, although as a multiplier, State revenues derived from oil create jobs in the public and private sectors.

The issue here is perception of oil developments in *Mixed* villages and the knowledge that respondents have about those developments. So few persons in the total AOSIS sample are employed in the oil industry or oil-related industries, including respondents residing in areas (North Slope, Kodiak Island) within reasonable proximity of oil operations, that I conclude, as a hypothesis, that non-Natives in *Mixed* villages (wherein commerce plays a more important role than in *Native* villages) are more optimistic about the consequences of oil operations, if not all other business enterprises, than are Natives--regardless of negative experiences in the past and potential changes to the environment that could negatively affect their own livelihoods.

When testing for the effects of employment sector and amount of income on attitudes, while controlling for race/ethnicity, Native respondents in the public sector whose incomes were less than $20,000 annually are positive on E50 at a rate of 6:1, whereas Natives employed in the public sector earning over $20,000 are negative on E50 at a rate of 1.6:1. Attitudes of Natives in the private sector are about 1:1 positive to negative, with respondents whose incomes are less than $20,000 and more than $40,000 holding negative attitudes and those in between holding positive attitudes. Natives earning very small incomes in the public-sector economies of *Mixed* villages may welcome the prospects of additional work and higher pay in the oil industry.

Although the income scale for non-Natives is higher than for Natives, attitudes held by non-Natives in the public sector about whether the search for oil will create jobs for local residents are very similar to attitudes held by Natives. Non-Natives earning less than $30,000 are positive at a rate of 7:1. Non-Natives earning more than $30,000 are negative at the rate of 1.4:1. The similarities with Natives do not hold for non-Natives in the private sector. Persons earning less than $20,000 are equally divided (rate of 1:1) on whether the search for oil will create jobs for local residents. Non-Natives earning more than $20,000 are positive at a rate of 2.5:1.

The paradox is that public-sector employees have the most to gain and the least to lose from oil development in their area. Revenues generated by the prospects for oil extraction and transport, and the extraction and transport of oil, account for almost the entire growth of the public sector in Alaska since 1971. In order to explain the paradox it would be necessary to ask questions that determine why public-sector employees--both Natives and non-Natives, and particularly those at the higher paying levels (above $30,000) and the higher educational levels--are negative about the consequences for local employment from the search for oil. And it also would be necessary to learn why the differences between Natives and non-Natives in the private sector (lowest earning and highest earning Natives are negative). It may well be that the consequences to the environment and to commercial fishing are feared by the Natives, whereas non-Natives generally maintain optimistic attitudes about the consequences of economic development.

III.B. The Total Posttest Sample

The posttest sample has a larger proportion of respondents in *Mixed* villages (48% in the pretest, 56% in the posttest) and consequently a larger proportion of non-Native respondents than the pretest sample (21% in the pretest, 33% in the posttest). In the preceding chapter we noted several differences between pretest and posttest samples that suggested that the plunge in oil prices affected village economic structures, including outmigration of persons in the private sector who may have lost employment. High earners in the posttest sample are predominantly employed in the public sector. Public earners of short- or long-term residence tend to participate in village affairs more than persons engaged in the private sector, and also to reside in villages year-round. Respondents in the private sector are less apt to reside in the villages year-round.

We have suggested that the private-sector economies of Alaskan villages respond quickly to economic downturns. The plunge in oil prices affects sales of fish, carved ivory, boats, motors, and most other goods and services in Alaska. The public sector responds much more slowly, sometimes even growing--perhaps briefly--to administer over problems caused by steep and protracted economic downturns. In analyzing the Western model in the posttest configuration, we will look for further differences from the pretest.

Although there are differences in sampling proportions in the pretest and posttest, and demonstrable differences in pretest and posttest economies, the similarities in the solutions demonstrate many persistent features in the economic, political, and social structure of coastal Alaskan villages from Kodiak to Kaktovik. Figure 18 yields a configuration similar to the pretest configuration in many features (Fig. 13). The COMPLEX MIXED VILLAGES-HIGH INCOME region is fitted in the right-front quadrant. The NOT COMPLEX NATIVE-DOMINATED VILLAGES-LOW INCOME region is fitted into three areas in the left half of the hypersphere.

The COMPLEX...HIGH INCOME region is similar to the region of the COMPLEX...HIGH INCOME region in the pretest. It fits together the features of

Variable	Plot	Centrality	D1	D2	D3
RSEX	A	107.936	-47.960	-95.450	16.890
RAGES	B	113.243	-88.530	29.398	-45.567
PPEMP	C	93.989	-18.026	-30.195	-99.999
RHHTYPE	D	113.027	-99.999	-1.676	-2.712
RHHSIZE	E	77.527	-21.362	-12.897	56.784
COMFISH	F	103.041	-52.778	28.140	56.694
RACEVIL	G	100.772	99.409	-56.758	-34.235
TOTACT	H	84.818	17.032	39.474	54.918
B1	I	88.702	96.383	-10.182	14.741
B3	J	84.897	74.278	-.182	43.767
B8	K	78.219	83.292	12.635	9.307
B9	L	117.429	-81.021	-26.578	-82.824
C1	M	89.351	99.914	5.803	-11.573
C6N	N	74.958	87.064	-10.450	-10.188
C12	O	82.485	80.540	-7.910	-59.125
C12M	P	90.483	73.619	-12.299	-79.491
D2	Q	91.807	99.999	14.071	-22.384
D3	R	57.785	61.180	-32.659	-34.689
D4	S	102.315	3.475	-99.999	36.577
D6	T	86.070	-56.941	-61.798	-6.071
D8	U	86.203	47.556	-81.700	-47.386
D19	V	88.531	-37.069	-68.688	-58.730
D24	W	62.187	4.632	-70.825	2.019
D25	X	95.828	11.155	84.844	-12.002
D26	Y	92.734	-3.152	-99.408	-36.426
D27	Z	109.834	-19.474	72.845	-76.629
D28	a	111.519	-84.963	42.074	.650
D29A	b	85.184	3.372	-59.814	56.144
D29	c	95.399	27.345	70.309	-60.671
E50	d	67.597	40.917	37.476	24.262
C12C	e	82.527	-22.784	62.229	2.099

Guttman-Lingoes' Coefficient of Alienation K = .152

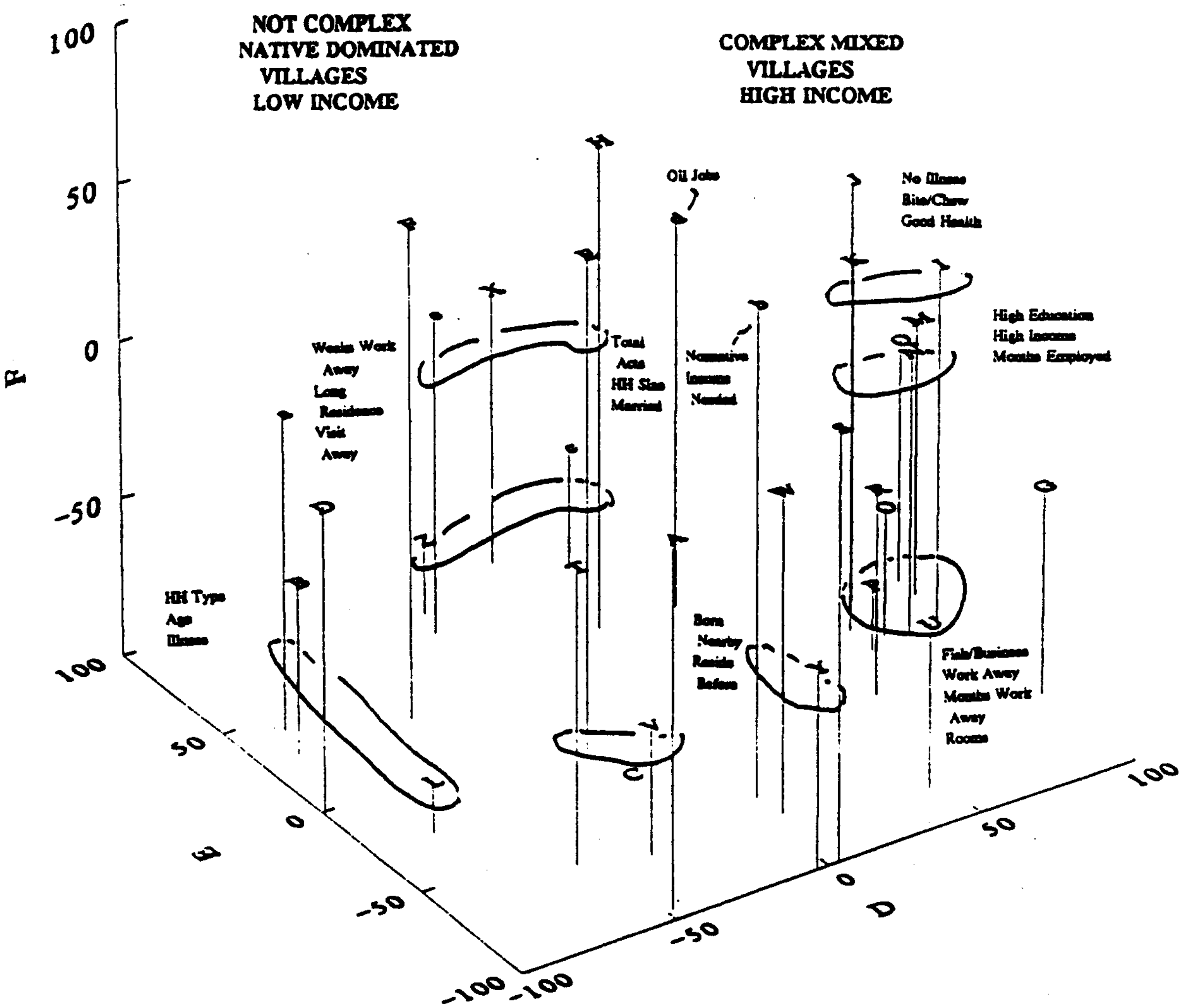

FIGURE 18. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 31 VARIABLES, N = 308, TOTAL POSTTEST SAMPLE, 1989-1990

large, complex villages in which non-Natives and high-earner Natives with high income needs reside. The fitting among variables in this region reflects respondents who are apt to be born away from the village, to have been reared away from the village, and whose most recent residence prior to the current residence was away from the village--outside Alaska. They are employed, earn high incomes, have attained considerable education, have good health, and are free from recent injuries. They tend to be young, certainly younger than 59; and their households are frequently single persons, conjugal pairs, or nuclear families. They seldom take other forms.

These generalizations are evident in the tight fit among health, income, education, and employment variables (also consult Table 18W in appendix). At the far right is the point representing mixed villages (G, RACEVIL). The items in the cylindrex to the left of that point form three planes. The plane in the center forms the axis of increasing education (M, C1), increasing income (O, D2), and increasing months of employment (N, C6N). The topmost plane fits the health variables around its periphery, self-reported good to excellent health (I, B1), the ability to bite and chew hard foods (K, B8), and freedom from recent illnesses or injuries (J, B3). These are characteristics of high earners, much as are high educational achievement and several months of employment. At the bottom of the cylindrex are variables measuring employment--not necessarily highly remunerative employment--and houses with many rooms; self-employment in commercial fishing (or a few other enterprises) (R, D3), employment away from the village during the past year (O, C12), the number of months employed away from the village (P, C12M), and rooms in the house (U, D8). As in the pretest, neither self-employment nor rooms in the house are strong indicators of high income, whereas high income is a strong indicator of rooms in the house.

The number of rooms in houses increase significantly between the pretest and posttest. Most of the increase is accounted for by respondents in *Mixed* villages, reflecting the greater proportion of respondents from those villages, the higher incomes of those respondents, and the 11-percent increase in the proportion of non-Natives in the *Mixed* subsample.

To the left of the right-front quadrant is a complex but small area that includes non-Native spouses (b, D29A), the minimal amount of income needed for a month (S, D4), and somewhat lower on the third dimension, the variables measuring birth place (W, D24) and place of most recent residence prior to the current residence (Y, D26). We explain the multivariate, multidimensional relations thusly: non-Native spouses correlate with high incomes and high-income needs. Many Natives have non-Native spouses, hence the correlation with variables that measure birth and recent residence in the village in which the respondent is interviewed. Because most persons born and reared in the villages are Native and most of them have low incomes, the non-Native spouse and minimal income required variables are positioned on the edge of the COMPLEX...HIGH INCOME region. The minimal income required by respondents in *Mixed* villages increased by 12 percent and by respondents in *Native* villages by 13 percent over the comparable requirements for the pretest respondents.

The NOT COMPLEX NATIVE-DOMINATED VILLAGES-LOW INCOME region is anchored in the left-center of the region (between the increasing age-nonnuclear household-increasing illness area on the left and the employed-married-subsistence activity, etc., area on the right) by the variables measuring *Noncom Fish* villages (F, COMFISH). The region comprises Native respondents whose dominant source of employment is in the public sector. They are long-term residents who were born, and whose most recent residence was, in or near the village in which they were interviewed. They tend to vote in city council elections and, if employed and married, tend to think they are better off financially than they were 5 years earlier, make frequent visits to friends and relatives in distant villages, engage in several subsistence activities, and reside in large households. Among the older persons there is a relatively high rate of recent illnesses or injuries that restrict their subsistence and visiting activities and also their employment, although age alone inhibits some of these activities. Household types, particularly among the aged and infirm, are nonnuclear, whereas household sizes among the younger and healthier married persons tend to be large and frequently include elders and unemployed adults.

On the far left the simplex demonstrates that as age increases (B, RAGES), household types tend to be nonnuclear (D, RHHTYPE) and debilitating illnesses tend to increase (L, B9). Toward the right-rear several variables that measure increasing weeks of employment away from the village (e, C12C), increasing years of residence in the village (X, D25), increasing household size (E, RHHSIZE), increasing participation in subsistence pursuits (H, TOTACT), current married respondents (c, D29), and increasing frequency of visits to friends and relatives away from the village (Z, D27) are fitted into an area on two planes.[72] In the front of the left-front quadrant are fitted variables that measure respondents' attitudes that they are better off financially now than 5 years earlier (T, D6), employment in the public sector (C, PPEMP), exercising the franchise in recent city council elections (V, D19), and positive attitudes about the search for oil creating employment for local residents (d, E50).

A difference between the pretest configuration (Fig. 13) and the posttest configuration (Fig. 18) is the positioning of the item that measures attitudes about whether respondents are better off financially now than 5 years earlier (D6). In the pretest, although D6 has high centrality and is positioned in the center of the hyperspace, it is an outlier in the total solution. Residents of *Mixed* villages thought that they were significantly better off than residents of *Native* villages. In the posttest, the attitudes are reversed as reflected by the positioning of D6 in the NOT COMPLEX...LOW INCOME region.

The measure whose proportions change almost not at all is the cognitive attitude about whether the search for oil will create employment for local residents (d, E50) (see Table 19). The differences from the pretest are modest but interesting.

[72] The area comprises two closely related simplexes in which items on the same plane most distantly removed from one another are least similar, and items on different planes are closely related to items on the upper or lower planes that are closest to their own positions. Thus, the variable that measures the number of visits away (Z, D27) is closely related to the variable that measures currently married respondents (c, D29), and also to the variable that measures increasing number of months in which persons worked away from the village for several weeks during each of those months (e, C12C).

I will cite a few of the divisions. Although the margins are close between positive and negative responses on whether the search for oil will create jobs for local residents (E50), more Natives and non-Natives are positive than negative; more commercial fishermen, whether Native or non-Native, are positive than negative; and more persons who engage in two or more subsistence activities, whether Native or non-Native, are positive than negative. Respondents who were more apt to be negative than positive about the creation of jobs for local residents from the search for oil are commercial fishermen, whether Native or non-Native, who report that they are better off now than 5 years earlier (D6). There are a few other factors operating as well. If persons voted in recent elections and if they are commercial fisherman, they are more apt to be negative than positive. And if they are Natives in *Mixed* villages and engage in two or more subsistence activities, they are more apt to be negative than positive (ratio of 1.4:1).

The attitudes about oil are generally favorable but not by much. And unlike the pretest, only fishermen who reported that they were better off now than earlier, and only Native respondents in *Mixed* villages who engage in large numbers of subsistence activities are more apt to be negative than positive. These responses may well reflect the fears of fishermen who consider themselves successful but, threatened by oil operations, respond with nays; and persons who would welcome increased employment opportunities in the face of a protracted economic downturn also respond with ayes. Native subsistence extractors in the *Mixed* villages pose a separate problem for a concluding hypothesis. As villages grow, crowding puts certain limits on resource extraction. Natives harvest more items and a wider variety of items than non-Natives. Depletion in certain areas, or the need to extend activities into more distant and less known areas, may be factors in Native resource planning. Contending with more growth from oil operations, as well as potential environmental changes from oil operations, may motivate the most active extractors to think that the search for oil will not create jobs for locals, i.e., the response may not be to the question asked but rather to an unasked question.

Theoretical Contrasts of the Posttest Sample: *Native:Mixed*: *Native* and *Mixed* villages are different in many ways, as we have stressed in the preceding analysis. We also have pointed out that the two types of villages share many similar characteristics. This is especially true when the contrast is between rural Alaskan villages, subsuming *Mixed* and *Native*, and Alaska's urban center of Anchorage and political center of Juneau. In comparison with Alaska's economic and political centers, *Mixed* and *Native* villages, whether taken singly or in combination, have the characteristics of dependent satellites in the hierarchy of the Alaskan economy, which is driven by oil revenues. Headquarters for the oil industry are in Los Angeles, Houston, New York, and London. It is to those places that dollars and pounds from Alaskan oil flow, and it is from those places that local management and executives come. The modest labor force required to pump and transport oil also comes from the lower 48 states. In a hierarchical scheme, Anchorage and Juneau also are satellites of the centers of economic ownership and control and political power.

If we imagine the national and world market as a coin, the Alaskan metropolises of Anchorage and Juneau can best be understood as sides of the same coin: each is the recipient of oil revenues that serve as the multipliers for their economies. The two form a rather large dependency. The private sector of Anchorage's economy is more fully developed than that of Juneau, whereas the public sector of Juneau's economy is more fully developed than that of Anchorage (in relative terms). Yet the two are joined as one in which Juneau is the major recipient and redistributor of revenues derived from oil; and Anchorage is the major recipient of Juneau's redistribution which is spread throughout the rural villages of the State. Anchorage, in turn, provides goods and services to the satellites, receiving large portions of the public funds redistributed from Juneau to small villages. Anchorage and Juneau, although metropolises in the sense of political-economic relations in Alaska (nexus), are but satellite to the metropolises of Los Angeles, New York, Houston, London, and Washington, D.C.

The residents of Anchorage might well take exception to this, realizing as they do that many purchases of durables, even bulk purchases of food, are made in Seattle, and also that Seattle companies (and Japanese interests) dominate Alaska's commercial fishing industry. Seattle also stands as a metropolis to Anchorage. The specific trade relations, or places in which Alaska's businesses and residents purchase goods and services, are less important to the metropolis-satellite than is the flow of capital--vastly more leaves Alaska in the ownership and control of persons and businesses outside the State than inside the State.

Revenues derived from government spending sustain the major share of economic activity in rural Alaska. Direct and indirect income transfers from government account for over 80 percent of the economies in most of the regions in our sample. A modest amount of the transfers are unearned income (ranging from 20-40% in our sample). The majority appear in village economies in the form of public employment of all kinds, health and social services, education, energy and utility subsidies, public safety, communications and postal services, and most costs of capital-improvement projects. In one sense, rural Alaskans pay little for the services they receive and for the buildings and maintenance of the buildings in which some services are delivered to them--services normally underwritten by taxes, including property taxes, in most of the U.S. In another sense, Native Alaskans paid dearly for these services, losing as they did through ANCSA their claims to land and resources occupied by their forebears for several millennia.

Although all rural Alaskan villages benefit from the redistribution of public-sector funds, they benefit disproportionately. More funds make their way to *Mixed* villages, making them ever more appealing places for services, than to *Native* villages. Services and the greater number of employment opportunities that they provide are one of the attractions of *Mixed* villages. But to say that *Mixed* villages receive greater amounts of public transfers than *Native* villages does not reveal the size of contributions from the public sector to the economies of *Native* villages. The annualized per capita subsidy for *public education alone* exceeds per capita income.

Native villagers in our sample pay between 3 and 8 percent of their incomes for housing.

Residents of *Native* and *Mixed* villages reap great benefits from public transfers. These are, however, at the end of the market chain; and regardless of public subsidies for transportation, utilities, and the like, residents pay extremely high prices to live in their arctic and subarctic niches. Per capita income ranges from 70 percent to 150 percent of the U.S. average; but living costs--all transfers accounted for--range from 125 percent to 180 percent of the national mean.

Let us return to the hierarchical metropolis-satellite model in which small, simple *Native* villages, such as Shaktoolik in Norton Sound, are satellite to a larger *Native* village, such as Unalakleet at the head of Norton Sound (which has a jet airstrip, is the locus of the Bering Straits School District, and has a small fish-processing plant). In turn, Unalakleet is metropolis to Shaktoolik but satellite to the *Mixed* village of Nome, 150 miles to the west. Nome, the transportation hub for the area, houses the regional profit and nonprofit corporations, the regional health center, several state offices, and a community college, and serves some small mining operations and a small commercial fishing business. In its turn, Nome is metropolis to many villages in the region and satellite to Anchorage-Juneau.

We do not distort reality if we generalize for rural Alaska in our sample that the hierarchical scheme comprises *Mixed* villages that serve as metropolises to *Native* villages in their immediate region. *Mixed* villages house regional centers for public services and administration; serve as transportation hubs, regional centers for Native regional corporations and private-sector businesses that serve the public sector, and centers for borough activities for villages organized into boroughs; and--in the instances of the commercial-fishing villages of the Aleutians, Bristol Bay, and Kodiak Island--provide bases from which fishermen and fish processors of various kinds operate in State, national, and international markets. Non-Natives, frequently between the ages of 30 and 45, occupy the highest income jobs in the public sector, are relatively recent migrants, and seldom remain in the villages for as much as a decade. Single persons or conjugal pairs whose employment is in the education system are often seasonal or short-term residents. Non-Natives also dominate higher income employment in the private sector. Some, particularly single persons and couples engaged in commercial fishing, are seasonal or short-term residents. Many non-Native commercial fishing families also relocate between fishing seasons.

The transportation sector moves persons in the public sector (education, health, researchers of various kinds, regional and village nonprofit corporations, and borough, State, and Federal Governments); persons in the private sector who serve the public sector (construction workers, mechanics, entrepreneurs, media, and researchers and consultants of various kinds); persons in the private sector, albeit few except for commercial fishing villages during the fishing season; and goods of all kinds to the villages. Houses, public structures, lighting, waste systems, and heating plants are constructed by temporary workers from outside the *Mixed* villages in the employ of firms located outside the *Mixed* villages on contracts with village and regional corporations, or with the State or Federal Governments. Except for fish, few goods are moved from the villages to larger distribution or consumption centers, such as Anchorage, Seattle, or Osaka, Japan. Goods flow in; cash flows out, often with seasonal entrepreneurs and employees, predominantly non-Natives. Most persons who remain in the *Mixed* villages--retiring there or, if bereft of retirement or social security income, living with their relatives--are Natives.

There are some exceptions to the generalizations about *Mixed* villages, e.g., public-sector investments in infrastructure and services in the large, predominantly non-Native villages, such as Dillingham in Bristol Bay, Kodiak City on Kodiak Island, and Unalaska-Dutch Harbor in the Aleutians, are huge to accommodate commerce but also to provide education, public safety, and health services. The difference between non-Native commercial fishing villages and other *Mixed* villages lies in private investments, including shops, grocery stores, fish-processing plants, and oil facilities.

Native villages have older populations and fewer seasonal or transitory residents who come for work and leave when the work is finished, primarily because there is less work. The residents travel less than their relatives and friends in *Mixed* villages because they have less disposable income. Houses are smaller, minimal income requirements are smaller, and more persons report injuries than in *Mixed* villages.

Figures 19 and 20 contrast *Native* and *Mixed* villages in the posttest. As in all previous contrasts between *Native* and *Mixed* subsamples, the differences between the SSA configurations for the two are marked. Age and health are important characteristics in accounting for the *Native* configuration. Length of residence in the village and race/ethnicity are central characteristics in accounting for the *Mixed* configuration. It is no fortuity that the structures of *Native* and *Mixed* villages are replicated in major features from pretest to posttest and from wave to wave in the panels over several corpuses of variables. Their relations to one another are as metropolis to satellite within a public-sector economy where services and the prospects of employment are somewhat better in the *Mixed* villages; and access to naturally occurring resources, if not support from relatives, is somewhat better in the *Native* villages. Educational attainment, youth, job competence, and the lure of jobs are reasons for Natives to locate in *Mixed* villages; but so are infirmities, old age, and the prospects of reasonable health and social services.

***Native* Villages and the Western Model**: The posttest configuration for *Native* villages is very similar to the pretest configuration (Fig. 14). A HIGH INCOME NON-NATIVES-NATIVES region forms a conex in the far-left center; a LOW INCOME NATIVES region forms a loose cylindrex in the right-front quadrant. Between the two are several items that fit into neither because they correlate with certain features of both regions.

The HIGH INCOME NON-NATIVES-NATIVES region on the left represents the more youthful, employed, better educated Native and non-Native persons in good health. The bottom two planes of the conex fit reports of good health (F, B1) and reports of no recent illnesses or injuries (G, B3) with the attitude that the search for oil will create jobs for local residents (a, E50).[73] The personal

[73] Little error is reduced by any variable in predicting that jobs will be created for local residents from oil searches nearby. We noted that successful commercial fishermen had positive attitudes about oil searches but that they are exceptions. We also noted that persons who report good health, or are self-employed, or are employed in the private sector have low positive attitudes. PRE scores for these R's range from 25 to 40 percent.

Variable	Plot	Centrality	D1	D2	D3
RAGES	A	124.199	99.999	-65.906	-32.826
PPEMP	B	88.316	20.067	19.829	47.678
RHHTYPE	C	103.069	79.945	3.253	-68.048
RHHSIZE	D	50.649	-2.906	24.486	-57.709
TOTACT	E	76.207	-54.262	48.336	-39.387
B1	F	82.046	-83.038	-13.553	-69.265
B3	G	86.969	-86.474	19.916	-57.878
B8	H	71.028	-78.956	7.912	-40.116
B9	I	113.567	84.559	-51.832	18.008
C1	J	89.510	-99.999	-34.718	-25.156
C6N	K	68.038	-79.324	-7.543	-14.024
C12	L	68.167	-69.909	-10.281	10.271
C12M	M	71.416	-63.482	8.674	17.981
D2	N	75.478	-60.932	-71.193	-39.331
D3	O	63.696	-36.993	39.752	-3.477
D4	P	60.699	-21.952	-61.040	10.950
D6	Q	76.392	-38.775	-83.725	-7.953
D8	R	63.066	-15.909	-37.645	31.746
D19	S	88.868	10.963	-99.999	-26.368
D24	T	82.802	50.525	21.390	12.711
D25	U	94.439	79.058	7.331	-27.687
D26	V	59.234	16.312	-31.109	-75.565
D27	W	85.828	20.392	57.461	6.375
D28	X	88.718	44.535	38.477	-69.032
D29A	Y	85.239	15.471	18.854	-99.999
D29	Z	89.339	15.522	-81.169	-78.910
E50	a	90.159	-91.285	-54.278	-46.396

Guttman-Lingoes' Coefficient of Alienation K = .192

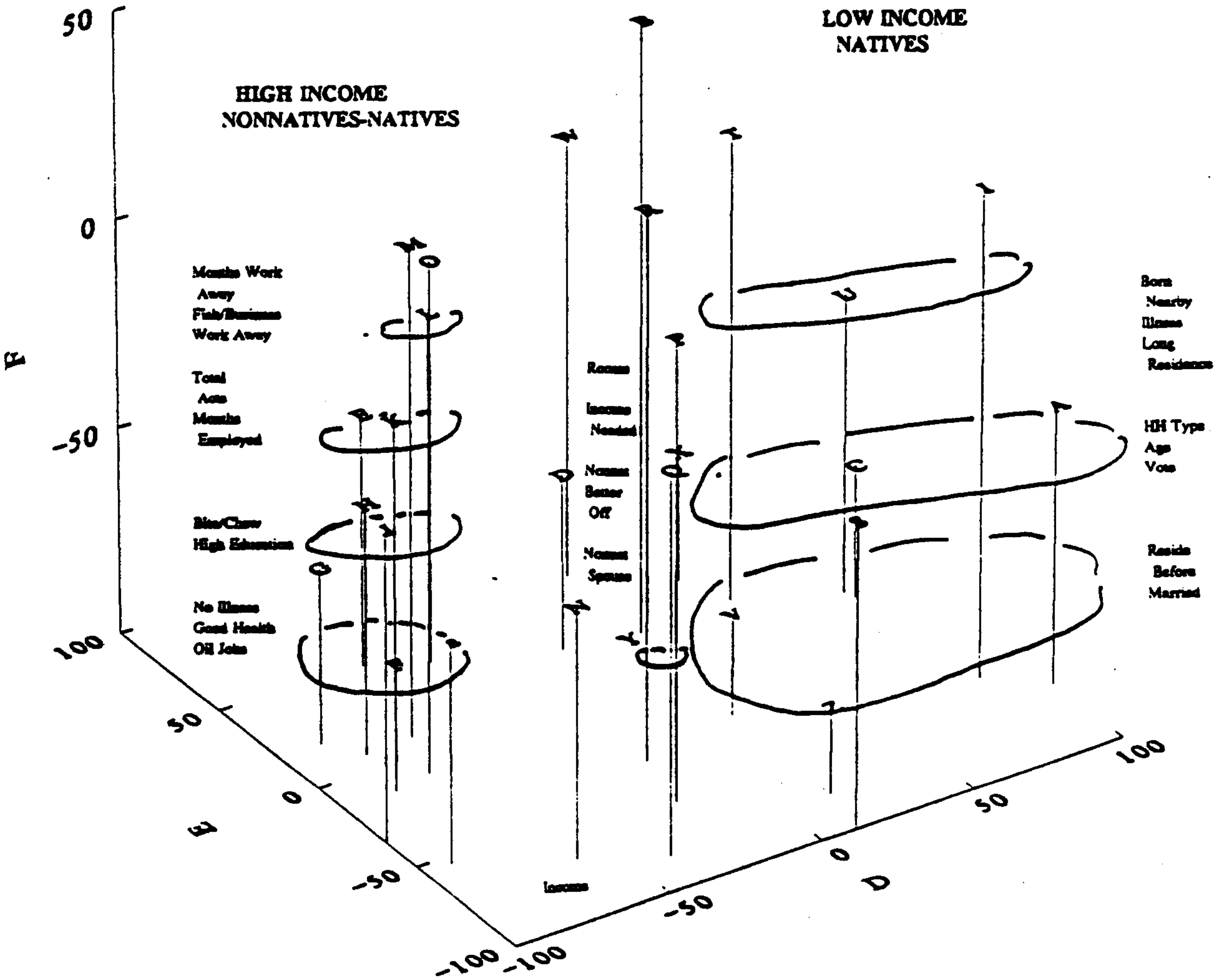

FIGURE 19. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 27 VARIABLES, N = 138, *NATIVE* SUBSAMPLE OF POSTTEST SAMPLE, 1989-1990

Variable	Plot	Centrality	D1	D2	D3
RAGES	A	111.342	-25.231	96.189	-37.066
PPEMP	B	109.011	13.395	-40.049	-99.999
RHHTYPE	C	129.421	-57.540	-99.999	-40.367
RHHSIZE	D	93.731	-47.621	-69.088	19.165
TOTACT	E	99.888	-19.245	5.763	95.629
B1	F	91.825	97.318	-9.373	39.024
B3	G	98.793	93.247	-55.410	23.129
B8	H	71.764	81.362	-23.823	9.480
B9	I	134.828	-94.550	48.662	-61.523
C1	J	87.200	98.237	2.114	23.681
C6N	K	86.618	99.999	7.627	6.597
C12	L	58.810	65.087	26.948	-7.401
C12N	M	76.565	76.509	37.604	-20.403
D2	N	72.403	81.409	18.305	19.778

Variable	Plot	Centrality	D1	D2	D3
D3	O	71.728	41.625	51.666	42.187
D4	P	64.139	72.223	-5.995	-24.552
D6	Q	80.726	51.772	16.023	-67.715
D8	R	15.305	28.340	-2.846	6.221
D19	S	84.402	-26.106	52.462	-50.402
D24	T	95.455	-21.599	59.502	66.723
D25	U	134.530	-98.447	7.392	75.167
D26	V	95.537	-4.974	-65.767	68.878
D27	W	70.571	-46.500	-14.142	-32.242
D28	X	115.089	-99.999	-6.660	16.846
D29A	Y	102.085	-33.363	-89.295	-16.231
D29	Z	81.439	-42.191	57.265	13.287
E50	a	85.313	92.593	-21.230	-24.121

Guttman-Lingoes' Coefficient of Alienation K = .192

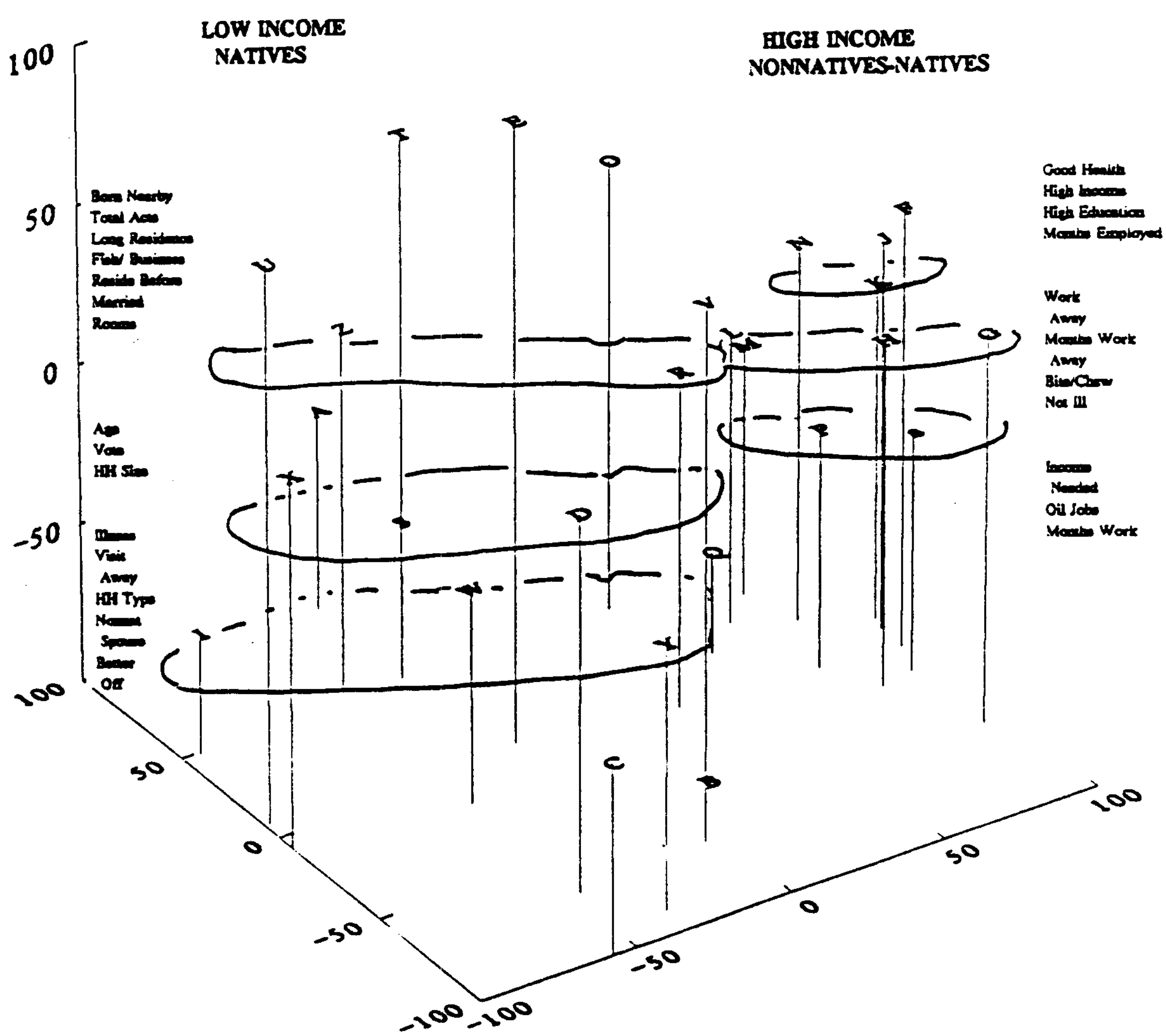

FIGURE 20. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 27 VARIABLES, N = 170, *MIXED* SUBSAMPLE OF POSTTEST SAMPLE, 1989-1990

characteristics of high educational attainment (J, C1) and the ability to bite and chew hard foods (H, B8) are fitted on the next level. Above the personal characteristics are activities in which respondents with good health and good educations engage. These respondents are apt to be employed (K, C6N) and to engage in several types of subsistence activities. Engaging in commercial fishing (O, D3), much of it conducted away from the village (L, C12; M, C12M), requires good health and is usually engaged in by respondents who also engage in many subsistence activities. But those respondents do not necessarily earn high incomes nor do they report that they are financially better off at the same rate as persons in the public sector or persons with high incomes.

The small, closely fitted area in the left-front quad represents items that correlate positively with income and with the items in the HIGH INCOME...NON-NATIVES-NATIVES conex, but are not fitted there undoubtedly because of the high correlations among subsistence activities and participation in the commercial fishing economy by many Natives who earn very little doing so. In *Native* villages, non-Natives tend to be very high earners from employment in the public sector. Therefore, in the left-front to the right of the income variable (N, D2), we see fitted non-Native respondents (X, D28) and non-Native spouses (Y, D29A). They are a considerable distance from one another on the base of the third dimension. The two non-Native measures correlate positively with increasing income requirements (P, D4), increasing rooms in the house (R, D8), and attitudes that the respondent is better off financially now than 5 years earlier (Q, D6). Non-Natives and non-Native spouses are highly correlated with each other: knowing that a person is non-Native reduces error in predicting that the respondent's spouse is non-Native by 76 percent. Nevertheless, many Natives have non-Native spouses. As a consequence, many items whose PRE coefficients are high and positive with Natives are close to zero with non-Native spouses, and high and negative with non-Natives. For example, PRE coefficients for non-Natives with household types are negative and reduce 40 percent of error (representing the dominance of single-person, conjugal-pair, and nuclear households). Coefficients for non-Native spouses with household types are negative but reduce only 20 percent of error. Non-Native spouses are more apt to live in nonnuclear households than non-Native respondents. Household size PRE coefficients for non-Natives and non-Native spouses also are similar: non-Native respondents reside in smaller houses than non-Native spouses. Both obtain very high positive PRE's with months of employment variables, but *all* non-Natives are employed, whereas knowledge that a respondent's spouse is non-Native reduces error in predicting employment by only 67 percent (K, C6M). The point here is that differences obtain between non-Natives and non-Native couples, and Natives and Native/non-Native couples.

Income (N, D2) is fitted between the HIGH INCOME...NON-NATIVE region and the Non-Native/Non-Native area to its right because income is high for non-Natives and non-Native spouses. There is a difference between them: knowledge that a person is non-Native reduces error by 77 percent in predicting that income is high, while knowledge that a respondent's spouse is non-Native reduces prediction error (that income is high) by 44 percent.

This is a rather extended discussion of the positioning of the items in the center, some of which correlate with high incomes (and non-Natives) and some of which correlate with less high incomes, Natives, and (some) non-Native spouses. Rooms in a house are not solely a function of income. Public-sector transfers have played a large role in providing housing in Native villages. Non-Natives and respondents married to non-Native spouses tend to earn high incomes, have large houses, have high income requirements, and think that they are better off now than 5 years earlier.

Household size increases with income and employment, as do visits away from the village. Each of these items is negatively correlated with non-Natives and non-Native spouses, demonstrating that they are activities engaged in by Natives who tend to be free from injuries and illness, relatively youthful, and employed or self-employed.

The LOW INCOME NATIVES region forms a cylindrex in the right-front quadrant. It is a very familiar structure representing underemployed or unemployed

Native respondents who engage in a few or no subsistence activities, are less apt to travel to visit relatives and friends away from the village, are apt to have been born in the village or nearby (T, D24) and to have resided in the village for a long time (U, D25), and if they are elderly (A, RAGES), are more apt to suffer from some debilitating injury or illness (I, B9) than if they are young. The households in which they reside are more apt to be nonnuclear than nuclear (single or conjugal-pair); it also is likely that they voted in the most recent city election (S, D19) and that they are currently married.

This last is the structure of elderly and youthful Natives, many residing in households that have no earner present or are fatherless (denuded nuclear, woman-headed) and in which income and labor is pooled. Members of these households engage in few subsistence activities but are sustained in part by people who do engage in those activities and by public transfers. They are recipients of some forms of sharing with kinspersons and friends but also from donors of skills and services unless decrepit.

It is kindly, laudatory, and humane that elders, single-headed households, and persons with modest education and no or little employment are assisted; but it is not consonant with the Protestant Ethic and economic development that persons of some means would dissipate them on persons who do not save and whose needs are unmitigated.

Mixed Villages and the Western Model: The left half of the hyperspace presents a complex region labeled LOW INCOME NATIVES. It is very similar to the low-income region we identified in the *Native* villages. The differences from the low-income region in the *Native* configuration are significant. In *Mixed* villages, at the highest level of the cylindrex, we see that most persons whose incomes are low,[74] or who are underemployed or unemployed, are Natives who have likely resided in

[74] Income disparities are tallied in Table 2. The lowest incomes in the *Mixed* subsample of the posttest are not exclusively those of Native households, although the incomes of 62 percent of Native households are less than $30,000 in contrast with 24 percent of non-Native households that earn less than $30,000. In further contrast, 50 percent of non-Native households have incomes greater than $50,000, whereas 22 percent of Native households have incomes greater than $50,000. The majority of Natives born within or near the village and who have resided within or near the village for more than 11 years earn less than $30,000.

the village for a long time (U, D25); were likely born in or near the village (T, D24); may well participate in commercial fishing (about 25% of Natives earning less than $30,000) (O, D3); have resided in the area recently, perhaps in the same village for many years--therefore not necessitating a move to their current residence (V, D26); reside in houses with several rooms (R, D8); engage in a wide variety of subsistence activities (E, TOTACT); and are married (Z, D29). On the middle plane, it is evident that as age increases, it is more likely that respondents vote in city elections (S, D19) and reside in large households (D, RHHSIZE). In addition, non-Natives who have resided for the longest periods in Native villages are also positioned on the periphery of the middle radex. At the base, we see that persons with infirmities (I, B9) are more apt to be older than younger. If persons make frequent visits to friends and relatives away from the village (W, D27), they are apt to reside in large households (D, RHHSIZE) and to engage in several subsistence actitivies. And if respondents have non-Native spouses (Y, D29A), they are likely to say that their household is financially better off now than 5 years ago (Q, D6). In *Mixed* villages, nonnuclear-household types (C, RHHTYPE) increase with household size and decrease with income and employment. These relations occur in all samples and subsamples.

Several items within the LOW INCOME NATIVES region in Figure 20 are not fitted within the comparable region in the *Native* configuration (Fig. 19). Visits beyond the village, participation in subsistence activities, and rooms in the house are fitted between the LOW and HIGH INCOME regions in the *Native* subsample. The reasons for the differences are apparent: there is a higher proportion of non-Natives, incomes and houses are larger, and fewer residents--particularly non-Natives--engage in subsistence activities in *Mixed* villages than in *Native* villages.

The HIGH INCOME NON-NATIVES-NATIVES region forms a tight conex whose axis is education, health, and employment. Beginning at the top of the cone, the axis is apparent from the tightly fitted relations among respondents who report good to excellent health (F, B1), have attained considerable education (J, C1), and are employed (K, C6M). The modulation aspect from the axis is the uses to which high educational attainment, good health, and employment are put. The fitting of income (N, D2) on the periphery of the highest plane of the conex reflects the 62 percent of non-Natives and 28 percent of Natives who annually earn more than $40,000. They are generally between the ages of 25 and 55, are highly educated and employed, and report good health .

Around the periphery of the middle plane of the conex are items that measure the absence from injuries and illness (G, B3), the ability to bite and chew hard foods easily (H, B8), and employment away from the village (L, C12; M, C12M). On the lowest level, minimal monthly income requirements for households increase with income, employment, and education.

The average PRE score for the gamma (γ) coefficients between every pair of items in this conex is .55. Non-Natives comprise 54 percent of the respondents in the *Mixed* subsample (posttest), yet they earn disproportionate shares of all incomes greater than $40,000 (72%) and greater than $50,000 (72%). Among respondents with college or higher educations, 71 percent of non-Natives annually earn more than $40,000 compared with 50 percent of Natives. Among respondents with good or very good health, 67 percent of non-Natives annually earn more than $40,000, contrasted with 35 percent of Natives. Natives are more often married, travel more frequently to visit friends and relatives away from the village, engage in more types of subsistence activities, and--as is demonstrated in Chapter 2--engage in more sharing and visiting within the village than non-Natives. High educational attainment and good health often assist Natives in gaining employment and earning high incomes, though neither so often nor so high as for non-Natives. And Natives expend income on subsistence pursuits, travel, and various forms of sharing that are much less practiced by non-Natives, even those married to Natives.

The pursuit of educations and employment, even entrepreneurship, accommodates Natives to lives in the subarctic and Arctic, where they have lived for most of their lives and will, in all likelihood, retire and die. They marry, and if they form nuclear families, it is likely that they will form nonnuclear households of some type in the future--perhaps forming grandparent-grandchild households or, as widow or widower, moving in with a child's family, or co-residing with a sibling. When residing in nuclear-family households, Natives visit and share with relatives and friends, especially elders, who reside in nonnuclear households.

Non-Natives are less often married, their households are small, and they are less apt to vote in local elections. They are predominantly short-term residents (28% of non-Natives have resided in the *[Mixed]* villages in which they were interviewed for more than 10 years compared with 53% of Native respondents). They travel to visit relatives and friends less often than Natives, saving some of their incomes to increase their investments in fishing operations or to assist them in their relocation to the lower 48. We know from our protocols and KI interviews that public-sector employees frequently invest in real estate in the lower 48 (for speculation, as landlord, or to occupy in the future). It is apparent that non-Natives have more to save or more to invest. The length of time that persons reside in a village is not a good indicator of participation in village affairs.

The traditional, communitarian ethics of Natives account for many of the differences between Natives and non-Natives in village Alaska. The very large subsidies from State and Federal Governments to Alaskan villages assist Natives and non-Natives alike. Transfers from regional and village corporations assist Natives in many ways. Jobs created by regional and village corporations are very frequently occupied by non-Natives, who also occupy jobs provided by State and Federal Governments. Whereas non-Natives benefit greatly from public-sector transfers, from jobs of all kinds, and from distributions of the State of Alaska Permanent Fund, non-Natives leave during economic downturns if governments or industries cannot provide for them. Whatever the particular cases may be, most non-Natives ultimately leave. Savings accrued from jobs and public-sector transfers assist the move. Benefits from jobs and public-sector transfers are shared widely among Natives. During economic downturns, they enjoy networks of relations and traditional activities that allow most of them to stay.

IV. THE STRUCTURE OF THE WESTERN MODEL IN THE PANEL

Analysis of responses within the panel, particularly between responses in the first and third waves of research (1987-1988, 1989-1990) allow us to determine similarities and differences between panel respondents (reinterviewees) and pretest and posttest respondents in regard to assumptions about economic development and Protestant-Ethic individualism, related facets of the Western model. Throughout this analysis we have contrasted an alternative hypothesis with the general and somewhat euphoric model of economic development. The main feature of the alternative hypothesis is that economic development is a political-economic phenomenon that, in regions occupied by Native Americans, occurs unevenly and creates dependencies in its wake. Native resources are expropriated, exploited, and dominated; and Native populations are recipients of the dole. Ownership and control of strategic resources, such as oil and fish, is transferred to corporations and companies whose bases are outside the region and to whom surpluses flow. Revenues are returned to governments that in turn redistribute the revenues.

The Western model, as envisaged by Congress through passage of ANCSA, predicts several outcomes. Most importantly, the combination of high educational attainment, good health, access to some capital (through ANCSA's provisions), creation of shareholder corporations, the receipt of title to land by persons through conveyance of regional corporation land to village corporation land and then to shareholders in village corporations, and the extension of democratic practices in a capitalist democracy (through various regional and village corporations) will precipitate changes in household organization, relations among wider networks of kinsperson, practices of saving, or economizing scarce resources so as to benefit one's self and family.

The features of individual and family life are not specifically sought by ANCSA as they were in the preceding General Allotment and Indian Reorganization Acts. They appear more as an undertow of pragmatic intent: if Natives are to survive in the market world, they must learn to economize scarce resources to maximize benefits. Changes to individual and family life are presumed to be a causal effect of economic development. Those who change and accommodate to them will succeed where others fail. All are not destined to succeed any more than any non-Native entrepreneur is destined to succeed. We approach the relation between Protestant-Ethic practices and economic development in this light.

The personal characteristics of education, health, occupation, and employment of Natives and non-Natives in Alaska are often similar; but the incomes, visiting and sharing practices, and household sizes and organizations are not. Each also has access to public services and resources made available from oil revenues. Non-Natives self-select to locate in Alaska. Natives choose to stay there (although Natives may relocate for employment or training for certain periods in their youth).

We have contrasted Native and non-Native individual characteristics, household organizations, visiting and sharing customs, and ethics (Protestant Ethic and traditional communitarian ethics) in the pretest and posttest samples. Inasmuch as over-time correlations (three waves) of the panel items used here proved not to be reactive (or to be testing artifacts), and also proved to have high reliability and high stationariness, contrasts of panel and pretest:posttest responses will allow us to remove the threats of specification error (ecological fallacy) that will linger if we do not contrast the panel with the pretest and posttest samples.

Table 21 demonstrates that first-wave (1987-1988) panel responses are so similar to pretest responses to those same items (Table 19) that comment is not required. There are no significant differences between the pretest sample and the first wave of the panel on the 12 items. Not only are there no significant differences, but differences in responses on the 24 attributes tallied among the 12 variables are greater than 2 percent in only 5 instances. The average difference for the 5 is 3.4 percent.

Posttest and third-wave panel responses for the same variables also are highly similar. The average difference among 18 attributes of 9 variables is 3 percent. The posttest sample is weighted more heavily toward *Mixed* villages in contrast to the pretest, which is more heavily weighted toward *Native* villages. The posttest, as a consequence, has 14 percent more respondents born outside Alaska and 7 percent

Table 21

CONTRASTS AMONG FIRST, SECOND, AND THIRD WAVES OF THE COMBINED AB PANEL, 12 AOSIS VARIABLES MEASURING RESPONDENT HEALTH, RESIDENTIAL HISTORY, VISITING PRACTICES, AND ATTITUDES ABOUT INCOME AND OIL (1987-1988, 1988-1989, 1989-1990), *N* = 170

	FIRST WAVE (1987-1988)	SECOND WAVE (1988-1989)	THIRD WAVE (1989-1990)
R'S HEALTH			
1 = Very Poor	0.0%	1.2%	3.6%
5 = Very Good	28.4%	32.4%	28.4%
Md [1 thru 5]	4	4	4
SUFFER FROM INJURY/ILLNESS			
1 = A Lot	9.1%	8.4%	7.6%
3 = Not at All	53.9%	62.3%	61.7%
Md [1 thru 3]	3	3	3
BITE AND CHEW HARD FOODS			
1 = Not at All	2.9%	3.5%	4.2%
3 = Very Easily	72.4%	72.9%	75.0%
Md [1 thru 3]	3	3	3
ILLNESS/INJURY PREVENT ACTIVITIES			
No	80.1%	82.4%	74.4%
Yes	19.9%	17.7%	25.6%
MINIMAL INCOME REQUIRED/MONTH			
1 = <$500	19.2%	16.4%	13.1%
6 = >$2500	12.2%	12.1%	13.7%
Md [<500 thru >2500]	$1,050	$1,065	$1,135
HOUSE FINANCES NOW/5 YRS AGO			
1 = Worse Off	25.3%	22.6%	17.5%
3 = Better Off	47.0%	51.8%	55.4%
Md [1 thru 3]	2	3	3
NUMBER OF ROOMS IN HOUSE			
1 = Less than 3	11.8%	10.0%	6.6%
4 = 7 or More	17.6%	26.0%	29.9%
Md	4.3	4.8	5.4
R'S BIRTHPLACE			
1 = Beyond Alaska	23.5%	22.9%	21.6%
4 = Here	35.9%	33.5%	31.2%
Md [1 thru 4]	3	3	3
R'S RESIDENCE BEFORE MOVING HERE			
1 = Beyond Alaska	18.0%	23.1%	20.0%
4 = Here	31%	23.8%	20.0%
Md [1 thru 4]	3	(27 missing)	(30 missing)
NUMBER OF VISITS OUTSIDE THE VILLAGE LAST YEAR			
1 = 0	20.2%	17.4%	12.4%
3 = 3 or More	35.7%	38.9%	37.9%
Md [1 thru 3]	2	2	2

Table 21 (continued)

	FIRST WAVE (1987-1988)	SECOND WAVE (1988-1989)	THIRD WAVE (1989-1990)
WILL SEARCH FOR OIL CREATE JOBS FOR LOCAL RESIDENTS			
No	38.6%	42.9%	42.9%
Yes	61.4%	57.2%	57.1%
IS OIL SEARCH GOOD OR BAD IDEA		missing	
1 = Bad	15.7%		27.3%
3 = Good	28.9%		45.5%
Md [1 thru 3]	2		(148 missing)

fewer born in or near the village than does the panel. The large number of missing responses for the measure of the respondents' residence before moving to the village is disconcerting. The third-wave panel respondents are identical to the first- and second-wave respondents. Interviewers simply failed to record information on this topic on from 16 to 18 percent of the respondents during the second and third waves. We therefore compare the posttest with the panel responses in the first wave. Equal percentages of posttest and panel respondents' most recent residence was in or near the village in which they were interviewed, but the posttest sample included 8 percent more respondents than the panel whose most recent residence was outside Alaska.

The greater number of inmigrants and the greater proportion of non-Natives, almost all of whom are under 55 years of age in the posttest sample, account for the differences between the posttest and third wave. The posttest has slightly more respondents with good health and fewer injuries than the third-wave panel responses. Minimal income requirements of posttest respondents are 7-percent higher than panel respondents, and about 7 percent say they are worse off now than 5 years earlier than panel respondents.

The higher income requirements of the posttest match our expectations: residents of *Mixed* villages, particularly non-Native residents, have higher income requirements than Natives and higher requirements than residents of *Native* villages. As for persons in the posttest sample who report that they are worse off now than 5 years earlier, this too matches our expectations: the sales and prices of fish slumped beginning in 1989,[75] but all other sales and services also slumped. Sales and services in nonfishing-related businesses are affected by a drop in the fish market, but they are even more greatly affected by the persistent low prices of oil. As oil revenues plunge, the overall economy from housing starts to retail sales wanes because oil revenues are the principal multiplier in the Alaskan economy. Panel respondents suffer from the same factors that affect posttest respondents, but the panel comprises a stable population as evidenced by the ability to locate the panel respondents in each of 3 years. Those who could not be located had relocated, presumably for work or to further their educations, or died in the cases of a few elderly Natives.

Panel respondents over the three waves consistently report that they are doing better. Upon subclassification into *Mixed* and *Native* subsamples, we see that the panel respondents residing in *Mixed* villages report greater improvements than panel respondents in *Native* villages (Table 22). In the total panel sample, respondents who reported that they are worse off decreased 8 percent and those who reported that they are better off increased by 8 percent between the first and third waves. The improvement also is noted between pretest and posttest. The difference is that a greater proportion of posttest respondents than third-wave-panel respondents reported that they are worse off.

As is demonstrated in the *Mixed:Native* contrasts (Table 22), third-wave-panel respondents in *Mixed* villages far outstrip their posttest counterparts in the pretest sample (Table 19) as well as third-wave-panel respondents in *Native* villages in their minimal income requirements and in their cognitive attitudes that they are better off now than 5 years earlier. This indicates that the panel respondents in *Mixed* villages are successful survivors. It also indicates that some of the respondents selected for the posttest sample are either recent migrants who left better circumstances than

[75] Fish prices fluctuate within a season and between seasons. The price of most salmon species, in particular, plunged in 1989 and remained low in 1990 (and 1991). The causes of the price drop are not fully understood. Among the known causes are fear of tainting from the Exxon Valdez oil spill (Japanese and European buyers), market glut (Japanese buyers stockpiled salmon in 1988), and extraordinary harvesting on the high seas by Japanese and Taiwanese drift-net fishermen.

Table 22

CONTRASTS BETWEEN *NATIVE* AND *MIXED* SUBSAMPLES, THREE WAVES OF THE COMBINED AB PANEL, 12 AOSIS VARIABLES MEASURING RESPONDENT HEALTH, RESIDENTIAL HISTORY, VISITING PRACTICES, AND ATTITUDES ABOUT INCOME AND OIL (1987-1988, 1988-1989, 1989-1990), *NATIVE N* = 88, *MIXED N* = 82*

	NATIVE WAVE 1 1987-1988	*MIXED* WAVE 1 (1987-1988)	*NATIVE* WAVE 2 (1988-1989)	*MIXED* WAVE 2 (1988-1989)	*NATIVE* WAVE 3 (1989-1090)	*MIXED* WAVE 3 (1989-1990)
R'S HEALTH						
1 = Very Poor	0.0%	0.0%	1.1%	1.2%	3.4%	3.7%
5 = Very Good	18.4%	39.0%	22.7%	42.7%	19.5%	37.8%
Md [1 thru 5]	4*	4	4*	4	4*	4
SUFFER FROM INJURY/ILLNESS						
1 = A Lot	11.6%	6.3%	12.9%	3.7%	8.1%	7.4%
3 = Not at All	45.3%	63.3%	54.1%	70.7%	52.3%	71.6%
Md [1 thru 3]	2	3	3	3	3*	3
BITE AND CHEW HARD FOODS						
1 = Not at All	4.5%	1.2%	4.5%	2.4%	5.8%	2.4%
3 = Very Easily	59.1%	86.6%	61.4%	85.4%	66.4%	84.1%
Md [1 thru 3]	3*	3	3*	3	3*	3
ILLNESS/INJURY PREVENT ACTIVITIES						
No	75.3%	84.1%	80.7%	86.5%	70.9%	78.0%
Yes	24.7%*	15.8%	19.3%*	13.4%	29.1%	22.0%
MINIMAL INCOME REQUIRED/MONTH						
1 = <$500	30.3%	8.8%	23.8%	8.6%	19.5%	6.2%
6 = >$2500	5.3%	18.8%	7.1%	17.3%	4.6%	23.5%
Md [<500 thru >2500]	$758*	$1,470	$782*	$1,470	$880*	$1,615
HOUSE FINANCES NOW/5 YRS AGO						
1 = Worse Off	29.4%	20.7%	27.6%	17.3%	27.4%	7.3%
3 = Better Off	31.8%	62.2%	40.2%	64.2%	38.1%	73.2%
Md [1 thru 3]	2*	3	2*	3	2*	3
NUMBER OF ROOMS IN HOUSE						
1 = Less than 3	13.6%	9.8%	10.2%	8.9%	8.2%	4.9%
4 = 7 or More	4.5%	31.7%	20.5%	34.2%	16.5%	43.9%
Md	3.2*	5.3	3.4*	5.7	4.7*	6.2

Table 22 (continued)

	NATIVE WAVE 1 1987-1988	*MIXED* WAVE 1 (1987-1988)	*NATIVE* WAVE 2 (1988-1989)	*MIXED* WAVE 2 (1988-1989)	*NATIVE* WAVE 3 (1989-1990)	*MIXED* WAVE 3 (1989-1990)
R'S BIRTH PLACE						
1 = Beyond Alaska	5.7%	42.7%	6.8%	40.2%	3.4%	41.3%
4 = Here (this village)	48.9%	22.0%	46.6%	19.5%	42.5%	16.3%
Md	3*	2	3*	2	3*	2
R'S RESIDENCE BEFORE MOVING HERE						
1 = Beyond Alaska	4.8%	30.5%	13.2%	32.0%	6.0%	32.9%
4 = Here	44.0%	15.9%	36.8%*	12.0%	29.9%*	11.0%
Md [1 thru 4]	3*	(5 missing)	(20 missing)	(7 missing)	(21 missing)	(9 missing)
NUMBER OF VISITS OUTSIDE THE VILLAGE LAST YEAR						
1 = 0	26.7%	13.4%	24.4%	9.9%	16.1%	8.5%
3 = 3 or More	38.4%	32.9%	41.9%	35.8%	39.1%	36.6%
Md [1 thru 3]	2	2	2	2	2	2
WILL SEARCH FOR OIL CREATE JOBS FOR LOCAL RESIDENTS						
No	45.0%	33.3%	44.9%	41.0%	50.6%	35.1%
Yes	55.0%	66.7%	51.1%	59.0%	49.4%*	64.9%
IS OIL SEARCH GOOD OR BAD IDEA						
1 = Bad	11.1%	20.5%	missing	missing	25.0%	27.8%
3 = Good	28.4%	29.5%			50.0%	44.4%
Md [1 thru 3]	2	2			2	2

'Asterisks (*) denote *Mixed:Native* contrasts significant at $P \leq .05$. *Mixed/Native* contrasts for each wave appear in the *Native* column. Significance of differences for *Mixed/Native* contrasts of nominal dichotomous variables is based on the test for the difference between proportions; the Kolmogorov-Smirnov 2-independent-sample test is used for ordinal variables. Variables discussed in this chapter but not listed in this table are listed in Table 1 (Chapter 2).

those that they currently enjoy, or they are residents of somewhat longer duration who have been adversely affected by the economic downturn.

Another indication of the financial betterment of panel respondents is the increase in their median house size (from 4.3 to 5.4 rooms) over the three waves. Posttest respondents also occupy houses with more rooms than pretest respondents (4.9 to 4.3), but this may indicate merely a large proportion of non-Native respondents in *Mixed* villages. House size is affected by income, but it also is affected by public programs (HUD programs and various capital-improvement projects, in particular, have assisted Natives to acquire better and bigger houses).

Nevertheless, knowing the number of rooms in a house reduces about 27 percent of the error in predicting cognitive attitudes about household finances.

IV.A. *Native:Mixed* Contrasts in the Panel

The *Native:Mixed* contrasts between pretest and panel first wave, and posttest and panel third wave are very similar to the contrasts for the total samples and the total panel. There are more recent inmigrants from outside Alaska in the posttest *Mixed* subsample than in the panel *Mixed* subsample (refer to the first wave). The *Native:Mixed* contrasts for the first wave and for the pretest are so similar as to forego most comment. The *Native:Mixed* contrasts for posttest and panel also yield similarities throughout. Although differences of percentage change, the relations of the greater proportion to the lesser proportions throughout the contrasts do not, i.e., the relative differences between *Native* and *Mixed* respondents throughout the contrasts do not change. The differences, referred to above, are the measures of minimal incomes required (more require less among *Native* respondents in the panel than in the posttest; less require less and more require more among *Mixed* respondents in the panel than in the posttest) and household-finance comparisons (which mirror the minimal income comparisons).

IV.B. The Western Model and Native Rural Dependencies: The Structure of Personal Characteristics and Household Organizations in the Panel

<u>Structure in the First Research Wave</u>: The SSA configuration for the first wave of the panel (Fig. 21) exhibits very few differences from the SSA configuration for the pretest (Fig. 13). The differences are accounted for by attrition of the least stable respondents from the panel (persons we were unable to locate in the second or third waves) and by retention of the most stable panel respondents. The most striking differences are attributable to panel respondents in *Mixed* villages, as we have just noted.

The configuration is divided into two distinct regions: NOT COMPLEX NATIVE-DOMINATED VILLAGES LOW INCOME on the left, and COMPLEX MIXED VILLAGES HIGH INCOME on the right. The NOT COMPLEX NATIVE-DOMINATED VILLAGE...region forms a cylindrex very similar to the NOT COMPLEX...region in the pretest configuration. Small, simple villages have more long-term residents with lower incomes, less employment, less education, larger households, more nonnuclear households, smaller houses, and more illness and infirmities than do large, complex villages.

Although the proportions of long-term respondents with lower income and the like are greater in *Native* (or *Noncom Fish* or *Periphery* or *Control*) villages than in *Mixed* villages, regardless of proportions,[76] whether persons reside in small, simple or large, complex villages, long-term residents who were born near the village in which they currently reside are more apt to reside in nonnuclear households, or large households, are more apt to vote in city elections, and--as they get older--are more apt to suffer from infirmities than are better educated, better employed recent migrants whose incomes are high.

Fitted in the middle plane of the NOT COMPLEX NATIVE-DOMINATED...cylindrex is *Noncom Fish* villages (F, COMFISH). We interpret this plane as representing relations among respondents who reside in small, simple, Native villages that they were born in or near (V, D24), and in which they have resided for a long time (W, D25). They are organized in nonnuclear households (D, RHHTYPE) and have resided in or near the village prior to assuming their current residence (X, D26). Household size and exercise of the franchise increase with length of residence in the village. Age (B, RAGES) also increases with length of residence for persons born in or near the village; and beyond age 50, illnesses and infirmities also increase (K, B9).

The COMPLEX MIXED VILLAGE HIGH INCOME cylindrex on the right is a familiar replication of the COMPLEX MIXED VILLAGE...region in the pretest and the posttest. The relations among the items fitted in the region demonstrate that as education and reports of good health and freedom from injuries increase, months of employment, income, the smallest amounts required by a household for a month, attitudes that household finances are better now than 5 years earlier, and rooms in the house increase. In addition, the number of currently married persons increases.

[76] Note that the measure for small, simple, Native-dominated villages (*Noncom Fish*) is fitted in the NOT COMPLEX NATIVE-DOMINATED...cylindrex on the left; and the measure for large, complex, *Mixed* villages is fitted in the COMPLEX MIXED VILLAGES...cylindrex on the right.

These are predominantly characteristics of non-Natives and respondents, whether Native or non-Native, whose spouses are non-Native. It also includes Natives, but the proportions are few relative to the proportions of non-Natives with these attributes. In addition, these attributes are more characteristic of residents of large, complex villages than small, simple ones.

The measure of *Mixed* villages (G, RACEVIL) is fitted between the lower and higher plane of the cylindrex, close to the measure of increasing educational attainment (L, C1). On the higher plane, educational attainment, increasing income (P, D2), and increasing months of employment (M, C6M) form the axis around the periphery of which are fitted non-Native respondents (Z, D28), non-Native spouses (b, D29A), the ability to bite and chew hard foods easily (J, B8), currently married respondents (a, D29), the smallest income required for a month (R, D4), and self reports of good to very good health (H, B1). On the plane below are fitted increasing rooms in the house (T, D8) and cognitive attitudes that respondents are financially better off now than 5 years earlier (S, D6).

A simplex in the right front of the hypersphere comprises predominantly private-sector employment (C, PPEMP), participation in commercial fishing or some other self-employed enterprise (Q, D3), months of employment away from the village (C12M), and employment away from the village in the past year (C12). These items are closely fitted with each other on the periphery of the COMPLEX MIXED VILLAGE...region in the pretest configuration. They form a small area beyond the periphery of the COMPLEX MIXED VILLAGE...region in Figure 21, because self-employment (D3) and employment away from the village (C12M) correlate negatively, but near zero, with income.

The reasons for the low, negative PRE coefficients between income and self-employment, and income and months of employment away from the village, are obvious. Namely, although commercial fishing (or other forms of self-employment) are engaged in by a large proportion of the *men* in the panel (53% of all males), the capital investments of the large majority of these fishermen is so modest and their participation in commercial fishing is so marginal that their activities do not

Variable	Plot	D1	D2	D3
RSEX	A	.14	.95	-.53
RAGES	B	-1.00	-.52	-.63
PPEMP	C	-.06	-.79	-.65
RHHTYPE	D	-.72	.81	-.09
RHHSIZE	E	-.72	-.06	.62
COMFISH	F	-1.05	.51	.22
RACEVIL	G	.86	.06	-.18
B1	H	.60	.53	.29
B3	I	.31	.72	.14
B8	J	.79	-.19	-.10
B9	K	-.86	-.31	-.79
C1	L	.83	.01	.21
C6N	M	.47	-.38	.45
C12	N	.43	-.86	.01
C12M	O	.08	-1.05	.22

Variable	Plot	D1	D2	D3
D2	P	.60	.07	.33
D3	Q	-.08	-1.05	-.17
D4	R	.53	.24	.39
D6	S	.56	.50	-.41
D8	T	.49	-.00	-.38
D19	U	-.73	.40	.65
D24	V	-1.21	.19	.16
D25	W	-1.27	.05	-.15
D26	X	-1.25	.04	.14
D27	Y	-.21	-.13	.80
D28	Z	1.08	.14	-.04
D29	a	.23	-.53	.64
D29A	b	.91	.32	-.09
E50	c	.23	.34	-1.06

Guttman-Lingoes' Coefficient of Alienation K = .172

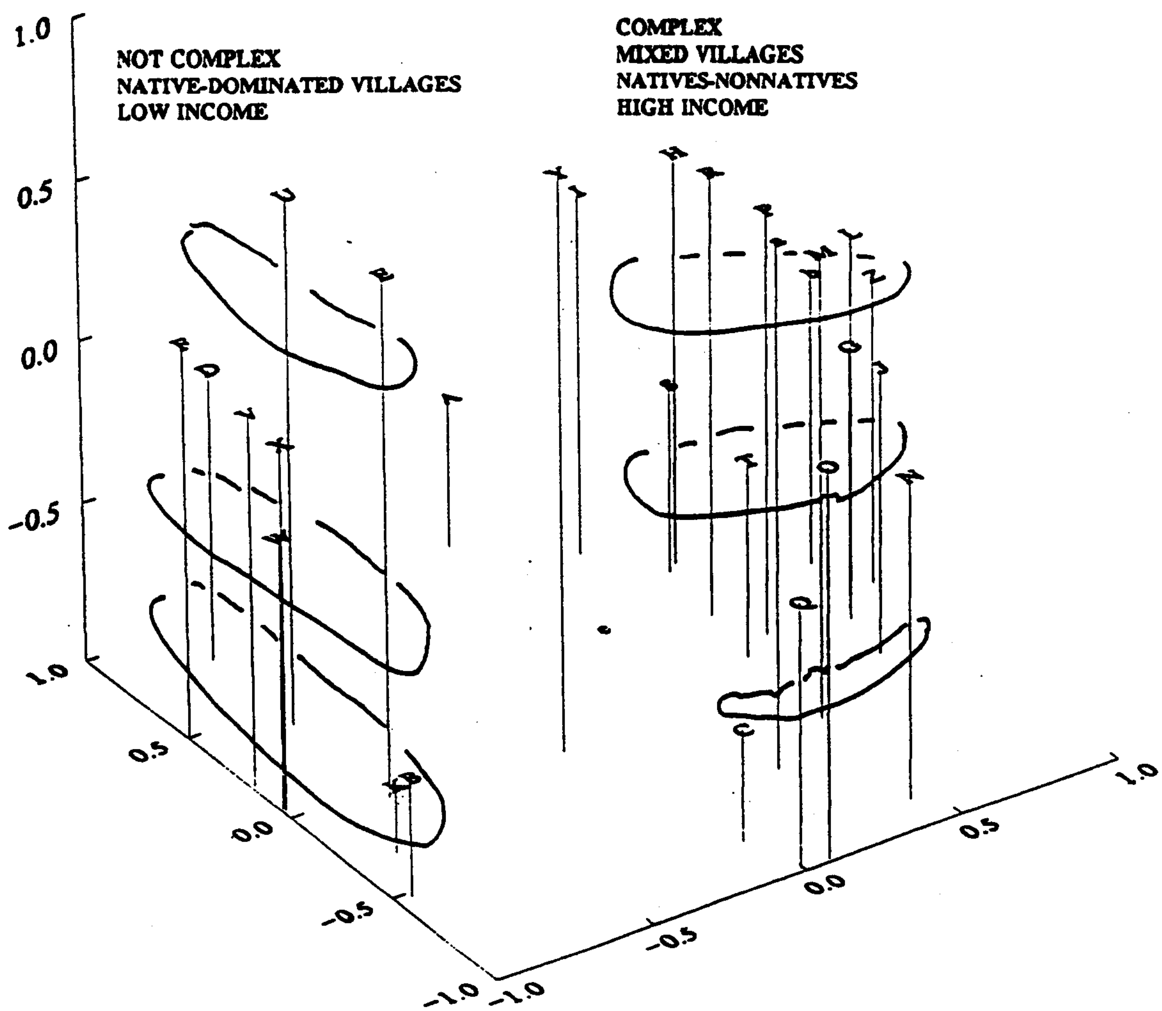

FIGURE 21. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 29 VARIABLES, FIRST WAVE, TOTAL PANEL, N = 170, 1987-1988

generate much income (51% of all males engaged in some commercial fishing earn less than $20,000 annually). As for employment beyond the village, so few persons are employed away from the village for more than 3 months during the year (7% of all males were employed from 4 to 6 months away from the village) that only modest income is generated by the employment (22% of persons employed away from the village for 4 months or more earn less than $20,000 annually, and 22% earn more than $40,000)[77] (C12M).

In the first wave of the panel, self-employment and employment away from the village yield a modest positive γ (.34); but each yields a negative γ with income (-.03). In the pretest, self-employment correlates positively, but near zero, with income (.04) and positively with months employed away from the village. These modest differences account for the fitting of the self-employment simplex beyond the periphery of the COMPLEX MIXED VILLAGE...region in the panel.

Persons who travel frequently from the village to visit friends and relatives (Y, D27) are predominantly Natives who are free from injury, younger, employed, and married. Because persons who travel reside in *Noncom Fish* villages as well as *Mixed* villages, as do persons who report no injuries, those items are fitted outside either region, although absence of injury (I, B3) can be seen as fitted on the periphery of the COMPLEX MIXED VILLAGE...region.

In the pretest configuration (Fig. 13), the variable that measures participation in subsistence activities is employed. Its presence, along with the attitudinal measure about whether the search for oil is a good or bad idea, fitted length of residence (D25) and visits away from the village (D27) into a simplex that does not appear in the panel configuration. Nevertheless, the relations of D27 to D25 and both to the measure of whether the search for oil will create employment for local residents (C, E50) is the same, as measured by PRE coefficients, in the pretest and in the panel.[78]

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[77] So that these figures are not misinterpreted, 22 percent of 7 percent of all males earned less than $20,000; and 22 percent of 7 percent of all males earned more than $40,000.

[78] The relations are not especially interesting. The relation between length of residence in a village and visiting away is positive but low, as is the relation between visiting away from the village and the cognitive attitude that the search for oil will create employment for locals. The relations between long residence and the search for oil is modest and negative (-.25).

As in the pretest, most PRE coefficients for relations between E50 and other variables range between +.10 and -.10. Knowing that a person resides in a *Mixed* village will reduce 24 percent of error in predicting that persons think that jobs will be created for locals from oil exploration. Knowing that a person voted in the most recent city council election will reduce by 45 percent the error in predicting that the person thinks that the search for oil will not create jobs for locals. Without exercising further controls, the strongest prediction about the search for oil is that more persons who exercise the franchise in city (and also village- corporation, regional-corporation, and State) elections were apt to think it would not create jobs than it would create jobs.

Structure in the Second Research Wave: The 3-D configuration for the second wave (Fig. 22) is very similar to the configuration for the first wave. This is to be anticipated from the univariate distributions in Tables 21 and 22. The relations among the 26 items employed throughout to evaluate the Western model have yielded very similar SSA configurations throughout. The NOT COMPLEX NATIVE-DOMINATED VILLAGES LOW INCOME region forms a cylindrex on the left; the COMPLEX MIXED VILLAGES HIGH INCOME region forms a conex on the right.

The second-wave configuration is interesting because of the clarity with which we can assess relations within and between the two regions. Permanence of place so dominates the NOT COMPLEX NATIVE-DOMINATED...region, with its strong exercise of political franchise among persons who reside in nonnuclear and/or large households, that we sense the continuity of Native persons in Alaskan villages who are of the place in which they reside. As a complement to this, we see clearly the importance of good health, high educational attainment, high incomes, long periods of employment, and ethnicity in creating stability within the populations of the complex villages in the COMPLEX MIXED VILLAGES HIGH INCOME region. The two regions provide a clear measure of what we have referred to as selection for a stable population. Respondents who could not be located during the second wave almost surely reflect instability through relocation due to job loss, ill health, location

Variable	Plot	D1	D2	D3	Variable	Plot	D1	D2	D3
BRSEX	A	-.09	-.63	.90	BD2	P	.68	.12	.02
BRAGE	B	-.76	-.93	-.72	BD3	Q	.39	.20	-.90
BPPEMP	C	.46	.86	-.38	BD4	R	.44	.09	-.02
BRHHTYPE	D	-1.07	.37	.39	BD6	S	.80	-.34	-.35
BRHHSIZE	E	-.72	.83	.13	BD8	T	.34	-.77	.00
COMFISH	F	-1.14	.50	.15	BD19	U	-.89	-.17	.68
RACEVIL	G	.79	-.15	.14	BD24	V	-1.25	.04	-.36
BB1	H	.43	.30	.82	BD25	W	-1.16	-.28	.11
BB3	I	.29	.41	.60	BD26	X	-1.27	.20	-.12
BB8	J	.57	.17	.46	BD27	Y	-.15	.16	-.70
BB9	K	-.06	-1.06	-.76	BD28	Z	.88	-.27	.17
BC1	L	.66	-.01	.39	BD29	a	.06	.80	-.44
BC6M	M	.46	.55	.04	BD29A	b	.86	-.32	.27
BC12	N	.17	.23	-.42	BE50	c	-.36	-1.04	.42
BC12M	O	.63	.17	-.54					

Guttman-Lingoes' Coefficient of Alienation K = .185

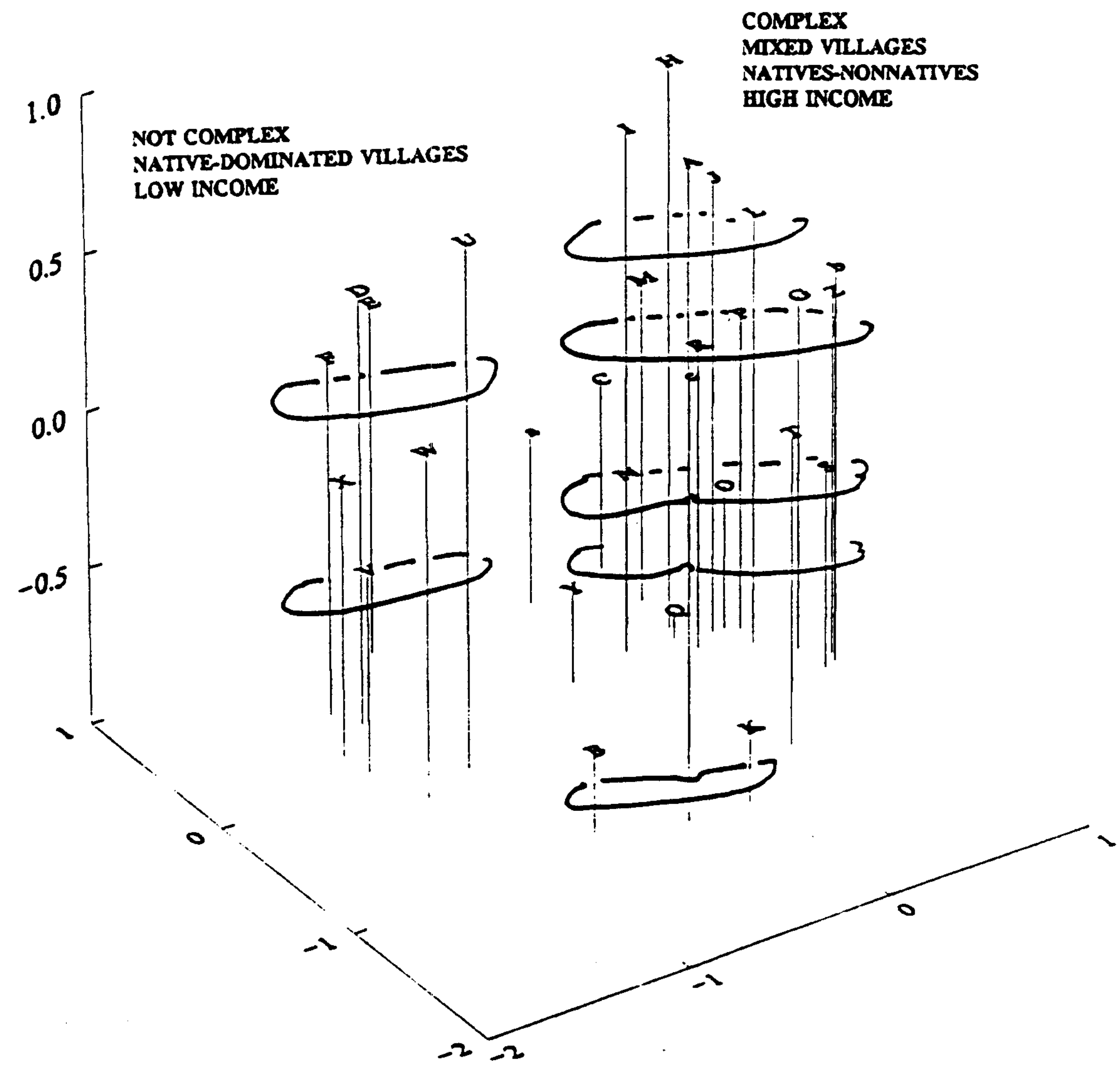

FIGURE 22. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 29 VARIABLES, SECOND WAVE, TOTAL PANEL, N = 170, 1988-1989

of employment elsewhere or less prominent factors, such as marriage coupled with relocation.

The NOT COMPLEX NATIVE-DOMINATED...cylindrex replicates most of the comparable region in the first wave's solution. Respondents who were born in the village (V, D24) most likely have resided in the village for a long time (W, D25), including residing in or near the village immediately prior to moving to their present location (X, D26). As permanence of place increases, respondents are more likely to have voted in the most recent city council election (U, D19). Large households (E, RHHSIZE) and nonnuclear households (D, RHHTYPE) are more likely to house long-term residents; and those households are more likely to be in simple, Native-dominated villages (F, COMFISH) than in the more complex villages in which non-Natives comprise more than 25 percent of all residents.

The COMPLEX MIXED VILLAGES HIGH INCOME conex allows us to see the importance of employment to income and the importance of ethnicity/race to employment. Knowing that a person has good health and high educational attainment reduces considerable error in predicting income and employment; but knowing whether a person is a Native or non-Native reduces much more error in predicting income and employment. The third radex from the bottom up (or the second from the top down) fits income (P, D2) at the right-center and months of employment (M, C6M) at the left-center. Around the periphery of that radex are fitted non-Native respondents and non-Native spouses (Z, D28; b, D29A), *Mixed* villages (G, RACEVIL), and the smallest income required by a household for a month (R, D4). The average PRE score for the 15 coefficients in this radex is .60; the average PRE score for these variables with income (P, D2), which is the axis, is .63. The strongest predictors of high incomes are non-Native persons and non-Native spouses, and they also are the highest predictors of one another.

It is important to recognize that neither knowledge of high educational attainment (L, C1) nor very good health (H, B1) reduces as much prediction error for income as race/ethnicity, yet education and health are strongly related to income and employment. The average PRE score among the four is .53. This accounts for their positioning as the axis for the conex. Self-reported health (H, B1) is at the apogee of the cone, with educational attainment (L, C1) below it on the right. Months of employment away from the village (O, C12M) is centered at the base of the conex. Education is fitted directly above the point for income, and self-reported health is fitted at the apogee of the conex above months of employment. Months employment away, which is fitted at the base, yields a negative PRE score with self-reported health (at the top) but an average PRE of .47 with income and months of employment.

Each radex comprises items that are more closely related to the item that forms the axis on their own plane than they are to the items above or below the plane on which each item is fitted. At the top of the conex, the average PRE score for self-reported health, freedom from illness and injury, and the ability to bite and chew hard foods easily (H, B1; I, B3; J, B8) is .53. At the base the average PRE score among months of employment away from the village (O, C12M), employment away from the village (N, C12), rooms in the household (T, D8), and cognitive attitude about whether households are better off financially now than 5 years earlier (S, D6) is .20. Self-employed commercial fishermen (or persons engaged in other forms of self-employment) (Q, D3) correlate highly and positively with months of employment away and also with attitudes that households are better off financially, but not strongly--although positively--with education and income. Self-employment negatively predicts good health, hence the distance between the base and the apogee of the conex.

Currently married respondents and making frequent visits to friends and relatives correlate positively and strongly with several variables in each region, although weakly with each other (γ .09) and near zero with the measures of small, simple villages (F, COMFISH) and large, complex villages (G, RACEVIL). Thus, they are fitted between the two some distance from each other.

Toward the left-front of the hyperspace, increasing age is fitted with increasing debilitating infirmities (K, B9). As age increases, persons are apt to be restricted in their activities because of injuries or illness. The proportion of infirm, elderly persons is greater in the small, simple villages than in the large, complex ones.

Knowledge of the attitude that the search for oil will create jobs for local residents does not allow for much reduction of error. Women are more sanguine than men (γ .35), and long-term residents are somewhat more sanguine than residents of shorter duration (γ .25). Because most PRE scores hover between +.20 and -.20 and none are higher than .38, it is evident that attitudes about the consequences of oil search for jobs was mixed among panel respondents in 1988-1989.

<u>**Structure in the Third Research Wave**</u>: Results of the third-wave reinterviews reflect the stationariness of responses among panel respondents (Fig. 23). Stationariness does not mean that change is not evident. Some changes between first- and third-wave responses are apparent. As in previous configurations, a NOT COMPLEX NATIVE-DOMINATED VILLAGES LOW INCOME region is fitted on the left, and a COMPLEX MIXED VILLAGES HIGH INCOME region is fitted on the right.

Stability of place characterizes the NOT COMPLEX NATIVE-DOMINATED...cylindrex. Persons born in or near the village in which they are interviewed are more apt to reside in small, simple, Native-dominated villages; to reside in large households, or households of nonnuclear arrangements, or both; and to have resided in or near that same village immediately prior to assuming their current residence than are respondents in more complex, *Mixed* villages. It also is more likely that these persons have resided for long durations (more than 11 years) in the villages in which they are interviewed.

The measures of income, employment, education, and race/ethnicity are fitted in the COMPLEX MIXED VILLAGE...conex. The interpretation of the distribution is that the item pairs within the bivariate distributions in the COMPLEX MIXED VILLAGES...conex increase together (representing few reversals), just as do the item pairs within the bivariate distributions in the NOT COMPLEX NATIVE-DOMINATED...cylindrex. The relations between the items in the separate

Variable	Plot	D1	D2	D3
RSEXC	A	-.00	-1.09	.18
RAGESC	B	-1.27	-.45	-.65
PPEMPC	C	.32	.79	-.36
RHHTYPEC	D	-.94	-.03	.46
RHHSIZEC	E	-.57	.62	-.25
COMFISH	F	-1.02	.39	.52
RACEVIL	G	.86	-.43	.20
B1C	H	.56	.01	.45
B3C	I	.33	.17	.53
B8C	J	.68	.20	.17
B9C	K	-.68	-1.15	.20
C1C	L	.75	.03	.11
C6NC	M	.40	.52	.01
C12C	N	.31	.69	.58
C12MC	O	.10	.95	.23

Variable	Plot	D1	D2	D3
D2C	P	.62	-.09	-.27
D3C	Q	.33	.91	-.60
D4C	R	.60	-.23	-.55
D6C	S	.46	-.42	.29
D8C	T	.31	-.75	-.35
D19C	U	-.32	-.47	-.73
D24C	V	-1.28	.21	-.02
D25C	W	-.92	-.15	-.71
D26C	X	-1.33	.34	.20
D27C	Y	-.30	.49	.56
D28C	Z	.96	-.27	-.17
D29C	a	.38	.34	-.85
D29AC	b	.85	-.42	.04
E50C	c	-.17	-.70	.77

Guttman-Lingoes Coefficient of Alienation K = .176

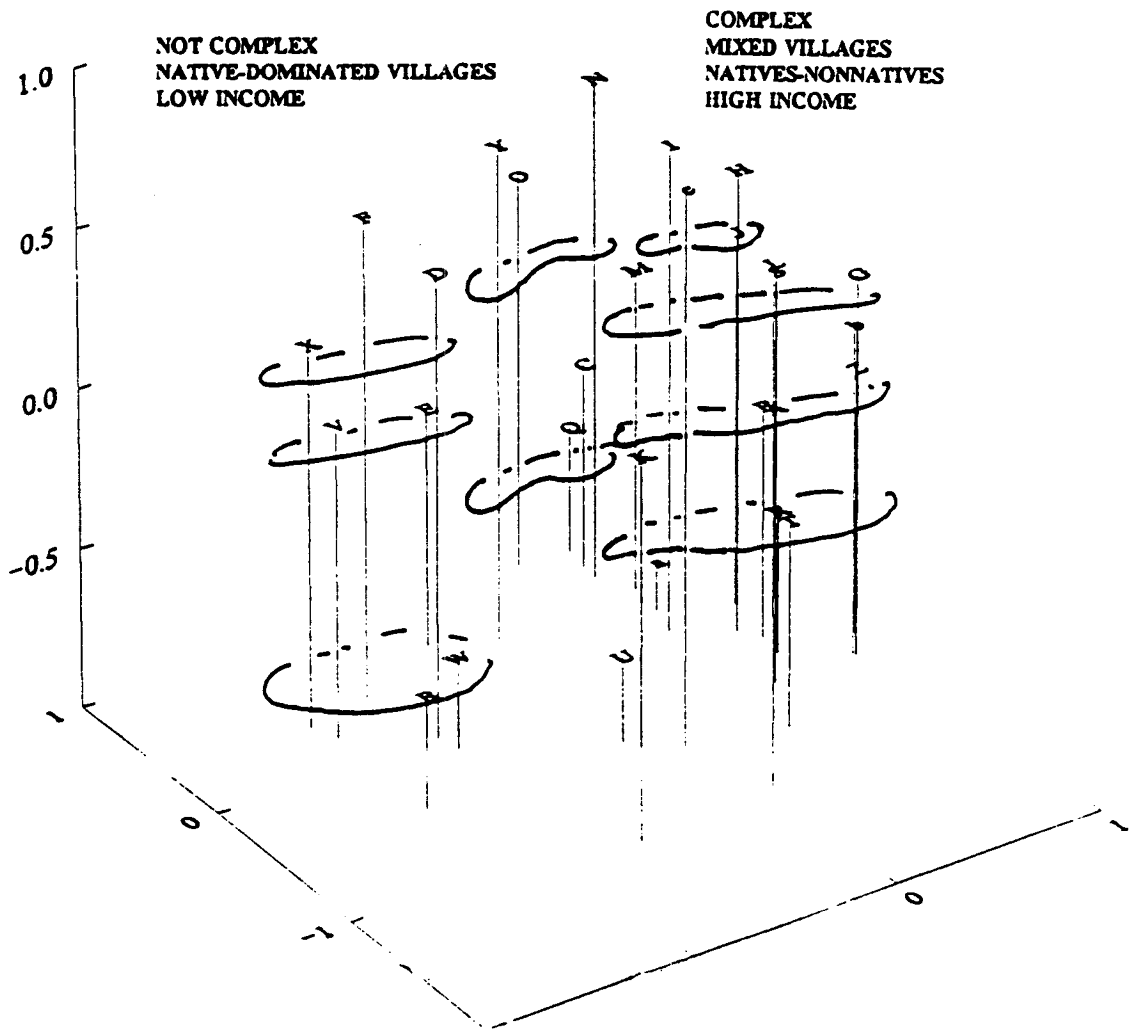

FIGURE 23. STRUCTURE OF AOSIS WESTERN MODEL, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 29 VARIABLES, THIRD WAVE, TOTAL PANEL, N = 170, 1989-1990

distributions tend toward zero or negative PRE coefficients. Thus, in the COMPLEX MIXED VILLAGES...conex, residents born outside the region who may be rather recent immigrants to the village tend to reside in smaller households of single-person, conjugal-pair, or nuclear arrangements; to enjoy good health; to have attained some college education; to be employed; to earn high incomes; and to be non-Natives or non-Native spouses of respondents. In turn, persons in large, nonnuclear households who are long-term residents have low or modest incomes; are underemployed or unemployed; are less educated; report somewhat less robust health; are Natives; and, if married, are married to Natives.

None of the preceding is surprising. We have come to understand the structure of the panel's employment, education, income, household, and residential history relations in this fashion. The average PRE score for the 21 coefficients comprising the NOT COMPLEX NATIVE-DOMINATED...cylindrex is .25. Small, simple village (F, COMFISH), nonnuclear-household organizations (D, RHHTYPE) and prior residence in or near the village (X, D26) are fitted in the top radex (average γ .40), with birth of respondent in or near the village (V, D24) and increasing household size (E, RHHSIZE) fitted at the middle level (γ .26). Each of these items is more closely related to the items adjacent to them and above them than to each other (average γ .63), as can be anticipated because they are fitted at opposite sides of the middle radex. At the base, respondents' ages (B, RAGES) increase with length of residence in the village (W, D25).

The COMPLEX MIXED VILLAGES...conex has as its axis the same items identified in Figure 22: from top to bottom the most central items are self-reported good health (H, B1), high educational attainment (L, C1), and income (P, D2). At the conex apex, the average PRE score among self-reported good health, freedom from injuries or illness (I, B3), and the ability to bite and chew hard food easily (J, B8) is .61. The average PRE score among the items on the second radex from top of the conex is .41. The items fitted around increasing education (L, C1) are the attitude that the household's finances are better off now than they were 5 years earlier (S, D6), increasing employment (M, C6M), and residence in large, complex, *Mixed* villages (G, RACEVIL). At the middle level, non-Native respondents (Z, D28) and non-Native spouses (b, D29A) are fitted on the periphery of increasing income (P, D2). The average PRE score for the items on this plane is .72. At the next lower level, increase in the minimal income required to meet a household's needs for a month (R, D4) is fitted with increasing numbers of rooms in the house (T, D8), both of which correlate highly and positively with income and non-Natives but obtain only a low positive PRE with each other (.10). Housing, as we have sought to make clear, is not solely a function of income. Public-transfer programs have made adequate housing possible for many persons with low incomes in simple and complex villages.

In the third-wave configuration, two changes from previous configurations appear, one of which stands out. The more prominent of the two is that exercising the franchise in city council elections (U, D19) and debilitating injuries or ill health (K, B9) are fitted between the NOT COMPLEX... and the COMPLEX...regions. As a measure of stability, if not political integration, persons in simple and complex villages exercise the franchise (the PRE scores are about 10% higher between D19 and the items in the NOT COMPLEX...region than are the items in the COMPLEX...region). And as a second measure of stability, infirmities are few, correlating negatively with the majority of items in both major regions. Infirmities do not increase noticeably with age (indeed, the PRE coefficient is -.03). Thus, many persons who reported debilitating illnesses and injuries in prior waves recovered, and fewer persons sustained new illnesses or injuries in the period prior to our third-wave research. Thus, this measure appears to select for stable respondents.

Nevertheless, in the third wave as in previous waves, length of residence (W, D25), age (B, RAGES), voting in city council elections (U, D19), and infirmities from illness or injuries (K, B9) are positively related (average γ .12). Indeed, the four comprise a simplex. A figure was not drawn around the simplex in Figure 23 because of the positioning of the measures for voting (U, D19) and infirmities (K, B9), whose multivariate relations are more complex than age or length of residence in the village.

The second difference is the fitting of the traditional, communitarian measure of leaving the village to visit friends and relatives (Y, D27) with increasing months of employment away from the village in the past year (N, C12); and these items, in turn, are fitted with the dichotomous (yes/no) measure of employment away from the villages in the past year (O, C12M) and self-employed commercial fishermen or some other business (Q, D3). In prior waves, the measure of visiting away from the village is fitted between the two regions. The third-wave configuration is similar to the posttest solution in that respondents who work away from the village for several weeks are apt to make frequent visits to friends and relatives away from the village; but in the posttest, the more frequent travelers also are younger, long-term residents of the simpler, Native-dominated villages.

In the third wave, persons who travel to visit friends and relatives are in their early employment years and are more often residents of *Native* than *Mixed* villages; but the PRE coefficients are positive with each. The travelers are as likely to be employed in the public as the private sector (although fishermen are employed in the private sector C, PPEMP). So, respondents who work away from the village also are apt to visit friends and relatives away from the village, unless those respondents are non-Natives or unless the respondent has a non-Native spouse.

The cognitive attitude about whether respondents think the search for oil will create employment for local residents (c, E50) is difficult to fit, as it has been in the preceding configurations. It is here fitted between the measure for recent illness or injury (Γ .33, K, B9) and the cognitive measure about whether respondents think their household finances are better now than 5 years earlier (γ .38, S, D6). More distant are the measures for *Mixed* villages (γ .31, G, RACEVIL) and non-Native spouses (γ .29, b, D29A). Thus, knowing that respondents are ill or injured and unable to engage in certain activities, or that respondents think they are better off now than 5 years ago, or that they have non-Native spouses, or that they reside in *Mixed* villages allows us to reduce error by about one-third in predicting that their opinions about the search for oil creating employment for locals will be positive. If we know that respondents vote in city council elections or that they are self-employed commercial fishermen, we can reduce our error by about the same amount in predicting that their opinion will be that the search will not create jobs for locals.

Differences with the posttest are modest. The principal ones are that permanence-of-place items in the NOT COMPLEX NATIVE-DOMINATED...region in the posttest are distributed around the periphery of the region in three simplexes. Exercising the franchise, the attitude that the household is better off now than 5 years earlier, and incidences of debilitating injuries or illnesses are fitted firmly within the NOT COMPLEX NATIVE-DOMINATED region. These differences are attributable to the high proportion of *Mixed*-village and non-Native respondents in the posttest sample, in contrast to the panel. In the latter, attrition selected for long-term, healthy, employed residents. The posttest sample was selected at random among all adults not previously interviewed. The panel lost respondents who relocated or died.

V. EMPIRICAL GENERALIZATIONS FOR THE TOTAL PRETEST-POSTTEST SAMPLE (COMBINED)

The Western model of economic development is accompanied by several assumptions about personal characteristics and personal and household ethics. The massive social-engineering project entailed by ANCSA, with its mandatory requirements to establish regional and village for-profit shareholder corporations, further assumed that for local and regional economies to flourish, shareholders would have to behave like successful shareholders in any other for-profit corporation. On a personal level, this means that resources must be economized to maximize benefits. Saving, delaying gratification, investing wisely, and developing one's skills and the skills of other persons in one's family represent economizing, as well as proper investment so that benefits will accrue to one's household (and to future households created by one's progeny). We have called these features, devoid of the fears of predestination and inner-worldly activism those fears were thought to generate, the Protestant Ethic. That ethic has served capitalism well.

Twenty years after the passage of ANCSA and the implementation of many of its provisions, it appears that Natives followed a traditional communitarian ethic--not the individualistic Protestant Ethic--in their everyday lives. If the communitarian practice of sharing resources, and also investing in equipment to harvest subsistence resources for self and others, is not the antithesis of the Protestant Ethic, it nevertheless inhibits saving, delaying gratification, and withholding resources from persons other than one's closest relatives. We know from our observations and from our KI interviews, including protocol interviews, that the communitarian ethic that characterizes the behavior of most Natives to some degree is practiced by persons who are devout Christians with decidedly New Testament ethics. Thus, traditional communitarian ethics are not antagonistic to New Testament ethics. I raise this point to avert any misunderstanding about the relation between individualistic Protestant-Ethic practices that have accompanied capitalist democracy and served capitalism well and Christian practices that encourage sharing and helping. In Native practice this extends to something akin to stewardship of the environment--a place where they live and gain their livelihoods along with the other creatures of that world.

The question raised here, and answered with benefit of the complete pretest-posttest sample, is whether ANCSA has had measurable effects on the individual lives of Natives--causing them to develop skills, generate employment, increase income, and participate in their Native corporations.

The evidence is overwhelming that non-Natives emigrate to Alaska villages for employment (including a wide variety of public-sector jobs and a smaller variety of private-sector jobs, but also for self-employment as entrepreneurs and commercial fishermen). Our observations and KI interviews suggest that these persons save some of their earnings, perhaps investing them, and leave those villages and Alaska as well when their businesses falter or their employment terminates. Non-Natives selected themselves to relocate in Alaska for work. They travel less, visit less, share less, engage less in subsistence activities, less often marry, less often have large households, less often vote in city and State elections, and less often live to old age in Alaska villages than Natives. They also have higher rates of employment and higher incomes than Natives.

Drawing from the words of former President George Bush in a different context, I am not sure that ANCSA provided a "level playing field" for Natives and non-Natives alike. Natives were given resources, rather than having to purchase them; and Natives were given shares in regional and village corporations, rather than having to purchase them. Non-Natives received no gifts and had no grubstake in Alaska. They paid their own ways there and set themselves up to open businesses or sell their labor unless they were flown to and fro in the employ of oil companies; or the big fish marketers; or borough, State, or Federal Governments, or school districts. But let us assume that ANCSA, through Federal transfers to Natives and to the State of Alaska, caused itself and the State Government to provide infrastructure, education, health services, and police services to Natives so that the playing field would be level. From that point on, Natives would start the game, sit on the bench, or be dropped from the team for lack of hard work.

Let us hypothesize that, in 1990, non-Natives have higher rates of employment and higher incomes than Natives because they have attained greater educations and have better health (self-reported). That is, they have cultivated their personal characteristics through hard work and have succeeded in comparison with Natives because of this hard work.

Table 23 provides comparisons of PRE (γ) coefficients between months of employment throughout the past year (from no employment to employment for 12 months) (C12M) and educational attainment (from no formal education to education beyond college) (C1). Controls on the coefficients are exercised for income (D2), which is subclassified from less than $10,000 annually to more than $50,000 annually, and for whether respondents are Natives or non-Natives. The total pretest-posttest sample is subclassified into *Mixed* and *Native* villages. If all things are equal, to satisfy the Western model PRE coefficients should be about the same sizes for the *Mixed:Native* contrasts and should be about the same sizes for Natives and non-Natives within those contrasts; and all PRE coefficients should be positive. The hypothesis is that employment increases with education, regardless of race/ethnicity or village type.

Table 23

GAMMA (γ) COEFFICIENTS, EDUCATIONAL ATTAINMENT BY MONTHS OF ANNUAL EMPLOYMENT, CONTROLLING FOR INCOME AND ETHNICITY, *MIXED: NATIVE* CONTRAST FOR ENTIRE PRETEST-POSTTEST SAMPLE, *N* = 856, 1987-1990

	Native						Non-Native					
	INCOME						INCOME					
	<$10K	<$20K	<$30K	<$40K	<$50K	>$50K	<$10K	<$20K	<$30K	<$40K	<$50K	<$50K
MIXED	.56	.58	.71	.25	.61	.38	.60	.53	.01	.34	-.19	-.05
NATIVE	.60	.44	.32	.42	.32	.55	a	.25	b	-.25	c	.16

[a]No non-Native respondent earned less than $20,000 annually.

[b]One non-Native respondent earned $30,000 annually. That person had some post-graduate education.

[c]Two non-Native respondents earning between $40,000 and $50,000 annually have high school educations.

It is evident in Table 23 that the relation between education and employment is very different for Natives and non-Natives. It also is evident that there are differences of scale (no non-Native earned less than $10,000 between 1987-1990). Knowledge of a Native's educational attainment allows a proportional reduction of error in predicting months of employment by more than 50 percent in four of six income categories in the *Mixed* subsample, and by more than 40 percent in four of six income categories in the *Native* subsample. The relations are uniformly positive, if curvilinear, across income classes. In the Native (race/ethnic) sample, knowledge of education (or conversely, knowledge of months of employment) accounts for 29 percent greater reduction of error for persons earning between $40,000 and $50,000, yet for 17 percent less reduction of error for persons earning more than $50,000 annually in the *Mixed* subsample than in the *Native* subsample. The apparent reason for the discrepancy in the highest incomes is that public-sector jobs generate the highest incomes in most *Native* villages, and the highest income jobs in the public sector require high educational attainment. Such is not the case for income in *Mixed* villages, particularly commercial fishing villages, where neither education nor fulltime (12-month) employment are critical to high incomes. Natives in *Mixed* villages perhaps face obstacles in competing for employment with non-Natives; thus, education is a more important factor in accounting for employment and income, at least up to the $49,000 level, than in *Native* villages. These caveats aside, Native employment increases with education throughout all income categories.

Non-Natives appear either to be playing a different game, or to be playing on a different field, or to occupy the pinnacle of a steep field in which Natives are pitted below them and the goal is to get to the top and, once secure, hold it against challenge. In the subsample of *Mixed* villages, education accounts for 60 percent of employment (and vice versa) at incomes less than $10,000 annually, 53 percent at less than $20,000, 1 percent at less than $30,000, and a negative 5 percent at more than $50,000. Essentially, this is the opposite of the Western model's prediction. It does not necessarily put the lie to the Protestant Ethic because hard work and investment in one's personal skills and business acumen can be done without benefit of formal schooling. The problem with relying too heavily on such an explanation is that it begs a covert tautology, namely: if formal education does not account for employment and if the two together do not account for income success, employment and income are accounted for by informal (unmeasured) education. Income success for non-Natives in *Native* villages also seems to elude a predictable relation between an increase in educational attainment and an increase in months of employment. The amount of education attained accounts for no more than 25 percent of the amount of employment in any income category, and in the $30,000-to-$40,000 class that 25 percent PRE is negative.

In general, Natives require increasing educations to gain more months of employment, particularly high-income employment. The reverse is true for non-Natives, whether in *Mixed* or *Native* villages for four of six income categories beginning at more than $30,000 annually.

The PRE scores in Table 23 do not account for age. To be fair to the social engineers who framed ANCSA and to the Congress that passed the Act, all Natives cannot have benefited from ANCSA's provisions and intent in the same way. In 1971, Native persons beyond the age of 22, if not already enhanced by college or technical educations, cannot be expected to benefit so much from ANCSA and related programs as persons who were 18 or younger in 1971. Programs to provide better and more complete educations, better health, more jobs, and higher incomes were created. And as shareholders in village and regional corporations, persons had to learn how to vote their corporate interests by ratifying boards of directors and their policies. The large number of programs created to foster personal and corporate development, it was presumed, would benefit protracted rather than immediate development.

Table 24 accounts for age differences. All things being equal, the table is constructed to determine whether Native respondents aged 22 to 40 (1987-1990) report better health and higher educational attainment than do Native respondents in the older age groups. The 18-to-21-age group is included, but the respondents in this group are too young to have benefited as fully from educational programs as the

Table 24

HEALTH, EDUCATION, MONTHS OF EMPLOYMENT, INCOME, AND VOTE IN VILLAGE CORPORATE ELECTIONS BY AGE AND RACE/ETHNICITY, TOTAL PRETEST-POSTTEST SAMPLE (COMBINED), N = 856, 1987-1990[a]

	SELF-REPORTED HEALTH					EDUCATIONAL ATTAINMENT					MONTHS OF EMPLOYMENT					INCOME (In Thousands)							VOTE VILLAGE CORP.	
	Very Poor	Poor	Fair	Good	Very Good	None	1-8 Years	9-12 Years	Some College	Higher	None	1-3	4-6	7-9	10-12	<$5	<$10	<$20	<$30	<$40	<$50	>$50	No	Yes
NATIVE																								
AGE (N)																								
18-21 19	0	0	21	37	42	0	0	84	16	0	11	42	16	16	16	11	21	21	5	26	5	11	38	62
22-40 289	.3	.5	22	42	28	0	7	66	25	2	16	23	16	10	36	13	17	24	18	8	7	13	28	72
41-59 190	0	5	28	45	22	3	43	40	12	2	21	25	13	6	36	13	17	19	19	14	5	13	23	77
60+ 97	2	16	45	31	6	17	71	8	4	0	76	8	4	0	11	19	23	26	18	9	3	3	28	72
Gamma γ			-.39					-.70					-.35						-.08				.07	
NON-NATIVE																								
AGE (N)																								
18-21 7	0	0	14	57	29	0	0	100	0	0	14	14	14	43	14	29	14	14	29	0	0	14	Not Applicable	
22-40 130	0	1	7	45	[illegible]	0	3	29	[illegible]	[illegible]	6	5	12	[illegible]	[illegible]	0	2	15	9	[illegible]	[illegible]	[illegible]		
41-59 59	3	0	12	37	48	0	0	32	37	31	9	3	9	14	66	2	0	7	10	16	14	52		
60+ 10	0	10	10	20	60	0	20	20	30	30	30	10	10	0	50	0	0	0	13	25	13	50		
Gamma γ			.00					.19					.05						.26					

[a]Percentages in each cell represent proportions by rows so that cell percentages total to 100 percent for each age group in each variable. Double underline signifies intra-Native comparisons in which the 22-40-year-old age group has a higher proportion of respondents than older age groups reporting good or very good health, high school or higher educations, 4 months or more employment, and annual incomes greater than $30,000. Redline signifies Native-non-Native comparisons of the same attributes for those same variables in the 22-40-year-old age group in which non-Natives have a higher proportion of respondents than Natives.

22-to-40-age group. Thus, comparisons between the youngest age group and the older groups on months of employment, income, and participation in village-corporation elections are not commensurable.

The 22-to-40-age group of Native respondents report slightly better health and considerably higher educational attainment than their immediate elders (41-59-age group). The 22-to-40-age group is employed at slightly higher rates from 4 through 9 months per year, and at equal rates with the next older age group for 10 months or more. The benefits from a slightly larger proportion of 22-to-40-year-old residents enjoying better health than the respondents in the next older age group, and a considerably larger proportion of the former achieving high school or some college education higher than the latter, is only weakly evident in months of employment.[79] It is even less evident in income. The older age group has a higher rate of persons earning between $30,000 and $40,000 (1.75:1); the younger age group has a higher ratio of persons earning between $40,000 and $50,000 (1.4:1); and the ratios are equal for respondents earning more than $50,000. As for participation in the village corporation, a slightly higher proportion (5%) of the 41-to-59-age group than either the next-younger or next-older group, exercises their shareholder rights to vote in village-corporation elections.

Programs to develop Native health, educational skills, industry, income, and corporate behavior almost surely have influenced greater educational attainment. There is little evidence that the other goals have been influenced. A second set of appropriate contrasts is with non-Natives in the 22-to-40-age group. Non-Natives in the 22-to-40-age group report rates greater than Natives in the same age group on every measure: very good health (1.7:1), college and higher educations, respectively (2:1 and 9.5:1), employment (7-9 months [1.3:1], 10-12 months [1.77:1]); and incomes greater than $30,000 (>$30K [2:1], >$40K [2:1], >$50K [3.2:1]). Non-Natives older than 40 enjoy higher rates than non-Natives younger than 41 in

[79] The ratio of the 22-to-40-age group with the 41-to-59-age group for some high school education is 1.65:1, and for some college is 2:1. The ratio of those age groups for 4 to 6 months of employment is 1.2:1, and for 7 to 9 months of employment is 1.66:1.

almost all of these same comparisons. It is doubtful that time is the deciding factor in accounting for differences between Native and non-Native populations.

VI. INDICATORS OF THE WESTERN MODEL

Much of the structure we have determined here is similar to the structure identified in Chapter 2. Some of the variables, such as income, months of employment, household size, and household type, are used in both places. And some are different, although clearly highly correlated with the variables used in the analysis of traditional customs. As was demonstrated in Social Indicators Study II (Jorgensen 1993:333-375), correlations between all pairs of variables within each topic, such as health, or education and employment, are predominantly strong (either positive or negative). The internal correlations of some variables within each topic are so high as to be redundant; we excluded those variables. Because variables tend to correlate strongly within topics, it is expected that they will yield PRE coefficients with variables representing other topics in quite similar ways (positive, zero, or negative).

For examples, the measure of the smallest income a household requires for a month correlates strongly and positively with income and feelings of satisfaction about income. The variable that measures exercising the franchise in city council elections correlates strongly and positively with voting in village-corporation elections, attendance at public meetings, and voting in State elections. Measures of where respondents were born, where they resided most recently, and the length of their residence in the village correlate strongly and positively.

We have determined that the best fits among the variables in test after test distinguish high income from low, high employment from underemployment, high educational attainment from low, and long-term residence from short-term. But in all of these structures, differences of race/ethnicity, i.e., Natives vs. non-Natives, are the most powerful contrast. In the analysis of personal and household characteristics in the context of models that predict economic development on the one hand, and accommodations to economic development while maintaining traditional communitarian practices on the other, Natives are different from non-

Natives regardless of education, employment, health, or income. Yet if we pay attention to education, employment, and income, for Natives, months of employment increase with education, and income increases with months of employment. For non-Natives, employment and income increase regardless of education. Positions on the education, employment, and income scales are significantly different between Natives and non-Natives. Natives and non-Natives are further distinguished by relations among household type (non-Natives seldom are organized into households other than single-person, conjugal-pair, or nuclear-family), household size (Native households are larger) and income, as explicated in Chapter 2.

There are several indicators of traditional communitarian practices in Chapter 2, including receipt of subsistence food from persons in and beyond one's household, eating with relatives in their homes, and visiting friends and relatives in their homes. The measure used here is the frequency with which persons visit friends and relatives in distant communities. Employed Natives between the ages of 25 and 40 who are educated beyond high school travel the most frequently. They are only moderately satisfied with the social ties they maintain with persons in distant communities (γ_{E12D27} .21), very few of them have recently received subsistence food harvested by others (γ_{A31D27} -.12), and they seldom eat meals with relatives in their relatives' homes (γ_{A32D27} .12). So D27 measures young, employed, Native respondents who most likely return to their natal villages when they can afford to do so. This is a measure of traditional familial and communal interests, including, we hypothesize, returning to extract naturally occurring resources. Travel costs are very high in the Alaskan bush. Kinship, friendship, and subsistence interests must be satisfied at the expense of saving and investing.

Indicators that the Western model is gaining practitioners are (1) increases in Native educational attainment, months of employment and income, and strong multivariate relations among them; (2) decreases in household sizes and household types (single, conjugal-pair, and nuclear forms only) as income *et al* increase; (3) decreases in the frequency of travel to visit friends and relatives in distant communities; (4) increases in short-term residence in the village in which the person is interviewed; (5) decreases in the total subsistence activities in which respondents engage; and (6) increases in the cognitive attitude that households are better off now than they were 5 years earlier.

It should be evident that the analysis of traditional customs is not easily separated from the analysis of the alternative models we have called "Western" and "traditional communitarian." The concluding hypothesis is that the national political economy and the world economy exercise severe constraints on village economies. The dependencies that have been created throughout Alaska, including in Anchorage and Juneau, are most obvious in the small villages. Yet even among those villages there is room for a few entrepreneurs whose successes may be momentary--dissipating when the price of oil drops or oil fields play out, or when there are no boats to repair or to provision, or when there are few fish to catch or protracted low prices for fish, or when Asian fishermen and fish merchants come to control the Pacific fish market. It requires capital and knowledge to become a successful entrepreneur in Alaska, and the life of the business will almost surely be dependent on naturally occurring resources on the one hand and a world market on the other.

Success as an entrepreneur, or collective success for village or regional corporations, may stimulate change toward personal and household characteristics as hypothesized in the Western model; but success in this sense also is ephemeral and to be sustained must compete with Native traditions, kinship obligations, and the Natives' uses of, and ideology about, the environment.

PART THREE:
ANALYSIS OF RESPONSES TO THE KEY INFORMANT PROTOCOL

CHAPTER 4
MULTIVARIATE ANALYSIS OF THE KI PROTOCOL

The Key Informant Protocol (KIP) data for 1987-1988 (N = 169) and for 1989 (N = 108) are analyzed here with multidimensional scale analysis (SSA). Variables are selected from SSA analysis that demonstrate the strongest relations within the complete data set and also those that provide the greatest theoretical contrasts. Whereas some variables correlate weakly in the total sample of KIP respondents, those same variables behave very differently in the theoretical contrast of *Mixed* and *Native* subsamples, producing powerful and consistent results that facilitate the discovery of sensitive indicators.

I. THE TOTAL KIP SAMPLE WITHOUT CONTRASTS

I.A. Analysis of the Initial Responses

The importance of subsistence and economic factors in the organization of contemporary village life throughout coastal Alaska from Kodiak to Kaktovik is undeniable, as are the effects exercised by the amount of household income on where persons reside and on how often, with whom, and in what direction (as donors or recipients) they share a variety of goods, services, and even cash. The harvesting and sharing of naturally occurring, renewable species are so ubiquitous among Natives and so frequent in more restricted ways among many non-Natives as to provide a core around which more specific constellations of factors vary (see Fig. 24, the multidimensional scale solution for the 1987-1988 [Initial] KIP's 48 variables, with 17 outliers deleted).[80]

[80] No tests of stationariness were possible with the 1987-1988 KI sample, so variables are removed from the sample if they do not demonstrate multivariate validity (See Social Indicators Study II [Jorgensen 1993]). In the 1989 reinterview sample, variables are deleted from the sample if they fail the test for stationariness or the test for multivariate (intervariable) validity. Because of these differences, the two SSA solutions provided here (Figs. 24 and 25) are not identical. Variables K12A, K12B, K23, K34, and K40 appear in the original solution but not the reinterview solution. Variables K17, K22, K26, K27 ,28, K30, and K33 appear in the reinterview solution (Fig. 25) but not the original SSA (Fig. 24).

The 3-D solution is dominated by a large cylindrex[81] labeled TRADITIONAL SUBSISTENCE in the right center region of Figure 24. The cylindrex fits variables at two levels in the third dimension (height). Fitted in the lower level of the cylinder are eight variables measuring the sharing of cash, labor, and goods. The upper level fits the variables measuring participation in subsistence pursuits; traditional ethics; and traditional enculturation and gender distinctions. The entire cylindrex is composed of variables which have very low centrality indexes: the average for the sharing variables in the lower plane is 29.5; the average for the traditional subsistence and traditional customs variables in the upper plane is 65.8.

Central to the upper plane of the cylindrex is the amount of total annual income that a household invests in harvesting naturally occurring resources (A, K1),[82] the variety of naturally occurring resources harvested annually by the household (B, K2),[83] and the proportion of protein in the household's aggregate diet obtained from naturally occurring resources harvested by or donated to (i.e., shared with) the household (C, K3).

As the variety of resources harvested annually increases, the proportion of a household's total income that is invested in annual harvests increases, and the proportion of proteins in the household's aggregate diet obtained from naturally occurring species increases. When households score high on all of these practices, they also are likely to maintain that the environment, or features of it, are viewed as being endowed with spirits, or that it possesses special relations to Natives to which they have attached significant cultural symbols (Y, K29). Such households also teach, essentially by precept, traditional gender distinctions and cultural expectations

[81] Discussion of multidimensional similarity structures, such as cylindrex, conex, and radex, appear above (Chapter 2). Comprehensive discussion of similarity structures appear in Ingwer Borg and James Lingoes *Multidimensional Similarity Structure Analysis*. New York, Berlin, Heidelberg:Springer-Verlag, 1987. A cylindrex, as in Figure 24, has the shape of a cylinder. The structure of a cylindrex has three organizing characteristics: a polarizing facet that establishes the direction a point lies from the origin; a modulating facet corresponding to the distance of the point from the origin; and an axis along which the radexes are stacked. The radexes are stacked in the cylinder. In Figure 24 traditional culture (a facet) defines the origin and establishes the direction a point lies from it; sharing defines the distance a point lies from the origin; and nature of participation in the subsistence economy defines the axis along which the radexes are stacked.

[82] Expenses for equipment, clothing, food and fuel to harvest game, fish, shellfish and plants.

[83] The total of all species harvested or received annually by the informant's family household in the following categories: plants, sea mammals, land mammals, birds, shellfish and fish.

Variable		Centrality	D1	D2	D3
K1	A	56.374	26.303	36.305	-10.475
K2	B	64.021	-5.585	47.988	-2.152
K3	C	44.160	17.411	28.005	-14.886
K4	D	112.640	-96.739	-49.117	-70.266
K5	E	101.647	-99.000	-16.852	-44.431
K6	F	102.164	99.000	-31.117	-31.342
K9	G	103.365	-98.557	-16.007	-57.965
K10	H	93.228	73.366	-63.894	-48.976
K11A	I	28.248	-24.575	-18.455	-15.688
K11B	J	39.390	19.552	-44.675	-23.920
K12A	K	65.536	-13.867	-64.788	-61.474
K12B	L	76.486	11.520	-76.470	-64.452
K13A	M	42.771	-24.003	24.368	-21.991
K13B	N	11.815	6.656	-16.120	-19.168
K14A	O	23.611	5.062	-22.683	-46.912
K14B	P	39.634	33.184	-28.093	-40.077
K15A	Q	60.547	-7.224	34.537	12.410
K15B	R	76.443	12.123	43.713	25.115
K16A	S	4.938	-1.946	-6.108	-27.071
K16B	T	44.526	43.149	-8.036	-16.606
K18	U	69.465	51.228	-33.487	-68.213
K23	V	98.833	-73.813	53.742	-14.019
K24	W	86.793	-52.815	52.887	-.634
K25	X	74.995	-56.623	28.649	2.334
K29	Y	60.652	9.461	16.059	26.384
K31	Z	64.779	51.816	15.069	1.897
K34	a	67.464	62.031	-13.475	-.890
K35	b	120.278	71.604	-84.467	-89.604
K37	c	99.802	18.414	72.183	25.296
K38	d	131.328	-63.012	-99.000	-99.000
K40	e	81.640	5.607	-89.724	-46.746

GUTTMAN-LINGOES' COEFFICIENT OF ALIENATION $K = .146$

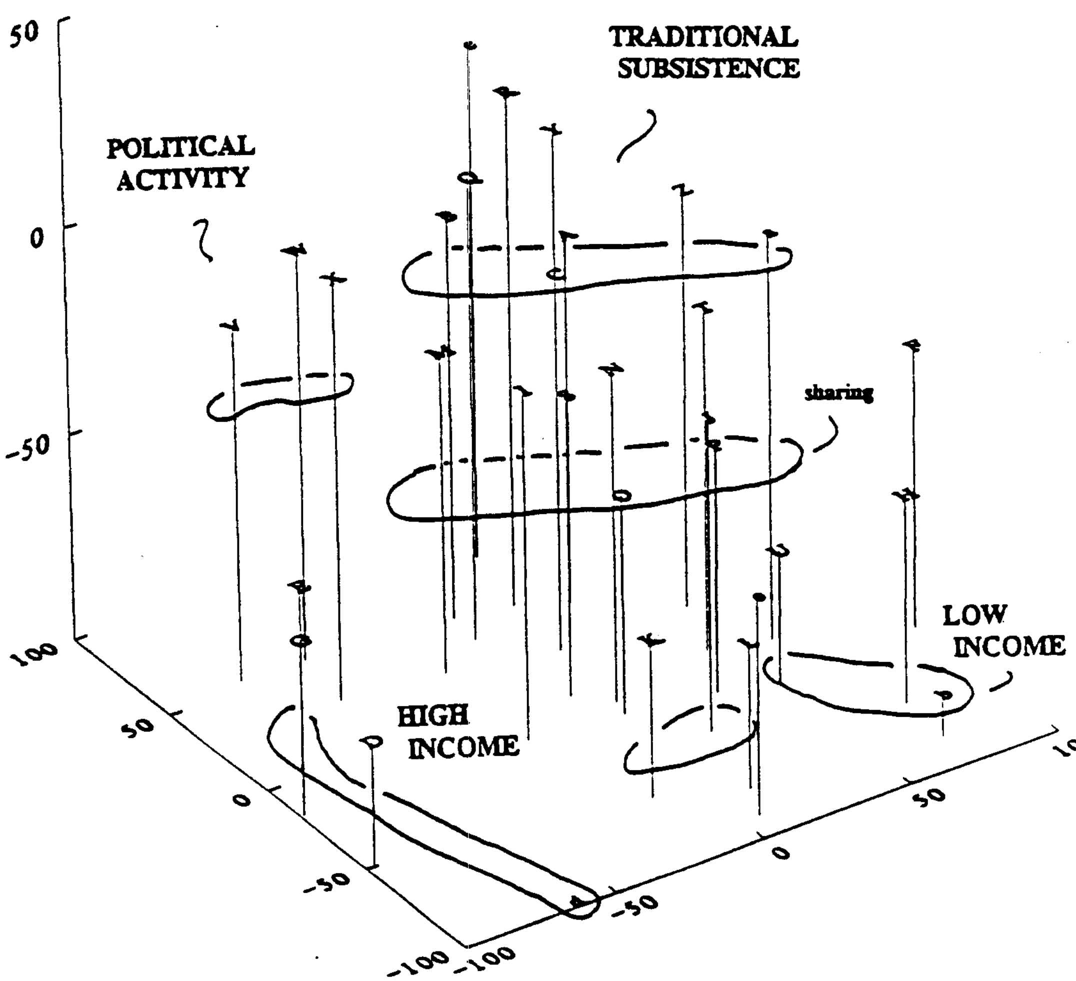

FIGURE 24. KI PROTOCOL STRUCTURE, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 31 VARIABLES, N = 169, TOTAL KIP SAMPLE, INITIAL INTERVIEWS, 1987-1988

to the children in their households (Z, K31). Persons in these households are not apt to perceive a strong association between schooling and success (a, K34).

Associated with these variables is the likelihood that the respondent was born and reared either in or near the village in which he/she resides (c, K37), and that members of the household give resources of various kinds[84] to persons in households other than their own within the village, without restriction to kinspersons (Q, K15A). The members of the household also receive resources from persons in households other than their own within the village (R, K15B).

The internal correlations within the set of sharing variables (lower plane) are so high as to suggest involution of sharing practices--once they get started, they are expanded in the varieties of things shared (given or received), and the distances are extended over which things are shared. Things are labor (human-productive capacity), equipment, products of extraction, by-products from extraction, commodities purchased at stores, and even cash. Expansion and extension of things--natural, acquired, purchased, produced--through sharing practices are central to traditional lives, so much so that new technologies, skills learned in formal schooling, and cash earned by intellectual labor become items for sharing; whereas, a snowmachine (even an airplane in one instance known to me) purchased from a salaried income might be used to deliver the items to be shared. Sharing, then, is a dominant theme in Alaskan villages.[85]

In general, the items shared in villages--a day's labor, assistance in cleaning fish, repairing an outboard engine, one silver salmon, one snowshoe hair, 5 or 6 pounds of walrus meat, a ½-day use of an all-terrain vehicle--are small and frequent. A family in need of food for a meal may go to a neighbor and request walrus meat, or

[84] By resources we refer here to products of extraction, such as game, fish, plants, and the like; fuel, tools or other goods.

[85] The giving questions (the A series) were asked of all informants, whereas the receiving questions (the B series) have been asked of all informants in the Schedule B sample and only of the Aleutian-Pribilof informants in the Schedule A sample. The reinterviews conducted during the 1989 field session provide complete measures of the receiving questions for the entire sample. The 1989 data allowed us to test for the validity and reliability of the questions and the responses to them (see Social Indicators Study II [Jorgensen 1993]) . Involution refers to the elaboration of something that appears to have turned inward upon itself, to wit: sharing within the family leads to sharing within the household, outside the household, outside the village, and so forth. The sharing of labor leads to the sharing of resources and the sharing of labor and resources leads to the sharing of cash, and so on.

an elder may receive a surfeit of salmon from half a dozen people, each dropping by to leave one fish. For this reason, most specific instances of sharing over a 12-month period are too frequent and too small to be remembered in detail. In general, persons give most frequently beyond their own household to relatives in the village (affines and kinspersons), to elders in the village (whether relatives or not), and to others--those known to be in need, or simply persons who might appreciate a taste of some Native food recently extracted by the giver.

The sharing variables (I-T, K11A-K16B) correlate highly and positively with one another and with traditional features of Native culture: (1) investing more than 20 percent of all income into subsistence harvests (K1); (2) harvesting a wide variety of species from several categories of naturally occurring resources on land, water, and air (K2); (3) maintaining a spiritual view of the environment (K29); and (4), observing traditional enculturation practices and gender distinctions (K31).[86]

If a person gives cash within the village (I, K11A), they may also receive cash (J, K11B). They will also provide and receive labor within the village (M, K13A; N, K13B) and beyond the village (O, K14A; P, K14B), and share resources (usually naturally occurring foods that have been extracted and processed) with persons beyond the village (S, K16A; T, K16B).

The variables that are fitted into the traditional subsistence cylindrex suggest that households give a bit more than they receive, but because knowledge of income does not account for much of the error in any of the subsistence variables, we cannot determine the effects of income on harvests, sharing, or other traditional practices. Our theoretical contrasts below demonstrate that income is an important intervening variable and that areas of high income and low income occur within the traditional subsistence regions. These relations are masked in the total sample by the effects of high income with non-traditional practices and beliefs.

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[86] Each sharing variable in the K11A-K16B set, on average, correlates ≥.50 with 4.5 other variables within the set and with 6 variables overall. The variables outside the sharing set with which the sharing variables most frequently correlate ≥.50 are traditional features of Native culture (K1, K2, K3, K29, K31).

The HIGH-INCOME set is located in a simplex on the far left, and the LOW-INCOME set forms a simplex on the far right.[87] As income increases within a household (D, K4), it is usually earned (E, K5) (as opposed to unearned income from welfare, transfers, dividends and the like) and increasingly stable throughout the year (G, K9). High income earners are most apt to reside in the largest villages (d, K38).

Low-income households, on the other hand, repel and are repelled by the variables in the high-income set, thereby locating the two sets of relations on opposite sides of the 3-D SSA solution. If a household has a low annual income (less than \$20,000 but surely less than \$30,000),[88] the percentage of a household's total income derived from unearned sources is high (F, K6). It is also stable throughout the year (H, K10). The heads of low income households are probably over 56 years of age and almost surely over 41 years of age (if the head is male) (U, K18). The low-income respondents also are more apt to accurately describe the objectives of the helping services (e.g., welfare, counseling, health care) available within the village or the region (b, K35) than are high-income respondents.

Traditional enculturation and gender distinctions are observed in these low-income households (K31), and these distinctions tie low-income households to the traditional subsistence cluster. Regardless of whether informant households have low or high incomes, if they invest large portions of their income into subsistence harvests, they usually believe that the environment is endowed with spirits (Y, K29) and that formal educations have little efficacy in causing persons to succeed (a, K34). Although K30, K31, and K34 (Y,Z,a) are located in the larger cylindrex, their positions and height form a simplex with the low-income variables. So these traditional measures tie high-income earners and low-income earners together in the large traditional subsistence region.

[87] Each simplex forms a triangle with variation in dimension 3 (height).

[88] For readers not acquainted with living costs in Alaska (as reflected in the costs of fuel, utilities, processed foods, transportation, durables, shipping and the like), \$30,000 for a household of 5 persons may appear high. See our discussion of basic expenses in Jorgensen and HRAF (1989: 70-93) for an analysis of living costs in village Alaska.

The variables which measure the giving of cash within and beyond the village (I, K11A; K, K12A) are pulled toward the high-income simplex; whereas, the variables that measure the receipt of cash from persons within or beyond the village (J, K11B; L, K12B) are pulled toward the low-income set. Some high-income earners engage in traditional subsistence customs, and they are more apt to be bigger givers than receivers, especially of cash. Persons with the lowest incomes are most apt to be big receivers. Those persons, if able, give resources and labor, usually locally.

The final simplex measures political activities. The more members of a household that belong to sodalities (V, K23), the greater the political participation by members in the household (W, K24) and the more likely that the informant for that household will correctly identify political issues (X, K25). Joiners also are participators, come from households of participators, and are well informed.

I.B. Analysis of the Reinterview Responses

Figure 25 presents a near mirror-image solution to Figure 24. At this point, with a few exceptions, I dispense from listing variable labels and provide alphabet symbols alone.

Similar to the solution for initial interview data, the traditional culture (traditional subsistence, ethics, sharing), HIGH INCOME, and LOW INCOME variables are fitted into regions in the hyperspace, but different from Figure 24, the bulk of the SHARING variables are fitted immediately to the right of the TRADITIONAL SUBSISTENCE cylindrex, rather than as a radex within the cylindrex. Only the giving and receiving of cash within the village (J, K) are fitted firmly within the TRADITIONAL SUBSISTENCE cylindrex.

The SHARING variables have the lowest average centrality, followed closely by the TRADITIONAL SUBSISTENCE variables with which they are closely related, yet because of the involution in sharing practices, the two cylindrexes are fitted side by side. The HIGH INCOME and LOW INCOME regions are not so affected by involution, demonstrating higher average centrality (100 and 108) than the traditional, culture-specific items. Income clearly distinguishes non-Natives, in

Variable		Centrality	D1	D2	D3	Variable		Centrality	D1	D2	D3
D28	A	130.832	99.000	-11.155	-12.240	K17	R	78.947	-70.963	69.570	-26.798
K1	B	72.070	-96.730	19.173	-40.656	K18	S	94.804	-55.699	-81.856	15.285
K2	C	65.864	-89.573	28.109	-30.573	K22	T	61.351	-30.503	15.651	40.579
K3	D	60.811	-90.217	4.510	-26.978	K26	U	54.026	-53.880	2.584	29.069
K4	E	97.206	61.238	35.885	-24.642	K27	V	66.577	-29.623	-9.066	46.204
K5	F	89.736	35.521	57.981	-45.750	K28	W	74.340	-99.000	-3.952	4.581
K6	G	107.334	-53.454	-99.000	1.895	K29	X	70.638	-98.599	-7.450	-32.497
K9	H	93.845	57.865	11.376	-51.336	K30	Y	56.157	-81.566	-.841	2.434
K10	I	91.535	25.420	-46.503	34.599	K31	Z	67.066	-96.650	-3.710	-16.979
K11A	J	54.265	-74.269	31.850	-8.450	K33C	a	83.891	52.523	-6.440	-6.685
K11B	K	70.477	-96.070	19.491	-1.922	K33G	b	92.207	54.125	-25.840	-44.515
K13A	L	54.744	-41.790	51.948	1.022	K35	c	100.678	-22.514	-57.266	-99.000
K14A	M	53.781	-47.367	40.794	-52.891	K37	d	87.251	-98.210	-12.502	-71.531
K14B	N	52.380	-49.840	34.886	-55.419	K37B	e	113.313	-65.143	-90.462	-73.659
K15A	O	69.137	-22.076	49.975	30.332	K38	f	105.575	71.649	15.959	-44.851
K16A	P	33.474	-27.340	34.994	-11.552	K41	G	108.141	74.948	-16.816	-1.384
K16B	Q	53.553	-28.518	33.062	-63.337						

GUTTMAN-LINGOES' COEFFICIENT OF ALIENATION $K = .160$

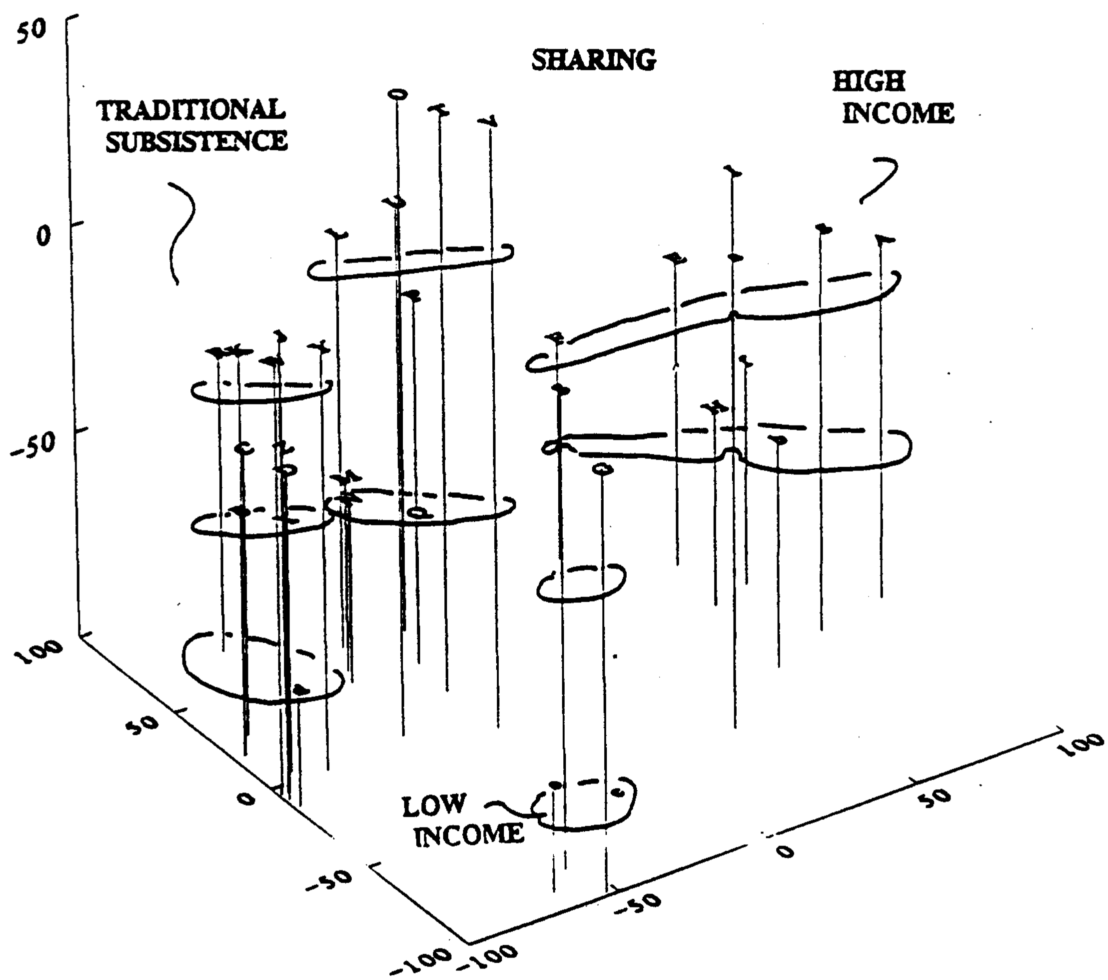

FIGURE 25. KI PROTOCOL STRUCTURE, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 33 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

general, from Natives, but Natives with high incomes appear to be actively engaged in traditional culture.

The HIGH INCOME region in the right center is a cylindrex representing high, stable, earned incomes (F, E, H) among residents of large villages in which 25 percent or more of the populations are non-Natives (f, A). These respondents tend to be serviced by all utilities, and those utilities are working in the houses (g). In 1989 we created new measures of perceptions of economic conflicts. These measures correlate highly and positively with each other and with the high-income variables. Apparently the greater the economic success, the greater the perception of economic conflicts between Natives and non-Natives, and between Natives and non-Native corporations (a, b).

Stable unearned incomes (I) are fitted between high incomes on the left, and the low-income sector of the traditional subsistence region on the right. The 1989 data from almost every village in the sample indicate an increase in stable unearned income (regular, predictable public transfers of income) since 1987. So unlike 1987, stable unearned income correlates positively with large and small villages, traditional customs, and Western customs. Its connection to the TRADITIONAL SUBSISTENCE region is with low, unearned income and elderly household heads (G, S). Climbs and plunges in stable, unearned income appear to be a sensitive socioeconomic indicator.

The top plane of the TRADITIONAL SUBSISTENCE cylindrex represents the traditional ethical beliefs in sharing as an expected communitarian practice, and the practice of sharing cash (giving J, and receiving K) within the village with large households (R). Here, respondents who think a person is responsible for his/her own attainment, qualify that belief by saying that it is done for personal ends and also to assist other persons in the family and wider community (W). This complements the belief that persons should work cooperatively for personal and communal gain rather than competitively for personal gain (Y). The middle level of the cylinder fits the allocation of an increasing percentage of household income to subsistence pursuits (B) with increased Native foods in the diet (D), a greater variety of species harvested (C), the maintenance of traditional gender distinctions (Z), and the belief that the environment is pregnant with significant symbols (X). At the base of the cylinder is located the variable measuring the birth and long-term residence of the respondent in or near the community in which he or she currently resides (d).

Somewhat distant from the TRADITIONAL SUBSISTENCE cylindrex, in the LOW INCOME region, the birthplace of the respondent's spouse is fitted (e). This demonstrates that spouses are more apt to have hailed from a village nearby the village in which he/she now resides with the respondent, than to have been born and reared in that same village. Patrilocality, coupled with village agamy, is a common Native practice throughout Alaska, and this fits a common male, but less common female, postnuptial residence practice. Correct understanding of the services delivered by various social service agencies (c), too, is fitted into the low-income cluster.

The cylindrex that forms the SHARING region is not composed exclusively of variables measuring the giving and receiving of labor or goods (food, equipment, etc.). The lower level of the cylinder fits together the giving of labor to, and the receiving of labor from persons who reside in villages different from the respondent's, as well as the receipt of goods from persons in villages other than the respondent's (M, N, Q). The middle level fits together the giving of labor within the village and the giving of resources to persons in distant villages (L, P) with many regular church-goers (religious participants) in the household (U), while the top-most level fits the giving of resources within the village (O) with stable marriages (few or no divorces) (T) and participation in many kinds of extracurricular activities sponsored by religious organizations (V).

The adjoining cylinders--TRADITIONAL SUBSISTENCE and SHARING--are influenced by the same underlying features. Traditional ethics, almost certainly complemented by ubiquitous adoption and consistent practice of New Testament Christian principles, give precedence to communitarian practices and beliefs rather than Protestant Ethic practices and beliefs. The low-income sector merely separates older household heads with lower incomes and better knowledge of helping services (public services) in the village. The high-income region, on the other hand, distinguishes the highest income earners in the largest and most complexly developed villages. Non-Natives are especially well-represented here, as is the belief that economic conflicts tend to be between Native and non-Native persons, or non-Native corporations and Natives (encompassing Native persons or Native corporations and organizations of all types).

To understand the structural relations we turn to a test of a powerful theoretical contrast.

II. THEORETICAL CONTRAST: *MIXED* V. *NATIVE*

Among the several theoretical contrasts we have tested, the differences between *Mixed* and *Native* villages are especially revealing. Figures 26 through 29 contrast responses from the respondents in *Mixed* and *Native* villages to the initial administering of the protocol. Forty-eight variables were rated from the protocol topics by Key Informant Investigators (see Chapter 12, Social Indicators Study II [Jorgensen 1993]).

II.A. Analysis of the Initial Responses

The *Mixed* solution in two and three dimensions[89] accounts for more variation than do the *Native* solutions, in large part because *Mixed* villages are much less homogeneous in race/ethnicity, place of birth, longevity of residence in the village, education, and occupation than are residents of *Native* villages. The heterogeneity yields greater variation in responses on the 48 variables which, in turn, yields a data structure in which regions are clearly marked. Greater heterogeneity in the *Mixed* subsample, in comparison with the *Native* subsample, is marked by the number of negative PRE coefficients >.50:15 percent of all *Mixed* γs, as opposed to 10 percent of all *Native* γs.

[89] Although the 3-D solutions reduce error by 9 percent from the 2-D solutions for each matrix, the 2-D solutions are simpler to read when so many variables (48) are fitted in a hyperspace. For that reason, a 2-D solution is presented, followed by a 3-D solution for each subsample (*Mixed* and *Native*). The principal differences between the 2-D and 3-D solutions for each are that 2-D solutions yield radexes; whereas, 3-D solutions yield cylindrexes. Some items which appear to be outliers in the 2-D solutions are fitted in regions in the 3-D solutions.

Variable	Plot	D1	D2
K1	A	.68	-.10
K2	B	.29	.34
K3	C	.57	-.18
K4	D	-1.50	-.10
K5	E	-1.34	.24
K6	F	1.32	-.58
K7	G	-.08	-.86
K8	H	-1.18	-.03
K9	I	-1.13	.51
K10	J	.84	-.58
K11A	K	-.22	.34
K11B	L	-.07	.28
K12A	M	-.10	-.03
K12B	N	.14	.00
K13A	O	.05	.60
K13B	P	.24	.59

Variable	Plot	D1	D2
K14A	Q	.38	.07
K14B	R	.54	-.03
K15A	S	.41	.59
K15B	T	.55	.55
K16A	U	.33	.29
K16B	V	.87	.17
K17	W	.01	-.43
K18	X	.98	-.69
K19	Y	-1.40	-.87
K20	Z	-1.34	-.46
K21	a	-1.31	.48
K22	b	-.82	-.30
K23	c	-1.04	.76
K24	d	-.61	.51
K25	e	-.69	.51
K26	f	.36	-.92

Variable	Plot	D1	D2
K27	g	-.39	-.91
K28	h	.13	.83
K29	i	.41	.82
K30	j	.52	.63
K31	k	.85	.06
K32	l	-.41	-.24
K33	m	-.94	-.83
K34	n	1.04	.56
K35	o	1.08	-.91
K36	p	-.61	1.05
K37	q	.71	.20
K37B	r	1.13	-.20
K38	s	-.79	-1.42
K39	t	1.15	.45
K40	u	.07	.70
K41	v	.35	-1.48

Guttman-Lingoes' Coefficient of Alienation K = .291

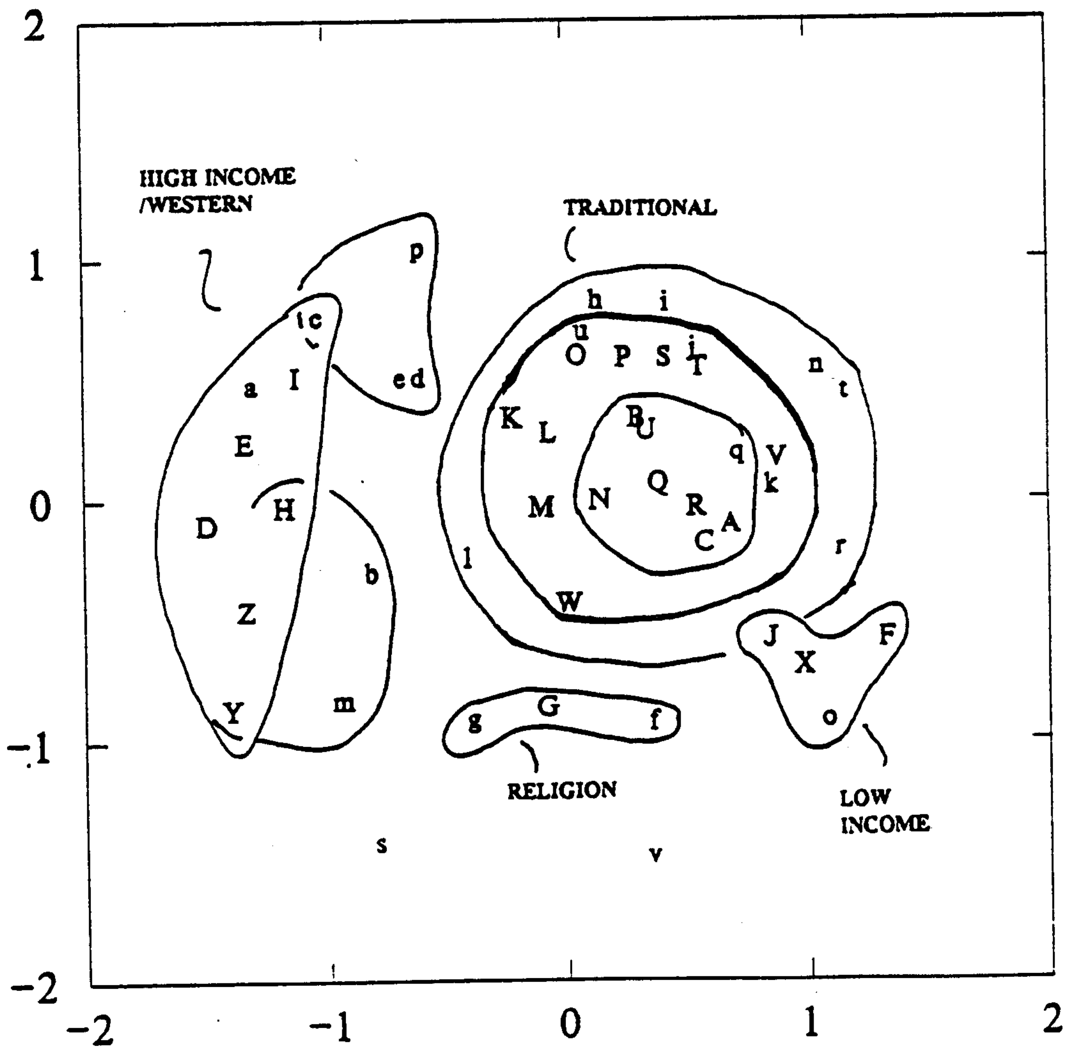

FIGURE 26. STRUCTURE OF KIP DATA, GUTTMAN-LINGOES' SSA CONFIGURATION (2-D), 48 VARIABLES, N = 79, *MIXED* SUBSAMPLE OF TOTAL KIP SAMPLE, INITIAL INTERVIEWS, 1987-1988

Variable	Plot	D1	D2	Variable	Plot	D1	D2	Variable	Plot	D1	D2
K1	A	.03	.79	K14A	Q	-.22	.95	K27	g	-.13	-1.02
K2	B	.30	.63	K14B	R	-.59	.88	K28	h	-.14	-.42
K3	C	-.11	.55	K15A	S	.31	.33	K29	i	.09	-.25
K4	D	1.41	-.36	K15B	T	.56	.12	K30	j	-.39	.18
K5	E	1.38	.08	K16A	U	-.09	.60	K31	k	-.66	.29
K6	F	-1.43	-.24	K16B	V	-.58	.61	K32	l	.16	.28
K7	G	.71	-.97	K17	W	.43	.36	K33	m	.67	-.42
K8	H	1.14	.27	K18	X	-.90	-.15	K34	n	-.49	.53
K9	I	1.34	-.37	K19	Y	-.60	-.95	K35	o	-1.62	.38
K10	J	-1.10	.01	K20	Z	.43	-1.11	K36	p	-.37	-1.11
K11A	K	.02	-.02	K21	a	.19	-1.46	K37	q	1.18	.63
K11B	L	-.77	-.18	K22	b	.03	-.98	K37B	r	-.38	1.19
K12A	M	-.47	-.16	K23	c	.83	.60	K38	s	1.18	-.74
K12B	N	-1.15	.08	K24	d	.67	.51	K39	t	-1.33	-.37
K13A	O	.40	.92	K25	e	.62	.26	K40	u	-.84	-.84
K13B	P	.12	.90	K26	f	-.64	-.63	K41	v	.82	-.16

Guttman-Lingoes' Coefficient of Alienation K = .31

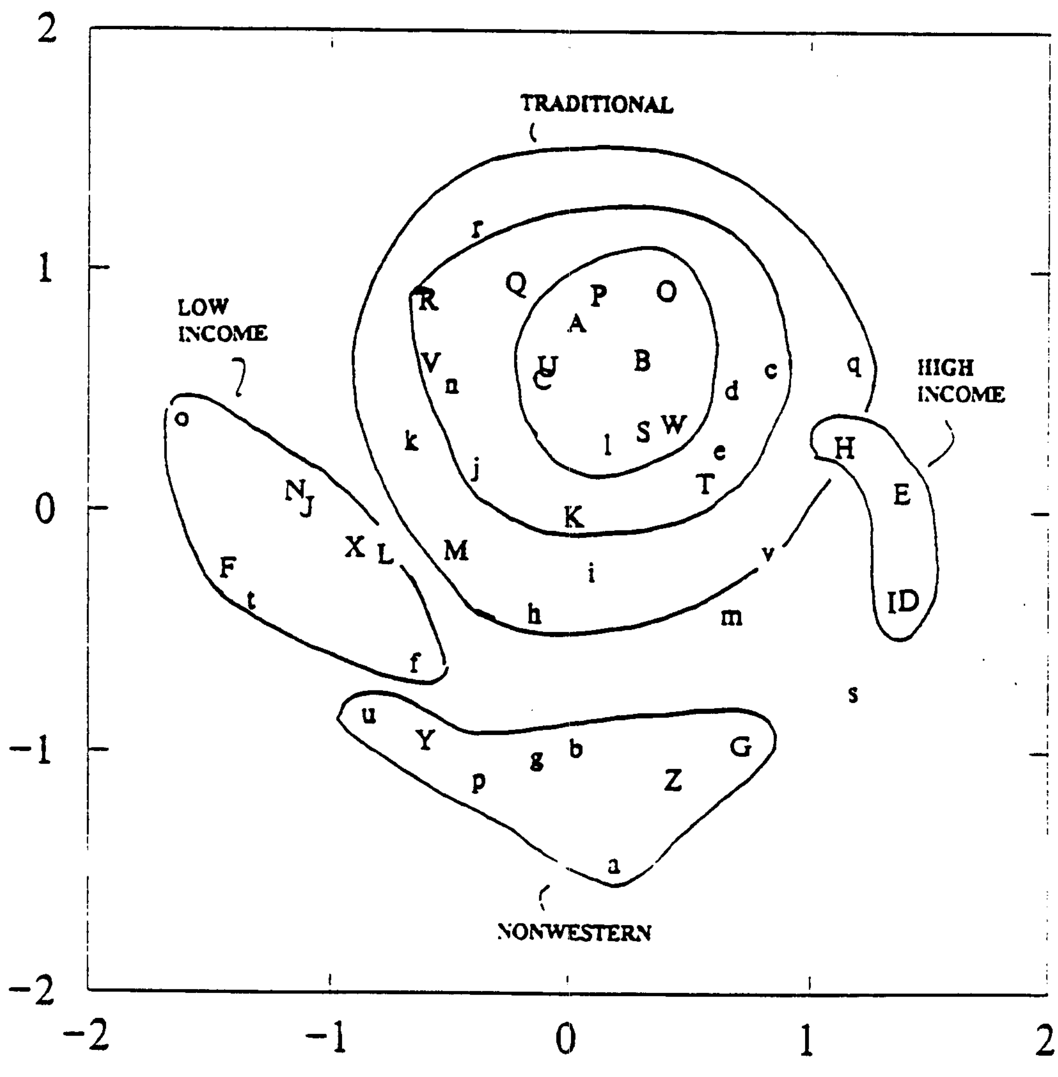

FIGURE 27. STRUCTURE OF KIP DATA, GUTTMAN-LINGOES' SSA SOLUTION (2-D), 48 VARIABLES, N = 90, *NATIVE* SUBSAMPLE OF TOTAL KIP SAMPLE, INITIAL INTERVIEWS, 1987-1988

Variable	Plot	D1	D2	D3	Variable	Plot	D1	D2	D3
K1	A	.74	-.06	.26	K20	Z	-1.00	-.57	.31
K2	B	.37	.51	.40	K21	a	-.99	-.01	-.71
K3	C	.63	-.15	.30	K22	b	-.57	-.39	.87
K4	D	-1.07	-.01	.08	K23	c	-.99	.66	.09
K5	E	-1.01	.21	-.13	K24	d	-.62	.58	.02
K6	F	1.05	-.72	-.27	K25	e	-.69	.58	-.01
K7	G	-.21	-.14	-.99	K26	f	.14	-.93	.05
K8	H	-.99	.14	.65	K27	g	-.35	-.84	.40
K9	I	-.95	.27	-.66	K28	h	.08	.75	-.24
K10	J	.72	-.63	.34	K29	i	.37	.79	-.20
K11A	K	-.23	.43	.19	K30	j	.39	.49	-.35
K11B	L	-.07	.29	.29	K31	k	.74	-.04	-.23
K12A	M	.03	.05	.65	K32	l	-.33	-.09	.81
K12B	N	.26	.04	.67	K33	m	-.78	-.65	-.68
K13A	O	.11	.67	.46	K34	n	1.07	.21	-.26
K13B	P	.33	.47	.62	K35	o	.83	-.96	-.22
K14A	Q	.43	.13	.34	K36	p	-.53	.56	-.85
K14B	R	.56	-.00	.38	K37	q	.61	.19	-.24
K15A	S	.43	.64	-.01	K37B	r	.61	-.36	-.76
K15B	T	.56	.59	-.11	K38	s	-.69	-.97	-.44
K16A	U	.44	.39	.27	K39	t	.51	.17	-.98
K16B	V	.85	.16	-.02	K40	u	.10	.65	.32
K17	W	-.03	.07	-.79	K41	v	.24	-.99	.22
K18	X	.87	-.75	-.02					
K19	Y	-1.00	-.89	.25					

Guttman-Lingoes' Coefficient of Alienation K = .213

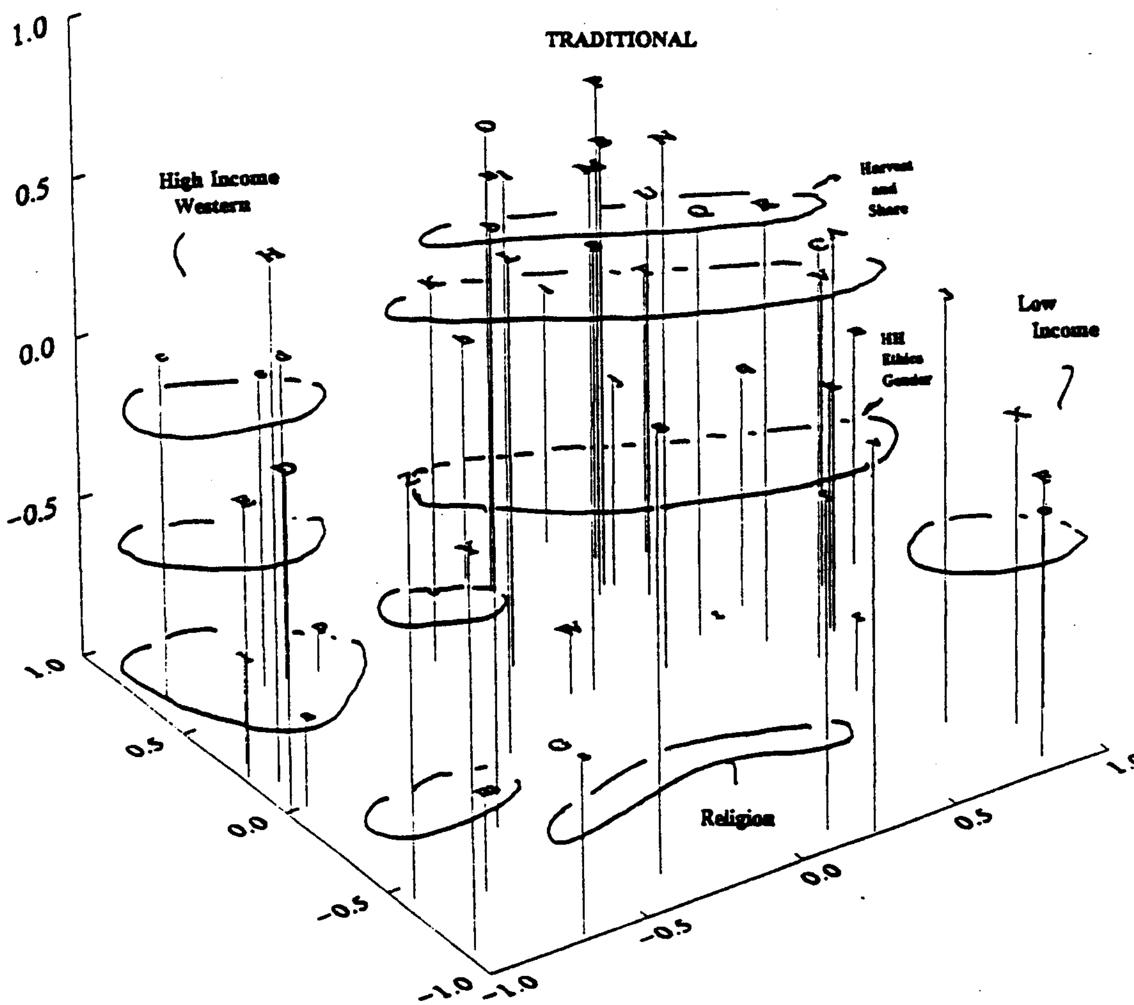

FIGURE 28. STRUCTURE OF KIP DATA, GUTTMAN LINGOES' SSA SOLUTION (3-D), 48 VARIABLES, N = 79, *MIXED* SUBSAMPLE OF TOTAL KIP SAMPLE, INITIAL INTERVIEWS, 1987-1988

Variable	Plot	D1	D2	D3
K1	A	-.07	.83	.35
K2	B	-.35	.60	.48
K3	C	.11	.57	.49
K4	D	-.98	-.55	-.31
K5	E	-.99	-.13	-.10
K6	F	1.00	-.12	-.29
K7	G	-.06	-.51	-.99
K8	H	-.92	.24	-.52
K9	I	-.96	-.70	-.25
K10	J	.95	.01	-.45
K11A	K	.05	-.05	.41
K11B	L	.73	-.18	-.11
K12A	M	.53	-.12	.38
K12B	N	.99	.19	-.26
K13A	O	-.47	.84	.12
K13B	P	-.14	.87	.00
K14A	Q	.11	.85	-.34
K14B	R	.38	.73	-.57
K15A	S	-.34	.32	.45
K15B	T	-.48	.24	.65
K16A	U	.03	.57	.04
K16B	V	.50	.67	.07
K17	W	-.53	.12	.17
K18	X	.90	-.20	.09
K19	Y	.51	-.95	-.14
K20	Z	-.34	-.99	.32
K21	a	-.13	-1.00	-.31
K22	b	.07	-.99	.11
K23	c	-.92	.29	.33
K24	d	-.71	-.16	.58
K25	e	-.60	.02	.53
K26	f	.64	-.62	.47
K27	g	.26	-.95	.49
K28	h	.30	-.22	.88
K29	i	.05	-.13	.89
K30	j	.39	.30	.61
K31	k	.63	.35	.39
K32	l	-.21	.22	.19
K33	m	-.49	.16	-.86
K34	n	.28	.37	-.49
K35	o	.95	.33	-1.00
K36	p	.26	-.11	-.99
K37	q	-.98	.45	-.17
K37B	r	-.11	.81	-.80
K38	s	-.76	-.69	-.75
K39	t	.99	-.02	.58
K40	u	.83	-.74	-.03
K41	v	-.67	-.46	-.05

Guttman-Lingoes Coefficient of Alienation K = .229

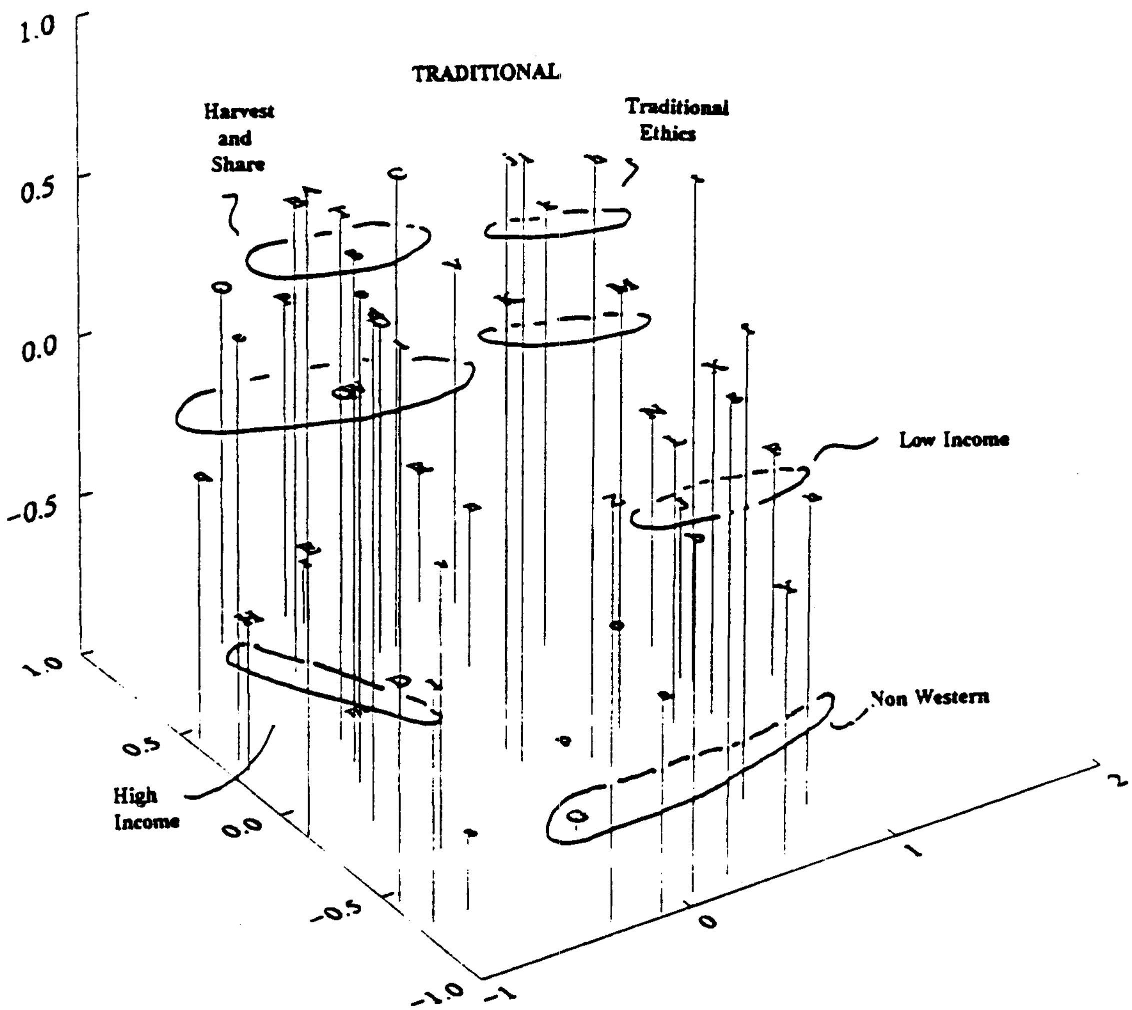

FIGURE 29. STRUCTURE OF KIP DATA, GUTTMAN-LINGOES' SSA SOLUTION (3-D), 48 VARIABLES, N = 90, *NATIVE* SUBSAMPLE OF TOTAL KIP SAMPLE, INITIAL INTERVIEWS, 1987-1988

Differences between the *Mixed* and *Native* populations are evident as well from the average number of PRE coefficients $\geq \pm.50$ for each. In the *Mixed* contrast, 39 of the 48 variables obtain γs $\geq \pm.50$ with three or more variables. Nine variables obtain γs $\geq .50$ with 2 or fewer variables. The average for all protocol variables in the *Mixed* subsample is 7.2 γs $\geq .50$. By contrast, the average PRE coefficients $\geq \pm.50$ among those same 48 variables in the *Native* subsample is 3.2. Nineteen of the 48 correlate $\geq .50$ with less than 3 variables. There are, then, considerable differences between the two populations.

Three regions dominate the *Mixed* solution (Figure 26): HIGH INCOME/WESTERN on the left, TRADITIONAL in the center, and LOW INCOME on the lower right. I will analyze them in turn, but the discussion of each region requires some reference to the other regions because of the nature of the ordinal variables we have employed. High, positive relations tend to be fitted together in the configurations, so it is possible to overlook the importance of high negative relations that repel variables in the solution. It will be important to refer to negative relations when analyzing the differences between the HIGH INCOME/WESTERN region and the TRADITIONAL region.

Data Structure in the *Mixed* Subsample, Initial Interviews: On the left side of the *Mixed* solutions (Figs. 26 and 28) a region comprising three areas is labeled HIGH INCOME/WESTERN. A description of the region and its areas follows. Let us first assess the region in broader strokes. Persons with high, stable incomes, most of which is earned in the private sector, tend to belong to several clubs and other voluntary organizations. They also tend to have stable marriages, and reside in households whose compositions have been stable over several years. Within those households, rules are observed (and expected to be observed) by household members. Should conflicts emerge within households, external agencies might be used to resolve them. Economic conflicts between Natives and non-Natives are perceived among persons whose incomes are high and, for the most part, earned from private sources. If they are also joiners of clubs and sodalities, they are also active in local, regional, or borough political affairs and knowledgeable about current political issues pertinent to Alaska. In addition, they understand the locus and source of control over local social service agencies, even if they do not use those services.

Even though these many items are not exclusive to non-Natives, the relations among them fit our hypothesis of Western economic and social organization. Most surely there are some high earners among Natives. In addition, many of those same Natives are active and knowledgeable about politics, knowledgeable about the locus of control over social service agencies, and keen in their perception of economic conflicts between Natives and non-Natives. Indeed, the positioning of the variables measuring these last mentioned topics is between the TRADITIONAL radex in the right-center portion of the hyperspace, and the HIGH INCOME/WESTERN region on the left (although they form simplexes with the WESTERN region). The positioning represents many non-Native high earners and some high earner Native respondents. Inasmuch as adult non-Natives reside in Alaskan villages either because of employment or because of spouse's employment, the high, positive relations among the variables in the HIGH INCOME/WESTERN region are dominated by non-Native responses. The LOW INCOME region, we note, is situated in the lower-right portion of the hyperspace, in close proximity to the TRADITIONAL region.

A simple, but important, question is whether the HIGH INCOME/WESTERN region represents Natives at the same rate at which non-Natives are represented. Complementary evidence from the AOSIS questionnaire data--pretest and posttest--suggests not.

High negative correlations obtain between the WESTERN variables and those that measure traditional practices. The WESTERN set correlates negatively with household size (W, K17); personal ethics that promote communitarian assistance and distribution (j, K30); traditional enculturation practices (indulgent, nondirective, few stipulations attached to requests and so forth) and Native gender distinctions (i, K31); the belief that formal schooling is not strongly associated with financial success (n, K34); and the respondent and his/her spouse were either born in the village or are long-term residents of the village (q, K37; r, K37B). These several variables are fitted in the TRADITIONAL region.

Especially instructive are the low negative correlations between the variables in the HIGH INCOME/WESTERN region and the variety of resources harvested; the amount of protein in the diet from naturally occurring resources; and the giving and receiving of resources, labor, and cash through sharing. These items form the core of the TRADITIONAL region. They are complemented by positive coefficients with household size, communitarian ethics, long-term residence in the village, and other items with which the HIGH INCOME variables are negatively related.

One question that simulated the development of our theoretical contrasts was whether Native household organization, ethics, enculturation practices, and opinions about the value of schooling would change toward those generally measured among non-Natives in the presence of stable, high earned income, attainment of secondary and higher levels of education, and political participation at the State and Federal levels. Neither these data nor data collected in KI reinterviews conducted in 1989 and discussed below, suggest changes toward Western ethics and practices. To the contrary, among Natives, increased education and political savvy often correlate with better jobs and higher pay, and also with traditional customs and greater skepticism of any positive correlation between education and success. The AOSIS questionnaire data for pretest and posttest samples and the three waves of the QI panels yielded similar results.

Understanding of the HIGH INCOME/WESTERN region should be facilitated by the following description of the plotting of the variables. Farthest to the left, a simplex is formed by three income variables (D, K4 [amount]; E, K5 [% earned], and I, K9 [stability of earned]) and two family organization and social organization variables (a, K21 [resolve household conflicts through external agents] and c, K23 [membership in several sodalities]). Persons in *Mixed* villages with large, stable, earned incomes tend to belong to several sodalities and to use social agencies to resolve conflicts within households. Inasmuch as there are more sodalities in large and complex villages than in smaller ones, this result is not surprising. Nevertheless, persons in large villages need not join sodalities. Those who do so tend to be stable, high income earners. The use of social agencies to resolve disputes also suggests that a large proportion of these persons are non-Natives.

In that same region, the second simplex to the right of the first, comprising H (K8 [% of total income from private source of income]), Z (K20 [expectations for obeying household rules]), and Y (K19 [stable household composition]) fits together earned income from private sources with Western (non-Native) traditions for stable household composition (little fluidity of membership) and the observation of household rules while resident in the house. The items in this region form other simplexes (triangular in shape) among E, H, D, and H, D, Z. These, in turn, form simplexes with b (k22 [stable marriages] and m [K33] [perception of economic conflicts, particularly between Natives and non-Natives]) in the area to the right.

At the top of the region, a second area to the right is formed comprising c, d (K24 [political participation in the household]), e (K25 [correct identification of political issues]), and p (K36 [perceived locus of control of social services]).

The LOW INCOME region is positioned in close proximity (below and to the right) to the TRADITIONAL region. It is evident that low, stable, predominantly unearned incomes--three items in the region--are not necessary to the TRADITIONAL region, but if persons are dependent on low, stable, predominantly unearned incomes, they most frequently observe the traditional practices and ethics fitted in the TRADITIONAL region. The LOW INCOME region fits stable unearned incomes (F, K6; J, K10) and, by interpolation, low incomes (γs for K6 and K10 with K4 and K5 are -.93, -.94, -.51, and -.75 respectively) with the most elderly household heads (X, K18), and with the correct perception of the goals of several social service programs available in the region (o, K35). Users of social programs may not know where the locus of authority over the programs resides, but they know what the programs do because they are impoverished users of those programs. In the 3-D solution, religious participation in the household (f, K26) and spouse reared in the same or nearby village of the respondent (r, K37B) are fitted in the region. The close proximity of those variables can be seen in the 2-D solution, but the 3-D solution makes the relations more graphic.

Low, stable, unearned incomes (F, J) correlate highly and positively with a large number of items in the radex that forms the TRADITIONAL region. So many variables are fitted so closely together in the TRADITIONAL region it will be helpful to describe the relations within this radex, at whose center is located the resource extraction and use variables, and the sharing variables.

Among Native respondents, both high-earner households and low-earner households correlate strongly and positively with the variables in the TRADITIONAL region. There are, however, major differences between them: high earners are bigger givers (the K11A-16A series) than receivers (K11B-16B series). Low earners are big givers and receivers, but their giving is restricted more to resources, such as animal products and by-products and labor, than it is to cash. This is similar to the solution for the total sample (without contrasts). This difference aside, the high- and low-earning Natives are tied together through sharing and through a large variety of traditional beliefs and practices. Central to the radex are the variables measuring the variety of resources harvested (B, K2), the percentage of total annual income invested in subsistence harvests (A, K1), and the proportion of naturally occurring proteins in the household diet (C, K2). Several sharing variables are fitted in the center of the radex along with the subsistence-harvest variables (see also the more complex cylindrex in the 3-D solution). The most closely fitted are actually activities most infrequently engaged in by any of the respondents, yet they are practiced by the most traditional respondents, hence their high positive correlations with the subsistence-harvest variables. These include sharing (giving and receiving labor), goods (animal products, animal by-products, equipment) and even cash with persons in households and villages other than the respondent's (Q, K14A; R, K14B; U, K16A; M, K12A; N, K12B). Sharing with persons in distant villages is less frequent by far than sharing with persons in the same village, but long-distance sharing does indeed occur. Also in the center of the radex is q (K37), demonstrating that respondents tend to have been born and reared in or near the village where they were interviewed.

Fanning around the center in the first concentric circle are variables measuring the practice of traditional enculturation and the maintenance of traditional gender distinctions (k, K31); the espousal of personal ethics that promote cooperation (j, K30); large household sizes (W, K17); and further variables measuring giving and receiving of resources (S, K15A; T, K15B), labor (O, K13A; P, K13B), and cash (K, K11A; L, K11B) within the village but beyond one's immediate household. These, of course, are the more frequently practiced forms of sharing.

Farther from the center in a third concentric circle, we see that the respondent's spouse was born and reared near the village in which the respondent was interviewed (r, K37B); that respondents are doubtful about a strong correlation between schooling and success (n, K34); that these respondents avail themselves of most of the social and health services that are available in the village (t, K39); that persons believe the environment is endowed with spirits and that Natives have special relations to their environment (i, K29); and that persons should work to develop skills so as to assist one's family and the wider network of kinspersons (h, K28).

The relations within the radex scale in several complex fashions, as is evident in the 3-D solution, but at the core we see that the more varieties of resources that a household harvests, the larger the proportion of protein from naturally occurring species in the diet. Harvest expenses increase as well, but the proportion is greater for the lower income households than for those with higher incomes.

A complex division occurs between persons (on the left) who are actively engaged in sodalities and politics (see c, K23, d, k24, and e, K25 in the HIGH INCOME/WESTERN region) and who are big givers (K, M, O, S: the K11A-16A series) and those (on the right) who are not so active in politics and are big receivers (N, R, T, V: the B series). This is not to suggest that some people only receive and others only give. Higher incomes correlate with more giving of cash and labor and receiving of goods and labor. Lower incomes correlate with receiving cash, labor, and resources and give resources and labor. The poorest, the elderly, and the infirm are primarily receivers of cash, but they also receive some labor (easier to comprehend by scanning the matrix or a 3-D solution).

In the 2-D solution, the religious participation variables are fitted as distant members of the TRADITIONAL region (center). Households where several active religious communicants reside (f, K26) are pulled toward the LOW INCOME region. Active participation in several church-related activities (g, K27) is separated by G, the proportion of earned income from the public sector to total household income (K7). The religion variables correlate with high and low incomes, and also with a host of traditional variables. Their positions in the 2-D solution demonstrates these relations. It is the case that the majority of Natives in all villages are devout Christians, active in their churches. They become more active as they grow older.

In *Mixed* villages most houses are hooked-up to all utilities and have several operable appliances (s, K38). *Mixed* villages are also large (v, K41). These are redundant measures, so they appear as outliers at the bottom of the distribution.

<u>Data Structure in the *Native* Subsample, Initial Interviews</u>: Multivariate relations in the *Native* subsample (Figs. 27 and 29) are very different from those in the *Mixed* subsample. The variables measuring marriage stability, household dynamics, household rules, and household conflict resolution yield low, negative correlations in the *Native* subsample, as does the correct perception of the locus of control over social service agencies. The low negative correlations are a function of Native practices, of course, but also a function of the manner in which the ordinal variables are arranged. For example, household rules are measured from few and loose to many and firm. So the order of each of these variables is from few rules, or few expectations, to many, or from traditional practices to Western practices. In the *Mixed* subsample, these variables formed with the high-income variables to make a region. Here they are divorced from income and form a loosely related set of points in a NONWESTERN area. Only household dynamics (Y, K19) and household rules (Z, K20) within the area correlate strongly and positively with one another (to be expected from the order of the attributes). The measure of village size (s, K38) is

meaningless in that large villages are *Mixed* in every case but Kotzebue, and all small villages are *Native*. The use of Native healers (u, K40) is an outlier because Native healers are available in few villages (principally NANA villages where the regional nonprofit corporation lends financial support to the practitioners.

The *Native* subsample does not bristle with high PRE coefficients, in part because of the wide range of variation among 24 villages representing five different languages and several dialects from Kaktovik in the high arctic to Old Harbor in the subarctic. Nevertheless, the data structure for *Native* villages, in general, lend empirical warrant to our expectations for family household structures, ethical codes, and subsistence practices that are much different from non-Natives and even different from some of the practices of Natives in the *Mixed* villages.

Two strong regions reflect traditional culture (TRADITIONAL, LOW INCOME), complemented by the NONWESTERN region. A fourth, a simplex labeled HIGH INCOME, comprising high, stable, earned income from private sources (D, K4; E, K5; H, K8; I, K9) is unrelated to the traditional regions and stands by itself on the right, again showing that persons with high incomes in the *Native* villages represent a sufficiently wide range of behaviors, sentiments, and household organizations to be set apart from any of the variables that measure these phenomena. The exception, perhaps, is that spouses who were born and reared near, but not in, the village (q, K37B), tend to belong to several sodalities (c, K23) and to be married to respondents whose incomes are predominantly from private sources.

The structure of the TRADITIONAL region is a radex whose core is made up of subsistence extraction variables (A, K1; B, K2; C, K3). As in the *Mixed* solution, some forms of sharing also occur near the center of the region. Here, however, the most central items are the receiving of food or other goods from within the village (S, K15A) and from outside the village (U, K16A). The 3-D solution demonstrates the small space into which the sharing and resource variables are fitted. The central places are occupied by the receiving and giving of goods/equipment (S, T, U, V) in and out of the village, by the giving and receiving of labor (O, P, Q, R), and the special positioning of the variables that measure the sharing of cash demonstrate modest, but interesting, differences from the TRADITIONAL region in the *Mixed* solution. In particular, the variables measuring receipt of cash by respondents from persons within and beyond the village (L, K11B; N, K12B) are positioned in, or in close proximity to, the LOW INCOME region. The variables measuring gifting of cash, particularly gifting within the village (K, K11A), are pulled toward the HIGH INCOME region. Persons with modest and low incomes are more likely to receive cash than to give it. And most persons in *Native* villages actively engage in giving and receiving goods and labor. Other features close to the core of the TRADITIONAL region are large households (W, K17), and the opinion that any economic developments that might occur locally would be controlled by persons (and businesses) outside the village who also would reap most of the benefits. This last measure suggests that residents of *Native* businesses are not ignorant about economic developments in the hinterland.

Radiating in the first concentric circle around the core from the right are the variables measuring political activity (c, K23; d, K24; e, K25); the sharing of labor outside the village (Q, K14A; R, K14B); the receiving of resources from outside the village (V, K16B); the opinion that there is little relation between the amount of schooling a person receives and his success as an adult (n, K34); the espousal of a communitarian ethic (j, K30); and the practice of traditional enculturation and maintenance of traditional gender distinctions (k, K31). Native ethics, sentiments, and beliefs fit Native practices of subsistence activities and sharing activities, as is amply demonstrated here. Completing this part of the radex, as noted above, are the variables that measure giving cash locally (K, K11A) and the receipt of goods locally (T, K15B). These last two variables are located close to the variables that measure high income, or the ability to give.

The second circle from the center of the radex intersects with the inner distribution of the LOW INCOME region. Beginning at the bottom of the distribution below K (the giving of cash locally), we see that the extra giving of cash (M, K12A) is fitted close-by, and both K and M form simplexes with variables measuring the ethic of personal responsibility for attainment so as to assist others (h, K28), and a belief that the environment is endowed with spirits (i, K29). Farther around the circle, the places where the spouse of the respondent (r, K37B) and the respondent (q, K3) were born and reared were close to the place where the respondent was interviewed.

The LOW INCOME region on the far left is composed of older household heads (X, K18) dependent on stable unearned income (F, K6; J, K10), cash assistance (L, K12A; N, K12B), and social services (t, K39), whose goals they perceive correctly (o, K35). They do not always perceive the locus of control over the social services correctly (p, K36 is in the NONWESTERN region). Several household members attend religious services regularly (f, K26), but they do not profess to engage in a large number of church-related activities (g, K27 is also fitted in the NONWESTERN region).

II.B. Analysis of the Reinterview Responses

The multidimensional scale solutions for the *Mixed:Native* contrasts of the reinterview data are very similar to the solutions for the initial interview data. Figures 30 through 31 demonstrate that the *Mixed* and *Native* solutions have high-income regions on the left and traditional culture regions on the right, and that the traditional regions divide into lower income sets of older households and higher income sets of younger households. The bridges between the lower and higher areas of the traditional regions are traditional ethical beliefs and practices, traditional gender customs, and spiritual views of the environment.

Because some variables analyzed in the first wave of research were dropped from the sample for the second wave,[90] the comparisons of the initial and reinterview contrasts are not identical. In the 1989 solution for the *Mixed* subsample (Fig. 30), the high-income region forms a circumplex toward the left rear of the figure. The variables measuring high, earned, stable income are joined with the three variables that measure perceptions of economic conflicts. As earned

[90] See the reference to Social Indicators Study II (Jorgensen 1993) above. In short, variables were dropped if they were underreported, failed the stability test, or failed to account for at least 50 percent of the variation (or reduce 50% of the error) of four or more variables.

Variable		D1	D2
D28	A	-1.55	-.72
OCC	B	-.94	-.27
RAGE	C	-.15	-1.27
RSEX	D	-1.00	.11
PEMP	E	-.79	-1.06
K1	F	.45	.66
K2	G	.51	.46
K3	H	.20	.62
K4	I	-.90	.80
K5	J	-.64	1.16
K6	K	.47	-1.01
K9	L	-.67	.64
K10	M	-.99	-.82
K11A	N	.59	.30
K11B	O	.76	.40
K13A	P	.01	-.22
K13B	Q	.50	-.51
K14A	R	.28	.54
K14B	S	.28	.46
K15A	T	-.05	-.71
K15B	U	.16	-.63
K16A	V	.36	-.11
K16B	W	.23	.15
K17	X	.68	.67

Variable		D1	D2
K18	Y	.51	-1.16
K19	Z	-1.35	-.18
K22	a	-.34	.12
K24	b	1.05	-.13
K25	c	1.19	-.35
K26	d	.46	-.05
K27	e	.21	-.33
K28	f	.84	-.14
K29	g	.72	.48
K30	h	.21	.27
K31	i	.77	.14
K33A	j	-.42	.69
K33C	k	-.47	.81
K33G	l	-.29	.81
K34	m	1.08	-.84
K35	n	.14	1.29
K36	o	-1.44	.60
K37	p	.90	.53
K37B	q	.41	-1.38
K38	r	.26	1.01
K39	s	-.45	-.61
K40	t	-1.40	.09
K41	u	-.41	-1.33

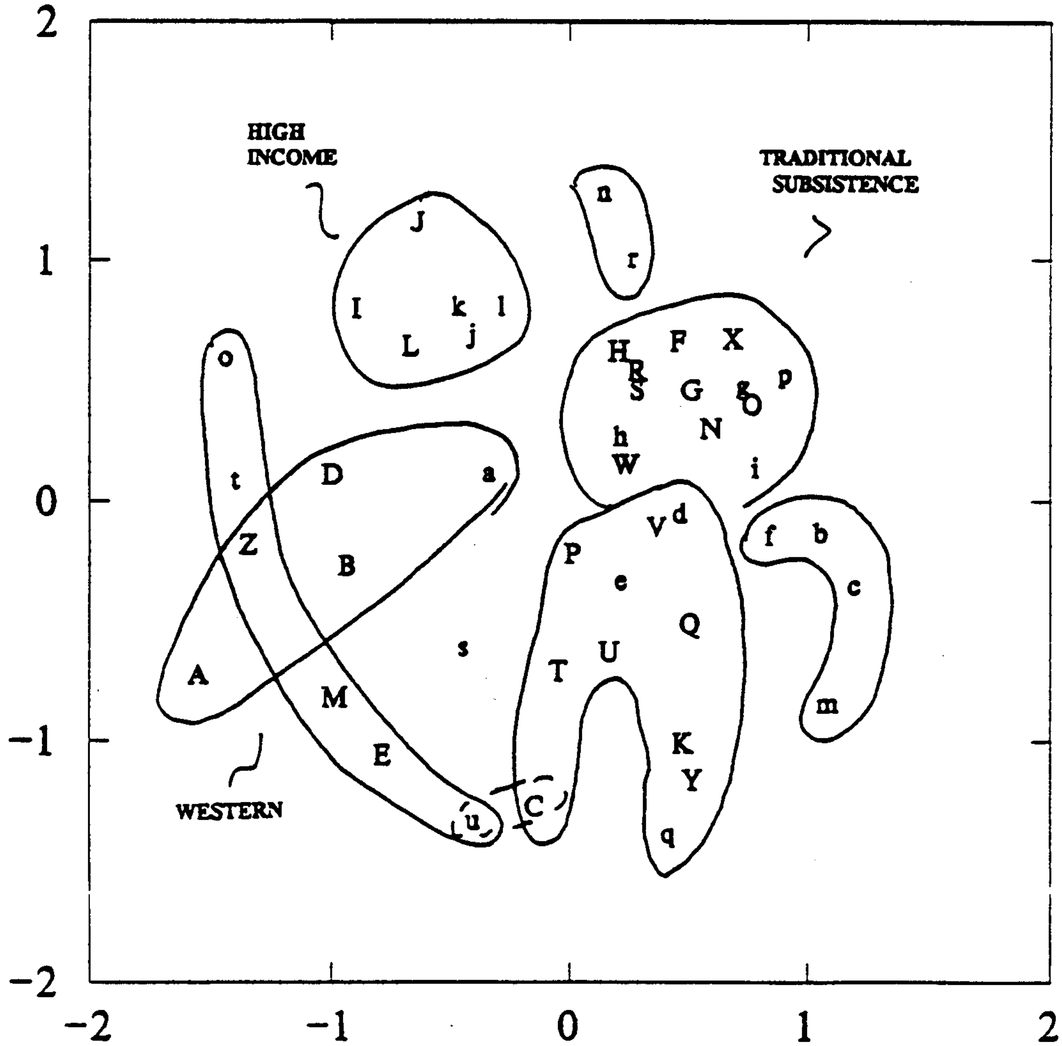

FIGURE 30. STRUCTURE OF KIP DATA, GUTTMAN LINGOES' SSA SOLUTION (2-D), 47 VARIABLES, *N* = 47, *MIXED* SUBSAMPLE OF THE TOTAL KIP SAMPLE, REINTERVIEWS, 1989

Variable		D1	D2
D28	A	-.77	-.35
OCC	B	-.52	.89
RAGE	C	.99	-.75
RSEX	D	-.69	-.33
PEMP	E	.16	-.03
K1	F	.45	.48
K2	G	.08	.29
K3	H	.81	.27
K4	I	-.82	.60
K5	J	-.98	1.18
K6	K	.65	-1.48
K9	L	-1.01	.06
K10	M	.05	-.57
K11A	N	.54	.66
K11B	O	.70	.37
K13A	P	-.38	.71
K13B	Q	.40	.55
K14A	R	.24	1.15
K14B	S	.20	1.12
K15A	T	.08	.68
K15B	U	.30	.19
K16A	V	-.32	.49
K16B	W	-.80	.44
K17	X	-.10	.58

Variable		D1	D2
K18	Y	1.02	-.85
K19	Z	.44	-1.18
K22	a	.73	-.41
K24	b	.15	-.79
K25	c	-.25	.47
K26	d	.20	-.93
K27	e	-.12	-1.03
K28	f	.83	-.01
K29	g	1.05	-.01
K30	h	1.00	.46
K31	i	1.39	.13
K33A	j	-1.43	-.89
K33C	k	-1.17	-.81
K33G	l	-1.58	-.80
K34	m	-.13	.45
K35	n	-.03	-1.11
K36	o	-1.24	.36
K37	p	.51	.46
K37B	q	.24	-.37
K38	r	-.31	.92
K39	s	.12	-.50
K40	t	.58	-.01
K41	u	-1.24	-.72

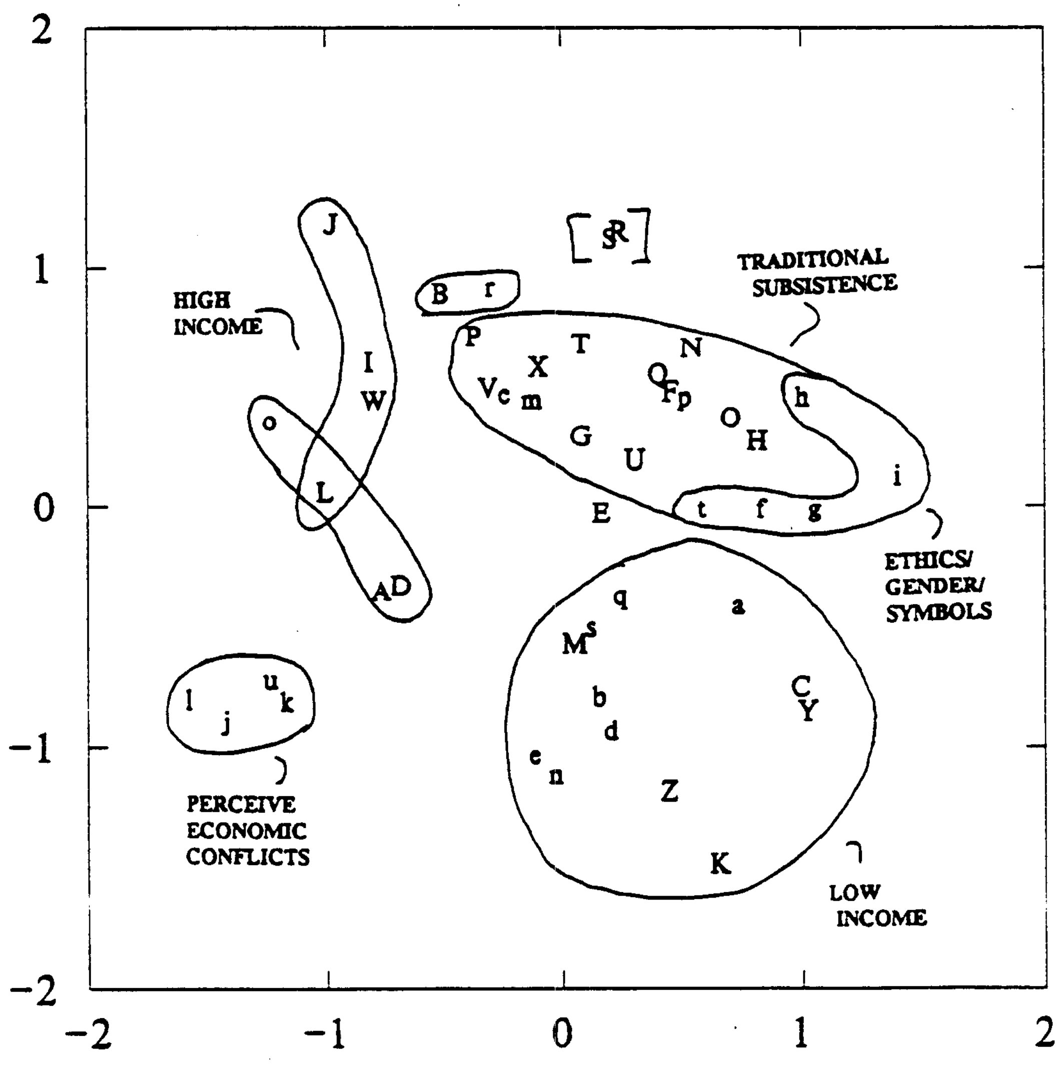

FIGURE 31. STRUCTURE OF KIP DATA, GUTTMAN-LINGOES' SSA SOLUTION (2-D), 47 VARIABLES, N = 61, *NATIVE* SUBSAMPLE OF THE TOTAL KIP SAMPLE, REINTERVIEWS, 1989

income increases and becomes increasingly stable, perceptions of economic conflicts between Natives and non-Natives and non-Native corporations increase. The variables used to measure perception of economic conflict in 1987-1988 are not comparable to those used in 1989.

Below and to the left of the high-income circumplex is the WESTERN region, composed of two simplexes (unidimensional scales) that cross. One, in the form Shepard (1974) calls a "horseshoe" (because of its shape and biconditional nature), fits non-Natives (A, at the bend) with professional and management occupations (B) and stable marriages (a) toward one end, and with stable household composition (Z) and women respondents (D) toward the other.[91] Private sector employment (E), utilities present and working (u), and stable unearned income ('M') form a simplex with stable household composition, the use of Native healers (t, a phenomenon of the NANA region), and the opinion that most social service agencies are controlled from outside the village (o).

The TRADITIONAL region matches the initial *Mixed* solution closely. The subsistence-harvest variables form the center of the radex. Radiating around those variables are the sharing (particularly the giving) variables (cash, labor, resources). The traditional ethics, gender, and beliefs variables, and the religious participation variables form the bridge to the elderly low- income households.

The solutions for the *Native* interview and reinterview samples (Fig. 19) produce similar structures, with exceptions for variables present in the interview sample but not the reinterview sample. Simplexes of high, earned, stable income are fitted on the left (HIGH INCOME). Although non-Native and women respondents are fitted in the high-income solution, high incomes are close to the upper (or back) portion of the TRADITIONAL region and help to account for the differences between the TRADITIONAL regions in the first and second wave solutions. The small circumplex in the lower left is an outlier drawing together perceptions of economic conflicts between Natives and non-Natives. It is positioned in proximity

[91] Women respondents more often are engaged in stable households, stable marriages, and professions (personally or through their spouses), than are male respondents. And they are more often non-Native or married to non-Natives. So, the woman respondent at home fits the Western ideal.

to the high-income, non-Native variables, but it is not fitted with them. Perceptions of economic conflicts are less in the smaller, predominantly Native villages. Inasmuch as infrastructures, businesses, and services are fewer in general in the *Native* villages, this outlier fits our expectations.

The higher income set is a radex (although in the shape of an ellipse) with the subsistence variables forming the center (percentage of income invested in subsistence harvests, variety of species harvested, naturally occurring resources in the diet). The sharing variables are positioned above, and the traditional ethics, symbolism, and gender customs are positioned below. In both the *Mixed* and *Native* solution, high political participation and accurate knowledge of political issues correlate strongly and positively with the belief that there is no strong relation between education and economic success. These variables are fitted in the radex in the *Native* solution, and in a simplex located to the right of the traditional solution in the *Mixed* solution. High income, high level of education, and low expectations for success from acquiring an education have correlated highly among Alaskan Natives on each occasion we have measured these items.

In the lower income area, a larger percentage of the household income is unearned and stable. Household heads are older, their marriages are stable and so are the households. Religious and extracurricular religious activities are high, as is social service use and correct understanding of the missions of the various social service agencies.

III. KI: COGNITIVE ATTITUDES ABOUT TRADITIONAL ACTIVITIES AND NATURALLY OCCURRING RESOURCES

Inasmuch as we did not gather information on attitudes about natural resource availability and management in 1987, our stability tests were restricted to reinterviews of informants in the Schedule B KIP sample. Every question proved to be stationary, and the multivariate relations have proved to be high and significant.

The sample on which the 1988 results are based is heavily influenced by the large *Mixed* villages of Kodiak, Dillingham, and Nome, and by the heavy emphasis on the private sector fishing industries of Kodiak Island and Bristol Bay. In 1989, the KIP respondents in the Schedule A villages of the Aleutian-Pribilofs, North

Slope, NANA, and Calista regions were interviewed, and the KIP respondents in the Schedule B villages were reinterviewed. Many of the concluding hypotheses we generated from the study in 1988 have gained empirical support from the restudy in 1989, but some have been considerably modified.

In 1988 we inquired about more than 100 types of sea mammals, fish, marine invertebrates, land mammals, birds, and plants (including marine plants). In 1989, we pruned the list to 73. I begin with an assessment of a few sea mammals. The responses to similar questions posed about the various groups of fauna and flora are so highly consistent that the analysis of sea mammals will provide reasonably accurate generalizations about the respondents' attitudes about other species.

I use the term species loosely and I also use the term "types" loosely. Types is a better term for our purposes than species because we often group several related species together for analysis, such as ducks, or geese, or berries.[92] In some instances, however, a single species represents a type, such as polar bear (*Ursus maritimus*) or caribou (*Rangifer tarandus*).

III.A. Availability

Several cognitive attitude questions were asked about each type of naturally occurring resource on our list. We asked respondents whether they thought the availability of the resource was insufficient, sufficient, or more than sufficient. Thirty percent of the total responses to the availability questions (73 types, 108 responses per type) were that resources were more than sufficient for local needs, 42 percent thought resources were sufficient, and 28 percent insufficient. By this gross measure, 72 percent of the total sample had sufficient resources. In comparing the responses further, we sought the distribution for each type of resource. The modal answer for 32 types of resources is that they are more than sufficient for the respondents' needs. Yet the modal response for another 33 types is that they are insufficient for the respondents' needs.

[92] For example, we lump seventeen duck species under ducks, including *Somateria spp., Polysticta stelleri, Bucephala clangula americana, Histrionicus histrionicus, Anas spp., Mergus serrator, Clagula hyemalis, Aythya marila mariloides, Melanitta spp., Spatula clypeata, and Mareca americana.* Geese includes the species *Branta spp., Philacta canagica, Chen caerulescens, and Anser albifrons.* Berries includes species of *Rubus spp., Empetrum nigrum, Vaccinium spp., Arctostaphylor alpine, Ribes spp., and Fragaria chiloensis.*

AMOUNT OF NATURALLY OCCURRING RESOURCES AVAILABLE FOR USE

More than Sufficient	Less than Sufficient
Chum salmon	Pink salmon
Herring	Red salmon
Cod	Silver salmon
Halibut	King salmon
Flounder	Crabs
Arctic fox	Red king
Variant fox	Blue king
Beaver	Snow
	Tanner
	Mussels
	Shrimp
	Scallops
	Wolf
	Otter
	Ermine
	Walrus

The 1988 data suggested that the cognitive attitudes persons held about resources were influenced by the commodity values of those resources, or whether persons attributed commodity values to them. The resources with commodity values deemed more than sufficient and less than sufficient in the 1989 reinterviews are tallied here.

Among the naturally occurring resources that have commodity values, it is evident that respondents classified more as less than sufficient than they classified as more than sufficient list. Resources with commodity values accounted for about half of the less than sufficient list, and about one quarter of the more than sufficient list. Inspection of the remaining items in each list[93] suggests that the types deemed less

[93] More than sufficient = gray whale (*Eschrichtius robustus*), bearded seal (*Erignathus barbatus*), dolly varden (*Salvelinus malma*), lake char (*Salvelinus namaycush*), common whitefish (*Coregonus spp.*), rarer whitefish (several species), burbot (*Lota lota*), smelt (*Osmerus spp., Mallotus villosus*), sculpin (several saltwater and freshwater species, including *Myoxocephalus quadricornis, Cottus spp., Leptocottus armatus*), polar bear, brown bear (*Ursus horribilis* [several subspecies]), caribou, gulls (*Larus spp., Pagophila eburnea, Xema sabini, Rissa tridactyla*), auklets (*Aethia spp., Cyclorrhynchus psittacula*), terns (*Sterna spp.*), puffins (*Fratercula corniculata, Lunda cirrhata*), murres (*Uria spp.*), ptarmigan (*Lagopus spp.*), herring roe-on-kelp (*C. harengus pallasi* on *Fucus spp.*), kelp (*Fucus spp.*), roots (many including *Sedum spp., Hedysarium spp., Claytonia spp., Allium spp., Rose spp.*), leaves (many), and berries. Less than sufficient = belukha [aka beluga] (*Delphinapterus leucas*), spotted seal (*Phoca largha*), ringed seal (*Phoca hispida*), ribbon seal (*Phoca fasciata*), black bear (*Ursus americanus*), moose (*Alces alces gigas*), snowshoe hares (*Lepus othus othus*), arctic hares (*Lepus arcticus*), clams (*Macoma spp. Mya spp.*), seaworms, sea urchins, starfish (*Asterias spp.*), geese, cranes (*Grus canadensis*), swans (*Olor columbianus*), owls (*Asio otus, Nyctea scandiaca*), grouse (*Canachites canadensis*), and fruits (several).

than sufficient, if not commodities, are invariably highly preferred subsistence resources (belukha, spotted seal, ringed seal, ribbon seal, moose, snowshoe and arctic hares, geese, cranes, owls, grouse and others). However, the more than sufficient list also includes a number of preferred and highly preferred species--caribou, bearded seal, dolly varden, lake char, whitefish, burbot, ducks, roots, leaves, berries, and roe-on-kelp. But unlike the less than sufficient list, the more than sufficient list includes many types of resources that have limited use and preference (e.g., brown bears, gulls, auklets, terns, puffins, murres, sculpin, gray whales).

It is apparent that both commodity values and preferences for subsistence uses are important in assessing cognitive attitudes about the amounts of resources available. Of all the species in the more than sufficient list, only two make large contributions to Native diets--caribou and bearded seals (each account for large amounts of kilocalories depending on the community). Among the species in the less than sufficient list, ten make huge kilocalorie contributions to Native diets (four species of salmon, moose, walrus, belukha, and three species of seals). Moreover, the resources with commodity value make huge contributions to household incomes. Respondents were asked the following resource-specific questions:

a. "Can the resource be managed?" After asking about the resource's availability, we asked whether the resource can be managed (responses ranged from "no" and "only God can manage" to "institutions can manage."

b. "Who should manage the resource?" We inquired whether Natives, Native organizations, a balanced combination of Natives and governmental agencies, a State agency, or a Federal agency should manage the resource.

c. "Who would manage the resource best?" We asked whether the respondent thought Natives, Native organizations, a combination of Natives and governmental agencies, State agencies, or Federal agencies would manage the resource best.

d. "Do local persons or organizations influence the management of the resource?" We asked whether the respondent thought he, or she, or local advisory boards, or fishing cooperatives, or any other local persons influenced management policies toward the resource in question.

e. "Who has the greatest knowledge and who best understands the resource?" We posed two questions about knowledge of the resource in question. One focused on scholarly or academic knowledge about the resource--knowledge that can be acquired through observation, research, reading. Responses were, generally, Natives (know the most), a combination of Natives and some scientists, or scientists. The other question focused on understanding through practical experience. For this question the responses, generally, were Natives, Natives and some persons from State agencies (particularly ADF&G), or (rarely) Federal agencies.

Questions were also asked about who best understands ice, water, and wind, and what respondents thought the consequences from increased oil-related operations would be (the responses ranged from deleterious to beneficial).

We sought to learn whether (and why) respondents favored third-party management of resources (e.g., so as to avoid conflicts over commodities); whether they thought third parties should manage the resources (if they considered the third-party incompetent or less than competent and considered some party other than the one they selected more competent); who they considered most knowledgeable about resources; who they thought had the greatest practical understanding of the resources; and whether they thought that management agencies were responsive to their concerns and were influenced by their requests. These questions were driven by field experiences among Natives and non-Natives in which State and Federal organizations were castigated for their lack of knowledge, mismanagement, and their failure to heed advice offered by locals. Questions also were driven by reservations and fears expressed by many village residents--Natives and non-Natives--about the consequences of oil-related operations to naturally occurring resources on which village life was based.

The design of the questions makes it possible to measure consistency in responses. The responses within resource types (land mammals, sea mammals, fish, birds, marine invertebrates, and plants) are highly consistent, and, as is reported above, also highly stable. If a person thinks a resource can be managed, that respondent thinks some persons, groups of persons, or institution (agency) knows most about that resource, is (or would be) the best manager of the resource, and should manage the resource. If respondents think that they or local persons and organizations influence the management of the resource, they think that the agency currently managing the resource should continue doing so. Conversely, if persons think that they exert no influence, or that their influence is rarely felt, they do not think that the agency currently managing the resource should continue to do so.

Whereas the responses were highly consistent, we do not know why respondents hold varying, but consistent, attitudes from one another. Moreover, we have not resolved the question about differences between attitudes about who should manage commodities and who should manage resources that have either little or undeveloped commodity value. For example, will persons choose to have a third-party manage so as to avoid conflicts over access to resources, preferential treatment, mismanagement, and the like, regardless of whom they think knows the most and would manage best? From our field research, we knew that Natives and non-Natives expressed dismay for government regulations of commercial fishing and almost all forms of subsistence fish and game management. We hypothesized that if Natives thought that resources were scarce and insufficient for their needs, they would think that Natives should manage the resources; and if they thought the resources were abundant, they would opt for either balanced or agency management. We hypothesized that non-Natives would prefer governmental regulation of a scarce resource but would be less concerned about abundant and seldom used resources, opting for balanced or even Native management of them. We were wrong. Race (or ethnicity) and residence in commercial-fishing areas, regardless of abundance of resources or access to resources and the extraction of them, are far more powerful factors in accounting for cognitive attitudes about resources and their management than are the availability or use of those resources. Let us turn our attention to species, beginning with sea mammals.

III.B. Sea Mammals

Sea mammals have been of enduring importance to Eskimos and Aleuts for perhaps 5 millennia. They were important sources for food for Natives and their dogs, for articles of clothing, for housing and transportation, and fuel, and they were central figures in the belief systems about sickness, death, and successful survival.

Among the sea mammals, the Bowhead whale appears to have attained greater and more widespread significance, among Eskimos at least, than any other sea mammal although the subsistence and economic importance of walrus and seals is considerable, certainly of greater importance in most coastal areas than was (or is) the Bowhead whale. We begin our analysis of cognitive attitudes with these animals, the species ultimately controlled in U.S. waters by the Federal Government through provisions of the Marine Mammal Protection Act (see Fig. 32).

We interpret Figure 32 thus: informants perceive the availability of sea mammals (the crescent shaped simplex on the left hand side of the figure) as similar--sufficient to insufficient for their needs. The distribution places the animals to the left hand side, meaning they correlate negatively with the variables that measure whether respondents think that the resource can be managed, whether those resources should be managed, who should manage them, who influences their management, and who understands them best. So, the resources do not fit closely with ideas about their management. The very tight distribution in the right center of the hyperspace demonstrates the consistency of all of the cognitive responses about management. A majority thinks that sea mammals can be managed only by God or by some persons, that Natives know the most about them and understand them best, that Natives seldom or never influence their management, that Natives would manage them better than do government regulators, and that Natives (or Natives in conjunction with government agencies) should manage them. If persons think that sea mammals can be managed by institutions, they think scientists and government employees know the most about the animals, are influenced by local persons, would manage them best, and should manage them. Persons who think Natives know the most and would manage best are more apt to think a balance of Natives and government agencies should manage the resources as opposed to persons who think institutions manage best and institutional employees know most. Although these data are ordinal, they behave like normally distributed, rectilinearly

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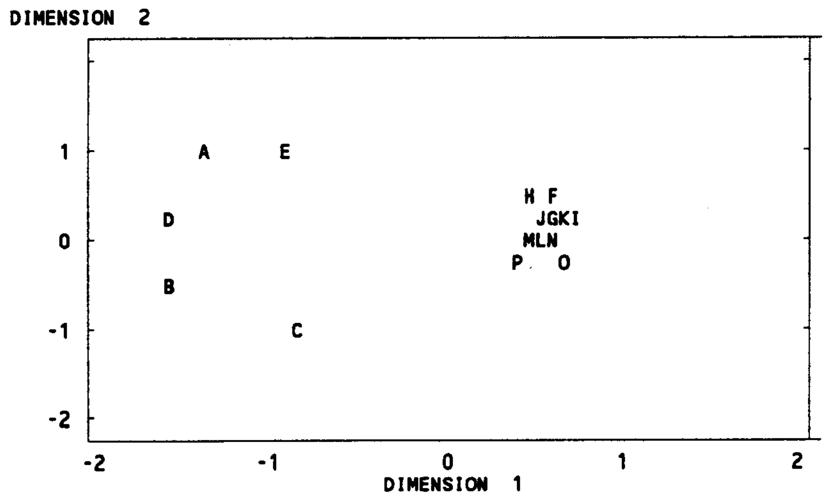

Coefficient of Alienation K = .152

COORDINATES IN 2 DIMENSIONS

VARIABLE	PLOT	DIMENSION 1	DIMENSION 2
BWALRUS	A	-1.41	.76
BBOWHEAD	B	-1.57	-.58
BBELUKHA	C	-.85	-1.14
BBEARDED	D	-1.60	.07
BSPOTTED	E	-.96	.81
BQ2A1	F	.59	.37
BQ2A2	G	.68	.08
BQ2B1	H	.49	.29
BQ2B2	I	.71	.12
BQ2C1	J	.51	.21
BQ2C2	K	.66	.21
BQ3A	L	.56	-.17
BQ3B	M	.49	-.20
BQ3C	N	.63	-.14
BQ51G	O	.66	-.40
BQ52G	P	.41	-.28

FIGURE 32. SEA MAMMALS, GUTTMAN-LINGOES' SSA CONFIGURATION (2-D), 16 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

related, interval variables. Indeed, although the loadings in the *a* cells are always quite large, the distributions are normal with little variation, as the matrix of Gammas (γ) in Table 31K (appendix) attests.

More respondents think that the numbers of walrus are insufficient for their needs than think they are sufficient, and most respondents think walrus can be managed, either by persons or by institutions. Answers to the question of who should manage them are similar to those for most other types of resources. We must remember that most of the respondents are Natives (reflecting the ethnic compositions of the 31 villages in the study). The modal responses are that respondents think Natives would manage them better than the Federal Government; Natives or Natives and some scientists possess the greatest knowledge about walrus; Natives seldom or never influence policies regulating sea mammals; Natives understand walrus better than do government employees; and that Natives should manage them. Many respondents think Natives know more, understand more, have little influence on policies affecting walrus, and would manage walrus better, or would be equivalent to government managers, but opt for a management balanced between Natives and government. About a quarter of the respondents think that government agents know most, are the best managers, and should manages.

In order to discover the attributes of the persons who held these opinions, attitudes about who would manage best (Q3A) were correlated and held constant with attitudes about who should manage (Q52A2), and several control variables were introduced (see Appendix, Table AK). The subclassification and partialling technique produced interesting results. Normally sex, age, and income are factors that influence correlations. More men than women think Natives would be better managers and should manage walrus, but the difference is not significant and confirms the often demonstrated fact that women (particularly Native women) are more conservative than men (they are less apt to seek or vote for change). Income exercises no influence on attitudes about who should manage walrus. Age, however, exercises influence: persons under the age of 29 are about equally split as to whether they think Natives or government appointees would be better managers (by a ratio of 5:4 they favor Natives, with 6 thinking that Natives and government regulators are equivalent), and they split 6:6 as to whether Natives alone, or the government alone, should manage walrus. Persons 60 and over think that the government is a better manager by 3:1 but think that government should be the sole managers by a ratio of 2:1. Persons between the ages of 30 and 59 think that Natives are better managers and should be the sole managers at ratios of 3:1. Because sea mammal hunters predominantly are middle-aged men, it is likely that they possess at least as much wisdom as the elders.

The factors exercising most influence on the relation between who should manage and who would manage best are race/ethnicity (Native or non-Native) and whether persons reside in regions where commercial fishing dominates the private sector economy (Kodiak, Bristol Bay, Aleutian-Pribilofs). Persons residing in commercial-fishing areas think that the government is the better manager and should be the sole manager at a ratio of 2:1; whereas, persons residing in noncommercial-fishing areas think that Natives would be better managers and should be sole managers at a ratio of 6:1. It is significant that residents of the commercial-fishing areas harvest very few walrus.

Non-Natives think that the government is a better manager than Natives at a ratio of 12:0 and that the government should be the sole manager at a ratio of 9:1 (there is a bit of reserve expressed toward government regulators). Natives think Natives are better managers at a ratio of 3.5:1 and that Natives should be sole managers at a ratio of 3:1. Natives, throughout our several tests, think that Natives know most and would manage best but are aware of Native powerlessness and skeptical that Natives could manage without adequate resources. Their responses, then, appear to be conditioned by the actual prospects of managing, rather than their wishes alone. Natives, much more often than non-Natives, temper their thoughts by opting for joint management by Natives and government.

III.C. Land Mammals

Among large land mammals, caribou and moose are the most frequent targets of subsistence hunters. Hunters in the Kodiak region stalk deer. Sport hunters from

Alaska's urban areas and elsewhere in the world also pursue caribou and moose, as well as Dall sheep and wolves. Wolves are pursued by Native and non-Native trappers, as are arctic foxes, variant foxes, beavers, otters, and several types of mink, ermine, and marten. Table BK (Appendix) provides bivariate and subclassification analyses of land-mammal data and cognitive attitudes about their management. Opinions about management and knowledge of land mammals are reported by almost all respondents.

In Figure 33 (see Table 33K), the most representative land mammals are assessed (see rationale for selection above: e.g., caribou distributions are more dense in the northern areas, moose distributions more dense in the southern areas, Bering Straits area has relatively large distributions of both, PRE between the two (availability) is .425; snowshoe hares are more abundant than arctic hares throughout the entire region; deer are very limited in distribution, etc.). The 2-D solution (Fig. 33) fits animal types into three simplexes and a solitary point in the left center of the hyperspace. In the upper left, the snowshoe hair (E) forms a simple Guttman scale with arctic and variant foxes (F, G); below and to the right are the moose (D) and caribou (C); and further to the right is a simplex joining polar bear (A), wolf (H), beaver (J), and otter (I). Alone at the top is the (dreaded but respected) brown bear (B). The resource availability variables are fitted on the left, and the management, knowledge, and influence variables are fitted on the right. The relations among them are strong and negative, meaning that the availability variables, in general, correlate negatively with the cognitive attitudes about management, knowledge, and influence. If, for example, a person thinks the amount of walrus is insufficient for his/her needs, they likely think that walruses can be managed by persons, or by persons in the employ of institutions.

Focusing on caribou will assist the reader's interpretation of Figure 21. Whether respondents think caribou are sufficient or insufficient, nearly all think that caribou can be managed (so the PRE coefficient between C and K [Q2M1 can caribou be managed?] is low and negative -.32). As to who should manage caribou?

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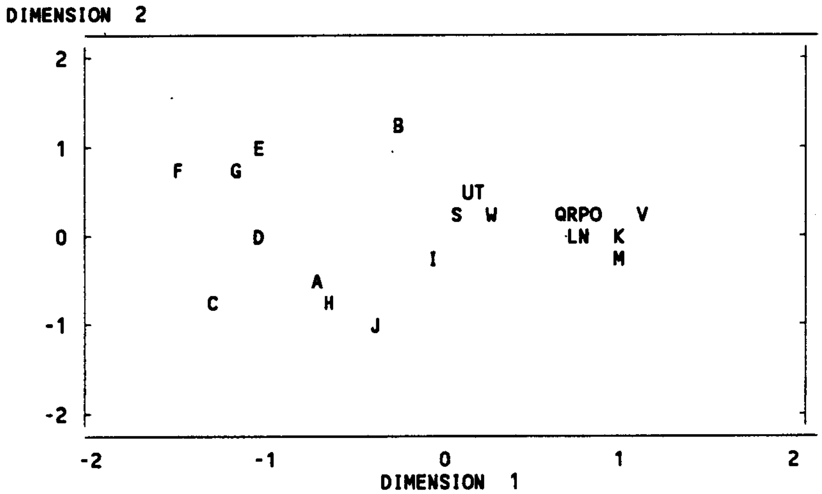

Coefficient of Alienation K = .560

COORDINATES IN 2 DIMENSIONS

VARIABLE	PLOT	DIMENSION 1	DIMENSION 2
BPOLAR	A	-.73	-.61
BBROWN	B	-.28	1.14
BCARIBOU	C	-1.36	-.77
BMOOSE	D	-1.08	-.21
BSNOWSH	E	-1.08	.86
BARCTICF	F	-1.55	.57
BVARIANT	G	-1.21	.50
BWOLF	H	-.69	-.77
BOTTER	I	-.08	-.48
BBEAVER	J	-.43	-1.17
BQ2M1	K	.99	-.24
BQ2M2	L	.79	-.16
BQ2N1	M	.98	-.33
BQ2N2	N	.81	-.12
BQ3D	O	.85	.20
BQ3E	P	.82	.09
BQ3F	Q	.72	.14
BQ3G	R	.75	.19
BQ4K	S	.05	.16
BQ4L	T	.19	.34
BQ4M	U	.12	.48
BQ51E	V	1.13	.09
BQ52E	W	.29	.16

FIGURE 33. LAND MAMMALS, GUTTMAN-LINGOES' SSA CONFIGURATION (2-D), 23 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

(L [Q2M2]), the PRE is low and positive (.116) because whether persons think caribou availability is sufficient or insufficient, most think that Natives should manage them. Specifically, respondents who think that caribou availability is insufficient opt for balanced management by government and Natives or by Natives alone by 11:3, and those who think that caribou availability is sufficient opt for either balanced or solely Native management by 44:10. The ratios, then, are about the same (circa 4:1).

Who would be the better managers of caribou if given the opportunity to manage? (P [Q3E]). Again, respondents who think there are sufficient caribou available outnumber those who think they are insufficient (54:11). But 32 of those who think that the amount available is sufficient or more than sufficient, also think ADF&G manages less well than would Natives (if given the opportunity). Thus, a low negative PRE (-.204) is obtained in which attitudes of sufficient and insufficient amounts of caribou available correlate with the attitude that Natives would be better managers of caribou (if given the opportunity).

In turning to relations among who should manage caribou and who would manage caribou better (L, P in the figure), a PRE of -.850 is obtained. The sign must be reversed for proper interpretation.[94] It is interpreted to mean that if persons think ADF&G appointees should manage caribou, they also think that they do so better than Natives would (should Natives exercise that authority). Obversely, a positive PRE in this relation would mean that persons who think ADF&G appointees should manage, also think that Natives would do a better job at it. The high negative PRE shows a high concordance between choice for management and the opinion (cognitive attitude) about who would manage better. Nine persons who think ADF&G would do better than Natives, opt either for Natives or a

[94] The ranks of the attributes in the variables assessing who should manage? (Q2*2) and who would manage better? (Q3*) are ordered as follows: Q2*2 1. ADF&G, 2. Various Federal agencies, 3. Combination of Government and Native organizations or persons, 4. Native organizations (such as whale or walrus commissions), 5. Local Natives. Q3* 1. Poorer than Natives could do, 2. As good as Natives could do, 3. Better than Natives could do. Thus, if respondents think ADF&G should manage and would do a better job than Natives, the PRE will be negative, and if a respondent thinks Native should manage and would do better than the government, the PRE will be negative.

combination of Natives and government agencies to manage, and nine who think Natives would do a better job opt for a combination management.

The relation between who should manage caribou and whether respondents think local residents influence ADF&G decisions about the management of caribou (Q4K, S) is high but does not reduce error by .50 (γ -.478). We reverse the signs to properly interpret the relation (as with the relation between Q2M2 and Q3E). In the case of caribou, the negative PRE score means that if respondents think ADF&G should manage, they also think local residents influence ADF&G management of caribou. If respondents think Natives should manage, they do not think that they influence ADF&G's management decisions of caribou at all. There are some exceptions: five persons who do not think they influence ADF&G decisions think that either the ADF&G or some balanced combination of Natives and ADF&G should manage, and eleven who think they frequently influence ADF&G policy think either a balanced combination of ADF&G and Natives, or Natives alone should manage.

By comparing all household income categories but the very highest ($0 to $20K, $20K to $40K, $40K to $60K, over $60K) with attitudes about who should manage and who would manage game better (the ADF&G, some balanced combination of ADF&G and Natives, or Natives alone), Natives are adjudged as "should manage" and "would manage better" by ratios of about 2:1. Among respondents whose household incomes were greater than $60,000 annually, the ADF&G fared best: by a ratio of 5:4, the highest earners thought that ADF&G should manage caribou, and by a ratio of 5:5, they thought that the ADF&G would manage caribou better than Natives or some balanced combination of managers.

Age seems to influence attitudes about the management of land mammals in a similar fashion throughout all types of naturally occurring resources for which we have data. The youngest persons think that Natives should manage (6:5), and the oldest think that the ADF&G should manage (6:1). But persons between 30 and 59--the ages of persons most actively and persistently engaged in hunting (land mammals, sea mammals, and birds) for household use and for sharing--think that Natives should manage the resources at a ratio of about 2.5:1.

Among other subclassifications of the relation between who should manage and who would manage better, race/ethnicity (Natives vs. non-Natives) and commercial fishing (commercial fishers vs. noncommercial fishers) provide strong evidence of the effects of race and economics on attitudes about resource management. In every measure, Natives by ratios of from 2:1 to 3:1 think that Natives understand resources better (through use) and know resources better (through formal study) than do ADF&G or MMS employees, or scientists. But many Natives, as the ratios demonstrate, think government employees or scientists know as much or more than Natives and would manage the resources better. Such is not the case for non-Natives. No non-Native thinks that Natives know as much from formal education, understand as much from use and practice, should manage, or would manage the resources better than government employees. The same holds true for noncommercial fishermen in contrast with commercial fishermen: the former predominantly think that Natives know most, understand most, and so forth; the latter think that scientists or MMS and ADF&G employees know most, should manage, and so forth.

As in the analyses of traditional customs and of the Western model with AOSIS data, race/ethnicity and commercial/noncommercial fishing contrasts are very powerful. After analyzing the 1988 data, it was my impression that persons engaged in the extraction of naturally occurring resources for sale as commodities (fish, marine invertebrates, walrus for byproducts, fur-bearers) would hold that all naturally occurring resources should be treated as commodities, so that the best management would be the management that best protected the occupational interests of the respondent. Thus, if a person was a commercial fisher, he/she would think that government agencies best protected their interests (agencies can be lobbied, providing the prospect of personal advantage, but regulations should provide a "level playing field" for all persons engaged in the extraction of the resource in question). I imagined that the attitude that government should manage resources would be extended to resources other than the resource(s) relied upon by the respondent (or the respondent's relatives, or many persons in the respondent's village) as a commodity.

There is little doubt that respondents think that resources they harvest as commodities should be managed by government agencies, as we will see below, but attitudes about management of land mammals are not restricted to whether a resource is a commodity nor are attitudes about resources as commodities so clearly extended to resources that are not sold as commodities.

For the management of land mammals, the greatest explanatory power is in knowing whether persons are Native or non-Native, and whether they reside in villages whose local economies are dominated by commercial fishermen (or, presumably, involved in some other private-market activity). Those villages are predominantly non-Native, so the effect of commercial fishing on attitudes about management of land mammals is not clearly understood. When we turn to the management of fish, little is left to doubt about the attitudes persons have about their regulation.

The very tight distributions (Fig. 33) of the relations among the variables measuring respondent influence on ADF&G decisions (S, T, U) and understanding through use (W) and the very close relations among the management variables, namely: can the land mammal resources be managed (K, M), should the land mammal resources be managed (L, N), who manages the land mammals better (Q, R, P, O), and who has the greatest knowledge about land mammals (V), demonstrate the same order obtained among attitudes in the sea mammal analysis.

III.D. Fish

The matrix of cognitive attitudes about the availability of fish is dominated by fish that have important commercial value in Alaska--salmon, herring, cod, halibut. These fish are also important to Native diets, as are whitefish, smelt, grayling, and char. Figure 34 (see Table 34K) provides evidence that attitudes about fish are structured in a fashion very similar to those about sea mammals and land mammals. On the left hand side of Figure 34, the five anadromous species of Pacific salmon

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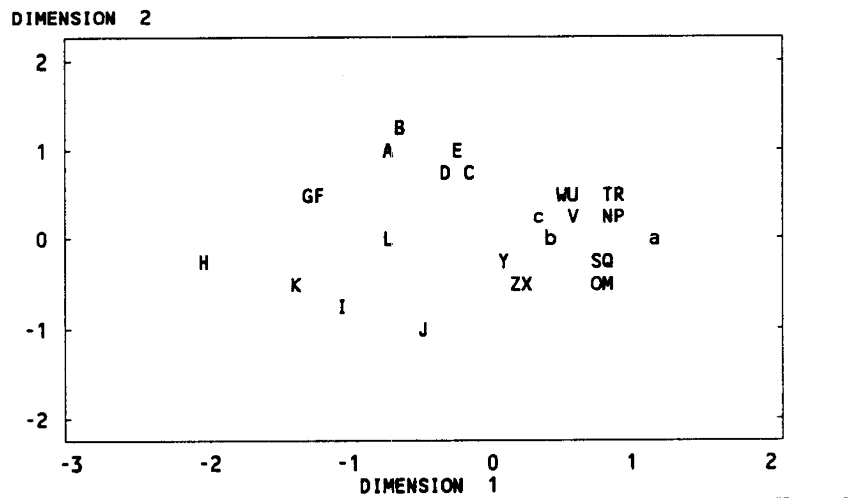


Coefficient of Alienation K = .195

COORDINATES IN 2 DIMENSIONS

VARIABLE	PLOT	DIMENSION 1	DIMENSION 2	VARIABLE	PLOT	DIMENSION 1	DIMENSION 2
CHUM	A	-.77	.96				
PINK	B	-.67	1.02	RED	C	-.20	.62
SILVER	D	-.35	.52	KING	E	-.24	.93
DOLLY	F	-1.23	.45	WHITE1	G	-1.36	.27
GRAYLIN	H	-2.09	-.38	HERRING	I	-1.05	-.92
SMELT	J	-.51	-1.01	COD	K	-1.42	-.69
HALIBUT	L	-.75	-.10	Q2D1	M	.81	-.33
Q2D2	N	.83	.22	Q2E1	O	.78	-.34
Q2E2	P	.89	.16	Q2F1	Q	.85	-.32
Q2F2	R	.87	.13	Q2G1	S	.74	-.31
Q2G2	T	.82	.26	Q3H	U	.55	.26
Q3I	V	.58	.19	Q3J	W	.51	.26
Q4A	X	.28	-.57	Q4B	Y	.11	-.35
Q4C	Z	.14	-.67	Q51F	a	1.16	-.18
Q52E	b	.38	-.06	Q52F	c	.37	.04

FIGURE 34. FISH, GUTTMAN-LINGOES' SSA SOLUTION (2-D), 29 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

available in Alaska form a circumplex at the top center of the hyperspace (A-E). Char, grayling, and whitefish (riverine fish which also migrate to brackish water) are located in the left center (F-H). The salt water fish--cod, herring, smelt--form a simplex in the bottom center (K-J). Halibut occupy the center (L).

A double circumplex (an inner and outer ring) on the right side fits the attitudinal variables about management, influence on management, knowledge, and understanding of fish. Moving around the circumplex clockwise, we find at 1:00 o'clock (top right) the variables measuring whether resources should be managed and fitted together (T, R, N, P). At 3:00 o'clock is fitted knowledge of fish (through education) (a). At 6:00 o'clock are the variables measuring whether fish can be managed (O, M, Q, S). At 8:00 o'clock are the variables measuring whether respondents exercise influence over ADF&G decisions (X, Y, Z). At 9:00 o'clock are the variables measuring understanding of fish through use of the resources (c, b) (at maximum distance from the variable measuring knowledge by education [a]). At 11:00 o'clock are the variables measuring who should manage fish (U, V, W).

I will discuss red (sockeye) salmon to interpret the SSA solution for fish. Salmon (all species) are important commodity items as well as subsistence items for villagers. The question here is whether, because fish are the pre-eminent, naturally occurring, renewable resource in Alaska's private-sector economy, cognitive attitudes toward fish will diverge markedly from cognitive attitudes toward other naturally occurring renewable resources, such as fur-bearing land mammals, which have limited commodity value, or land mammals whose major contribution to village economies is through subsistence. Table CK (Appendix) provides the bivariate and the partialled bivariate tables used here to assess the multivariate relations.

King (Chinook) and red salmon are the most valuable of all Pacific salmon species, being preferred by fish purchasers worldwide over silver (coho, the next most preferred), dog (chum), and pink (humpback; the least preferred) salmon. Year after year, kings, reds, and silvers--in that order--fetch the greatest prices per pound to fishermen among all salmon species. Kings have a wider spawning range than reds because, among other reasons, reds require lakes to develop through the fry and early paar stages, and all river systems suitable for spawning are not connected to lakes. Therefore, kings have greater importance to respondents in more villages than do reds.

We can see in Figure 34 that kings (E), reds (C), and silvers (D) are fitted closely together in the circumplex of salmon. Respondents agree on the availability of kings and reds but also on the availability of the other salmon species. The least preferred species are located at the top left of the circumplex, the three most preferred species are located at the bottom right. If reds are deemed insufficient, so are kings and silvers. If reds are deemed sufficient, so are kings and silvers. Only 17 percent of the respondents think that reds are more than sufficient, and 20 percent think that kings are more than sufficient. The $\gamma = .80$ for the relation between respondents' attitudes about the availability of kings and reds reduces error by 80 percent. The PRE for the relation between reds and silvers reduces error by 92 percent and for the relation between kings and silvers by 86 percent. The PRE for reds and herring reduces error by 61 percent.

The coefficients in the management and knowledge of the fish matrix are undoubtedly influenced by commodity values of fish. As respondent cognitive attitudes of the availability of reds increase, they are apt to think that government should manage salmon, but as attitudes about their availability decrease, respondents are apt to think Natives should manage the resource ($\gamma_{Q2D2RED} = .54$). If persons think salmon cannot be managed, or that persons can manage them, they think that Natives should manage them (45% of all respondents), but if they think institutions can manage salmon, two out of five think the ADF&G should manage them ($\gamma_{Q2D2Q2D1} = .73$).

The attitudes about who should manage and who would manage better are very firm. Respondents who think Natives should manage salmon also think that Natives would manage them better than the ADF&G; and respondents who think the ADF&G should manage think the ADF&G would manage better. Several respondents appear to compromise, thinking either Natives or government institutions would manage better, and think a balanced combination of the two should manage ($\gamma_{Q2E2Q3H}$ = .86). Less error is reduced in the relation between the attitude about who should manage and whether local residents influence ADF&G policies toward the management of salmon. Respondents who think they (personally) or their local advisory boards or their co-ops (and the like) wield little or no influence think Natives should manage. Some respondents who think they wield modest influence from time to time think that a balanced combination of Natives and government should manage the resource. And those who think they or their local and/or commercial associations wield considerable influence think that the ADF&G should manage ($\gamma_{Q2D2Q4A}$ = .50).

Knowledge and understanding, as discussed above, are distinguished in the analysis of cognitive attitudes about resources because of construct validity problems encountered when respondents were asked "who knows more about...[some resource, or some abiological phenomena]?" When provided with for instances, such as "Natives," "MMS employees," "ADF&G employees," or "oil company scientists," respondents, particularly Natives, frequently thought that apples and rocks were being compared. Respondents appeared to lump oil company scientists with something akin to value free science, and to lump MMS employees with political meddlers. Respondents responded, it appeared, on the basis of their specific experiences. They had met, or other villagers had met and dealt with ADF&G appointees. The MMS appointees may not have met with villagers, but many had contact with them through OCS lease-sale hearings (regarding environmental impact statements). Few, if any had dealt with oil company scientists, so politics were dissociated from the motivations and practices of oil company scientists in their views. We have attempted to gain construct validity by distinguishing "knowledge through formal education and research" and "understanding through experience (with the resource or the abiological phenomena)."

A majority of respondents who think Natives possess the greatest knowledge about fish, think Natives should manage them. If respondents think Natives and some scientists are equally knowledgeable about fish, a majority of them think a balanced combination of government and Natives should manage those fish. If respondents think scientists know the most, a slight majority among them thinks the ADF&G, alone, should manage fish. There is high variability in this relation, perhaps because of a construct validity problem. Sixty percent of all respondents think that a combination of government and Native institutions and persons should manage fish, yet 51 percent think Natives know more, and 35 percent think Natives and scientists, equally, know more than nonscientists and non-Natives. The responses suggest that persons may think Natives know more but lean toward the ADF&G for management of the resource ($\gamma_{Q2D2Q51F} = .50$).

As for "understanding," 78 percent to 22 percent of the respondents think Natives know more than government appointees (ADF&G, FWS, MMS), yet their thoughts about who should manage are not consistent with their thoughts about who would manage best: they most frequently opt for balanced management ($\gamma_{Q2D2Q52F} = .68$). The variation in responses about "knowledge" and "understanding" may be a function of construct validity problems, but the variation may also be caused by the reality that fish are commodities (the majority of those analyzed in Fig. 18 have commodity value). Persons may wish to have an independent, ostensibly fair, institution (no conflicts of interest) managing the resource under the regulatory authority of law so that all persons are equal under those regulations.

I sought to know how the relation between "who should manage salmon" and "who would best manage salmon" behaved when partialled for sex, race/ethnicity, income, age, and commercial fishing/noncommercial fishing. Upon holding sex constant, we learn, as in the case for sea mammals, that men are more apt to think that Natives would be the best managers (50%) and should manage (43%), and men who think ADF&G would do best opt for the ADF&G to manage ($\gamma = .84$). Women are less apt to think Natives would do better (43%) and are also less apt to think that Natives should manage (39%). The linear-like relations for the male and female partitions between "who would be the best manager" and "who should manage" are similar. Women are a little more conservative than men, more often opting for "what is," rather than "what could be."

Age accounts for some reduction in error in our predictions of attitudes about fish, as it does for attitudes about sea mammals, land mammals, birds, and some other types of resources. Younger (below 30) and older (above 55) respondents are more apt to think the ADF&G would do better and should manage fish than Natives or some balanced combination. Persons between the ages of 30 and 55 think Natives should manage fish and would do better as managers.

Among all QI (including KI) respondents, non-Natives earn greater incomes than Natives on average, and residents of the largest and most complex villages, particularly commercial- fishing villages, earn greater incomes on average than residents of other villages. Income is not an important factor in accounting for attitudes about the management of fish. Respondents earning less than $30,000 annually think Natives would manage best (47%) and should manage (44%) (modal categories). Respondents earning between $30,000 and $60,000 annually think that Natives would manage best (53%) and should manage (48%) at proportions only slightly higher than persons with lower earnings. Only among earners over $60,000 annually does a majority of respondents think the ADF&G would manage better (36%) and should manage the fish resources (36%). Another 29 percent think Natives and ADF&G would be equally proficient managers, and 36 percent think joint management should be implemented.

Race/ethnicity (Native/non-Native) exercises greater influence than either age or sex alone on attitudes about who should manage and who would manage best. Among Native respondents, 53 percent think Natives would be the best managers and should manage the fish resources; 23 percent think Natives are as good or better than government appointees and should jointly manage the resource. Twenty percent of Native respondents think the ADF&G should manage although 27 percent of those respondents think that Natives would be better or equivalent to government managers. The commodity nature of fish and the tradition of working within a State-regulated structure seems to have influenced some Natives to think that regulatory authority should be vested in institutions whose employees--they aver--know less and would perform more poorly than persons they do not think should manage fish. Among non-Natives, however, 75 percent think ADF&G is best and 88 percent think the ADF&G (56%) or a balanced combination (31%) should manage the State's fish. So among non-Natives, there is some willingness to share regulatory authority with Natives, but not to delegate it solely to Natives. Only one non-Native thinks the ADF&G would do a poorer job than Natives. The proportion of non-Natives who think that government agencies manage best and should manage, jointly or completely, is much greater than among Natives.

Among respondents from noncommercial-fishing villages, 62 percent think Natives should manage fish, and 65 percent think Natives would do a better job than government agencies. Forty-nine percent of the respondents from commercial-fishing villages think the ADF&G would manage best, and 40 percent think ADF&G should manage. Thirty-two percent think Natives would be better managers than ADF&G, but only 19 percent think that Natives should manage. The commodity factor, influenced by race, age, and high incomes, looms very large in these contrasts. Non-Native respondents think government agencies should regulate fish, but so do many Natives and many respondents from commercial-fishing villages, even when those respondents think Natives would manage better.

It is evident that respondents attitudes are very much influenced by their occupations and the commodities which are important to those occupations. Non-Natives are much less apt to think that Natives would be better managers than government employees and are much less apt to think that Natives should manage resources than Natives are apt to think that government employees should manage resources.

III.E. Birds

In the following analysis, I have reduced the large inventory of birds to ducks, geese, cranes, swans, gulls, ptarmigans, and owls. These birds were better reported than others in the list. Also, they well represent waterfowl, sea birds, upland game birds, and predators important to villager diets and to sport hunters.[95] The average

[95] Gulls are better reported and also correlate highly and positively with auklets, terns, puffins, and murres. Ptarmigan correlate highly and positively with spruce grouse.

PRE coefficient among geese, ducks, cranes, and swans is about .66, and the average PRE coefficient for geese with the other three is .73. Because geese are better reported than swans or cranes, and because the coefficient for geese and swans (γ = .87) reduces so much error, in analyzing Figure 35 (see Table 35K), I will use 'geese' as the example of attitudes held by respondents about the availability and management of birds.

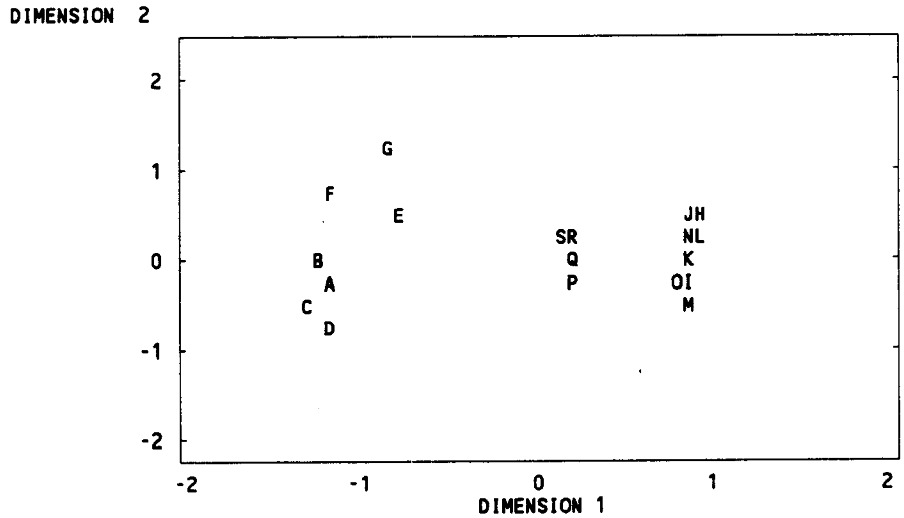
The structure of attitudes held by village residents about birds is not greatly different from the structures of attitudes we have assessed that are held about other naturally occurring species in their environments. The most preferred types of birds are the waterfowl--ducks, geese, swans, and cranes. Although the PRE for ducks and geese is very high, respondents are more apt to think ducks are less available (insufficient for their needs) than geese. Whether respondents think geese are sufficient or more than sufficient, they think that Natives or Native organizations (in conjunction with Natives) should manage geese (and other birds).

If respondents think birds cannot be managed or if they think that they can be managed by persons, they think Natives and Native organizations should manage them. If they think institutions can manage birds, they also think a balanced combination of Native and governmental (State and Federal) organizations and agencies should do it.

Attitudes about who should manage, as with fish, are demonstrably influenced by respondent attitudes about whether their opinions influence government policies toward birds. If respondents think they never or they seldom influence regulatory policies toward birds, they think Natives should manage them. If they think they exercise influence on occasion, they think a balanced combination of Natives and government (State and Federal) organizations should make the decisions. If they think they frequently exercise influence on the regulatory policies of governmental agencies, they think State government should manage birds.

Attitudes about birds held by men and women differ. As in previous contrasts, women are more conservative than men, more apt to prefer the status quo. The modes for both sexes think that Natives should manage (men = 47%;

GUTTMAN-LINGOES' MINISSA



Coefficient of Alienation K = .098

COORDINATES IN 2 DIMENSIONS

VARIABLE	PLOT	DIMENSION 1	DIMENSION 2
DUCKS	A	-1.20	-.28
GEESE	B	-1.26	-.09
CRANES	C	-1.31	-.63
SWANS	D	-1.18	-.84
GULLS	E	-.80	.30
PTARM	F	-1.23	.66
OWL	G	-.89	1.03
Q2Q1	H	.91	.22
Q2Q2	I	.87	-.31
Q2R1	J	.87	.25
Q2R2	K	.89	-.30
Q2S1	L	.95	.18
Q2S2	M	.88	-.36
Q2T1	N	.90	.18
Q2T2	O	.79	-.32
Q4F	P	.21	-.18
Q4G	Q	.23	.09
Q4H	R	.23	.21
Q4I	S	.13	.19

FIGURE 35. BIRDS, GUTTMAN-LINGOES' SSA SOLUTION (2-D), 19 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

women = 36%), and both are less apt to think that government should manage birds, but not by much for women (men = 23%; women = 34%).

Race/ethnicity provides strong evidence of deep differences between Natives and non-Natives about the management of naturally occurring resources. Natives think Natives should manage birds (53%). Non-Natives think government agencies should manage birds (56%). As in most other measures, in about equal proportions, Natives and non-Natives think that some balanced combination of Native organizations and governmental agencies should manage birds (Natives = 28%; non-Natives = 31%).

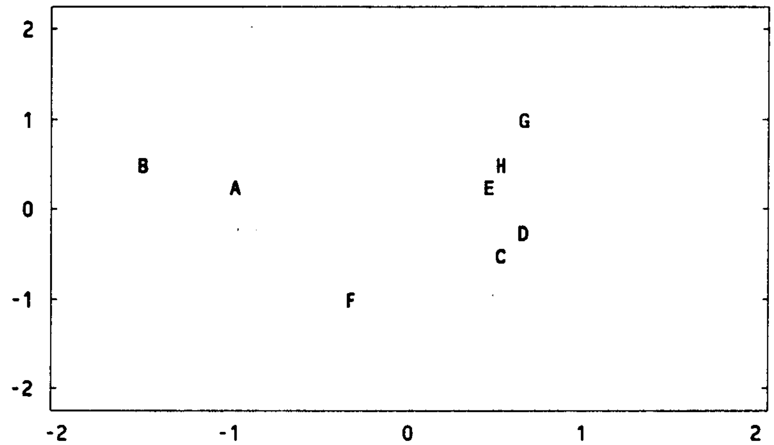
Income does not exercise strong influence on attitudes about the management of birds, but evidence for differences in attitudes that appear to be affected by very high incomes, non-Native ethnicity, and residence in the largest and most complex villages is drawn from the contrast between residents of commercial-fishing villages and residents of villages which are not engaged in commercial fishing, or are engaged rather marginally in the industry. The major generalization here is that a majority of respondents from commercial-fishing villages think government agencies should manage, whereas a majority of respondents from noncommercial-fishing villages think Natives should manage.

Table DK (Appendix), bristles with exceptions to the generalizations offered here. It is the case, nevertheless, that if a respondent is Native, male, and resides in a noncommercial- fishing village, he thinks that Natives should hold regulatory authority over birds (if decision making authority is to be centralized). If a respondent is non-Native, male or female, and resides in a commercial-fishing village, he/she thinks that government agencies should be vested with regulatory authority over birds. Sex makes a difference, but race/ethnicity makes a greater difference in attitudes about who should manage resources.

III.F. Marine Invertebrates

Attitudes about the availability and management of the twelve varieties of marine invertebrates about which we inquired are subsumable under two types, crabs and clams. The assessment of attitudes is simple and brief (see Fig. 36 and

GUTTMAN-LINGOES' MINISSA



Coefficient of Alienation K = .083

COORDINATES IN 2 DIMENSIONS

VARIABLE	PLOT	DIMENSION 1	DIMENSION 2
CLAMS	A	-1.02	.23
CRABS	B	-1.56	.27
Q2L1	C	.54	-.66
Q2L2	D	.69	-.29
Q3K	E	.48	.11
Q4D	F	-.31	-1.02
Q51H	G	.67	.90
Q52H	H	.50	.46

FIGURE 36. MARINE INVERTEBRATES, GUTTMAN-LINGOES' SSA SOLUTION (2-D), 8 VARIABLES, *N* = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

MARINE INVERTEBRATES. MATRIX OF GAMMA COEFFICIENTS, 8 VARIABLES, *N* = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

	CLAMS	CRABS	Q2L1	Q2L2	Q3K	Q4D	Q51H	Q52H
CLAMS	1.000							
CRABS	0.679	1.000						
Q2L1	0.242	0.138	1.000					
Q2L2	0.199	0.067	0.849	1.000				
Q3K	0.340	0.272	0.713	0.857	1.000			
Q4D	0.433	0.272	0.546	0.500	0.393	1.000		
Q51H	0.166	0.085	0.292	0.489	0.691	0.179	1.000	
Q52H	0.481	-0.035	0.541	0.674	0.936	0.355	0.948	1.000

accompanying matrix). Respondents think marine invertebrates, in general, are sufficient for their needs (although red and blue king crabs--formerly a very important commodity for fishermen in the Aleutian and Kodiak areas--are not); that government regulators are influenced by local residents, know more about marine invertebrates than do Natives, and that invertebrates can be managed and should be managed by government agencies.

IV. KI: COGNITIVE ATTITUDES ABOUT KNOWLEDGE OF THE ENVIRONMENT AND EXPECTATIONS FOR THE CONSEQUENCES OF OIL-RELATED ACTIVITIES

In the analysis of the affective attitudinal data following the 1987 field session, we discovered that AOSIS questionnaire items focussing on certain traditional customs, such as whether persons felt elders were accorded proper treatment and respect, suffered from numerous threats to validity. Indeed, most affective attitudinal questions in the AOSIS questionnaire suffered from numerous threats to validity (see Social Indicators Study II [Jorgensen 1993]). Many affective attitudinal questions were excised from the questionnaire, but some pertaining to expectations about the consequences from oil operations; feelings about the environment; and feelings about the continuity of traditional practices and beliefs were retained in modified form and asked again during the 1988 field session, but still most of these failed the tests for stability and intervariable reliability.

Given the importance of ideas and beliefs to the concept of wellbeing, and the importance of attitudes about oil-related activities; the environment; government appointees and elected officials' knowledge of environmental issues and representation of village interests in relation to the environment; and the integrity of village society in the assessment of the concept of wellbeing in modern Alaskan villages, we introduced several items into the protocol administered in 1989 to measure these topics. The forced-choice questions originally designed for the AOSIS instrument to measure similar topics had failed.

Data on half of the variables in the following analysis were introduced in 1988, so, for half of the presumably important topics addressed here, data are available for a single time slice--the winter of 1989. Questions previously asked in 1988 and assessed here are those measuring understanding of the environment. The first set seeks to do so through cognitive attitudes about formal acquisition of knowledge (scholarship, research, scholarly experience) (Q51*).[96] The second set of questions (Q52*) seeks to measure understanding of the environment through use or practical experience (instrumental learning through use). The second set repeats the same topics addressed in (Q51*).[97]

I analyze the variables assessing understanding through knowledge and understanding through use at several places above when focussing on attitudes toward resources which form natural groups--sea mammals, land mammals, and the like. I did not, however, focus on cognitive attitudes held by respondents about who best understands abiological phenomena, such as wind, water, and ice. I do so here. I also assess respondents' cognitive attitudes about the consequences of oil-related activities (drilling, pumping, and transporting of oil [by ship and pipeline], enclave development, and recreation sought by oil workers), and whether respondents think that Native traditions are being maintained; whether significant symbols are assigned to aspects of the environment; and whether there are differences in understanding between Natives appointed or elected to government offices and non-Natives elected or appointed to government office.

The protocol variables assessing these topics follow.

Attitude About Acquisition of Knowledge. We ask how long it takes to acquire knowledge about a place (the time required and the ways in which Natives may have come to understand an area). Natives tended to answer this question in ways that facilitated the following classification of responses: (Q6) (1) about 1 year, (2) 1 to 5 years, (3) 6 to 20 years (a generation), (4) a lifetime, and (5) a person never gets to know an area completely (meaning "a person is always learning" or "a person learns

[96] The Q51* series of questions ask "Who do you think better understands ___________ of your area?" (1. Natives, 2. Natives and some scientists, 3. scientists). The questions (Q51*): ***A = Water, ***B = Ice, ***C = Winds, ***D = Plants, ***E = Land Mammals, ***F = Fish, ***G = Sea Mammals, and ***H = Marine Invertebrates.

[97] The rank order of the attributes, i.e., possible responses, for this series of questions is: 1. Natives, 2. oil companies, 3. ADF&G, 4. MMS, or other Federal agencies.

from the accumulated experiences of several lifetimes, that is, relying on the advice of previous generations of extractors").

Significant Symbols Attached to Places in Native Environments. We ask whether the respondents possess special memories about the wildlife or the places, such as springs, promontories, lakes, capes, hills, woods, bays, lagoons, in their areas which their families like to recount: (Q7) (1) none, (2) a few, (3) many, or (4) many which have accumulated over two or more generations.

Attitudes About Oil-Related Changes. We ask respondents what they think the effects of oil-related changes (type of oil-related phenomenon is specified) have been on the environment (specified)? Here we seek to know whether informants perceive changes to water, fish, plants, land mammals, sea mammals, and birds from oil-related activities as (or will be): (Q8) (1) deleterious, (2) no change, (3) mixed (some harmful and some helpful), or (4) beneficial (Q8A = Drilling, Q8B = Pumping, Q8C = Transporting, Q8D = Pipe Line, Q8E = Enclave Development, Q8F = Recreation).

Among the the following cognitive questions, the first two are intended to be specific checks on two affective questions in the AOSIS instrument (A37 and E7). The third seeks information about how respondents cognize the ways in which elected and appointed officials of governments understand Natives (their cultures, their ideas about the environment, their uses of the environment), and how actions of those officials influence Native affairs.

Memory of Sharing. Respondents are asked to think about how things were 10 years ago and to comment on what they remember about the amount of sharing (goods, foods, labor, cash and resources--such as boats, snowmachines and tools) that occurred between households and friends when compared with the present: (Q9) (1) less than present, (2) no change, or (3) more than present.

Comparison of Treatment of Elders. Here we ask what the respondent thinks about the way in which elders are treated, especially those who have few relatives in the village: (Q10) (1) less care is shown than should be, (2) appropriate care is shown for their needs, or (3) more care and attention is paid than is necessary for their needs.

Attitude About How Non-Native State Representatives Comprehend Native Understandings.[98] We ask respondents whether they think non-Native persons elected to State government (representatives, senators), in general, comprehend how Natives understand the areas in which they reside: (Q11A) (All Q11* questions are rated according to the following variable definition codes) (1) not at all, (2) they have some limited comprehension, or (3) they understand completely how Natives understand their locale areas.

Attitude About How Native State Representatives Comprehend Native Understandings. Do you think that Native persons elected to State government (representatives, senators), in general comprehend how Natives understand the areas where they reside: (Q11B).

Attitude About How Non-Native Appointees to State Agencies, such as the ADF&G, Comprehend Native Understandings: (Q11C).

Attitude About How Native Appointees to State Agencies, such as the ADF&G Comprehend Native Understandings: (Q11D).

Figure 37 and Table 37K (Appendix) demonstrate the intercorrelations and similarity structure for the 30 variables. The average Γ score for the correlations between every pair of variables in the understanding set (Q51* "knowledge," Q52* "use") is .93. Although the relations between the "knowledge" and "use" variables reduce almost all error, the variables that measure understanding through use (instrumental, practical experience) have greater intervariable reliability than do the variables that measure understanding through knowledge. It is very likely that the Q51* set is not measuring what we seek to measure and should be dropped from further consideration, as should questions pertaining to understanding through use

[98] In this set of questions, we seek to learn how respondents think that elected and appointed officials in the State of Alaska comprehend Native understandings (use, symbols, etc.) of the areas where they reside. The question was fraught with construct validity problems, as interpreted by the KI's. The new variables should allow KI's to fit responses to the appropriate constructs.

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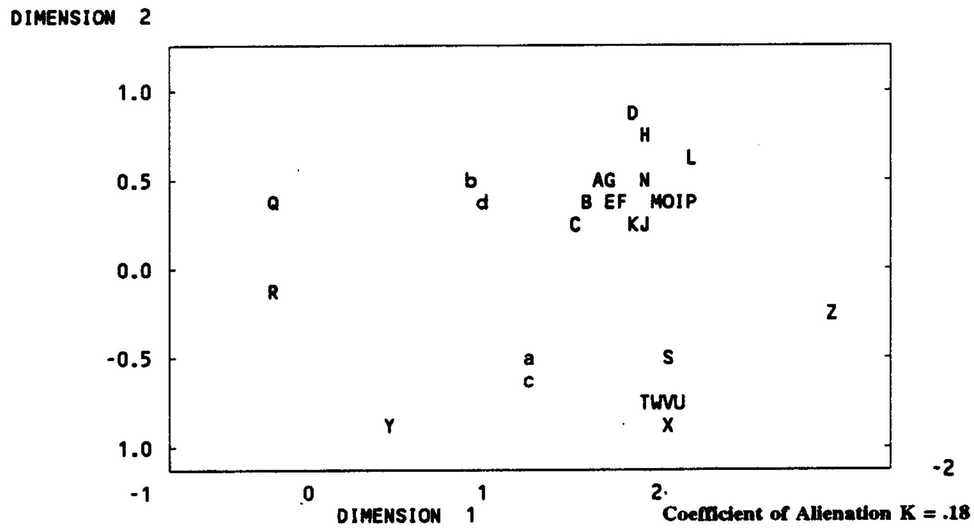

Coefficient of Alienation K = .18

COORDINATES IN 2 DIMENSIONS

VARIABLE	PLOT	DIMENSION 1	DIMENSION 2	VARIABLE	PLOT	DIMENSION 1	DIMENSION 2
Q51A	A	-.00	.49	Q52H	P	.64	.31
Q51B	B	-.08	.37	Q6	Q	-2.30	.29
Q51C	C	-.14	.25	Q7	R	-2.33	-.16
Q51D	D	.22	.77	Q8A	S	.50	-.62
Q51E	E	.09	.36	Q8B	T	.41	-.80
Q51F	F	.08	.34	Q8C	U	.62	-.84
Q51G	G	.11	.42	Q8D	V	.51	-.75
Q51H	H	.32	.69	Q8E	W	.40	-.75
Q52A	I	.57	.28	Q8F	X	.50	-.89
Q52B	J	.30	.18	Q9	Y	-1.50	-.94
Q52C	K	.23	.16	Q10	Z	1.65	.26
Q52D	L	.65	.51	Q11A	a	-.48	-.65
Q52E	M	.40	.34	Q11B	b	-.91	.44
Q52F	N	.37	.41	Q11C	c	-.49	-.70
Q52G	O	.50	.35	Q11D	d	-.83	.37

FIGURE 37. COGNITIVE ATTITUDES ABOUT THE ENVIRONMENT, GUTTMAN-LINGOES' SSA SOLUTION (2-D), 30 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

of plants (Q52D) and marine invertebrates (Q52H) (the last mentioned items [L, P] form an outlier simplex with understanding of plants and marine invertebrates knowledge [D, H]). The circumplex formed by the knowledge and use variables reflects high positive correlations among them. The variables measuring understanding of ice (J), wind (K), land mammals (M), fish (N), and sea mammals (O) have high centrality indexes.

Although the variables measuring respondent attitudes about the consequences from oil-related activities form a tight area in the bottom right of the distribution, the variables that measure understanding of water, ice, and wind through use (Q52A-B-C) are highly and positively correlated with them (accounting for a 67% average reduction of error). The same variables (understanding through use of water, ice, and wind) also account for about a 70-percent reduction of error in the variables measuring respondents attitudes about how Native and non-Native officials (elected and appointed) comprehend Native understandings of issues (Q11A, B, C and D). The variables measuring attitudes about Native and non-Native officials are separated in the distribution even though the correlations among them (within the set) are very high and positive. The KI interviewers report discussions of these topics were frequently confusing, so much so that their ratings of respondent attitudes on these items are tentative. I provide no further analysis for the "political understanding by racial/ethnic differences among officials" here.

Other outliers are variables that seek to measure traditional customs: time to acquire knowledge (Q), significant environmental symbols (R), memories of sharing (Y), and treatment of elders (Z). Response rates are high, and the relations between those variables we presume to be related in specific ways that fit our expectations. For example, knowledge of attitudes about the time required to acquire knowledge about the environment reduces 54 percent of the error in predicting whether significant symbols are attached to the environment, and 37 percent (-) of the error in predicting attitudes about the treatment of elders. Memories of sharing reduces 30 percent of the error in predicting attitudes about the treatment of elders. It is likely that these items will be important in matrices where variables other than those in Table 37K (Appendix) are analyzed.

In Figure 38, the matrix is reduced by 14 variables. The set measuring understanding of the biological and abiological environment through scholarship and research is excised (Q51*), as are the measures of the comprehension by non-Native officials of Native positions on various issues (Q11A, Q11B), and the measures of memories of sharing and attitudes about the treatment received by elders.

The 2-D solution in Figure 38 accounts for 89 percent of the variation in the matrix, conclusively demonstrating the close, high, positive relations among the variables measuring cognitive attitudes about consequences from oil-related activities; among the cognitive attitudes about the understanding of the environment through practical experience (use); and attitudes about the comprehension by Native officials (elected and appointed) of Native understandings about the environments in which they reside.

Ice, water, and wind are formidable features of the abiological environments of the Arctic and sub-Arctic. Cognitive attitudes about these phenomena are central to the solution (Fig. 38, average centrality index of .36). These three features are, of course, intimately and inextricably related: high winds are a major cause of high seas and the movement of ice. These phenomena, too, are intimately and inextricably related to air temperature (not measured here). Knowing how to use ice, to defend against its more devastating movements, and to benefit from the less threatening changes to it, in particular, have been crucial to coastal dwellers in Alaska for millennia. Because of the very high and positive relations among the abiological phenomena measured here, and because of their high and positive relations with the biological phenomena measured in the matrix (fish, land mammals, sea mammals, and marine invertebrates), and because of their high and positive relations with the variables measuring the comprehension by Native officials of Native understandings about their environments, I will focus on ice (Q52B) to analyze the solution.

The relations among attitudes about the practical understanding of abiological phenomena reduce almost all error in predictions. The relations, in general, work

COORDINATES IN 2 DIMENSIONS

VARIABLE		CENTRALITY	1	2
Q52A	A	46.261	-92.504	-40.079
Q52B	B	29.472	-72.009	-50.569
Q52C	C	32.232	-59.309	-65.476
Q52E	D	47.699	-85.989	-62.579
Q52F	E	55.042	-88.006	-71.999
Q52G	F	56.215	-95.524	-63.312
Q52H	G	55.139	-100.000	-48.989
Q6	H	148.564	100.000	-61.020
Q8A	I	42.820	-44.515	6.848

VARIABLE		CENTRALITY	1	2
Q8B	J	53.343	-23.124	12.053
Q8C	K	66.494	-62.992	28.469
Q8D	L	48.937	-35.275	11.720
Q8E	M	45.291	-18.791	-.049
Q8F	N	60.070	-38.035	23.551
Q11B	O	72.829	-11.804	-100.000
Q11D	P	65.536	-14.997	-93.435

Guttman-Lingoes' Coefficient of Alienation K = .110

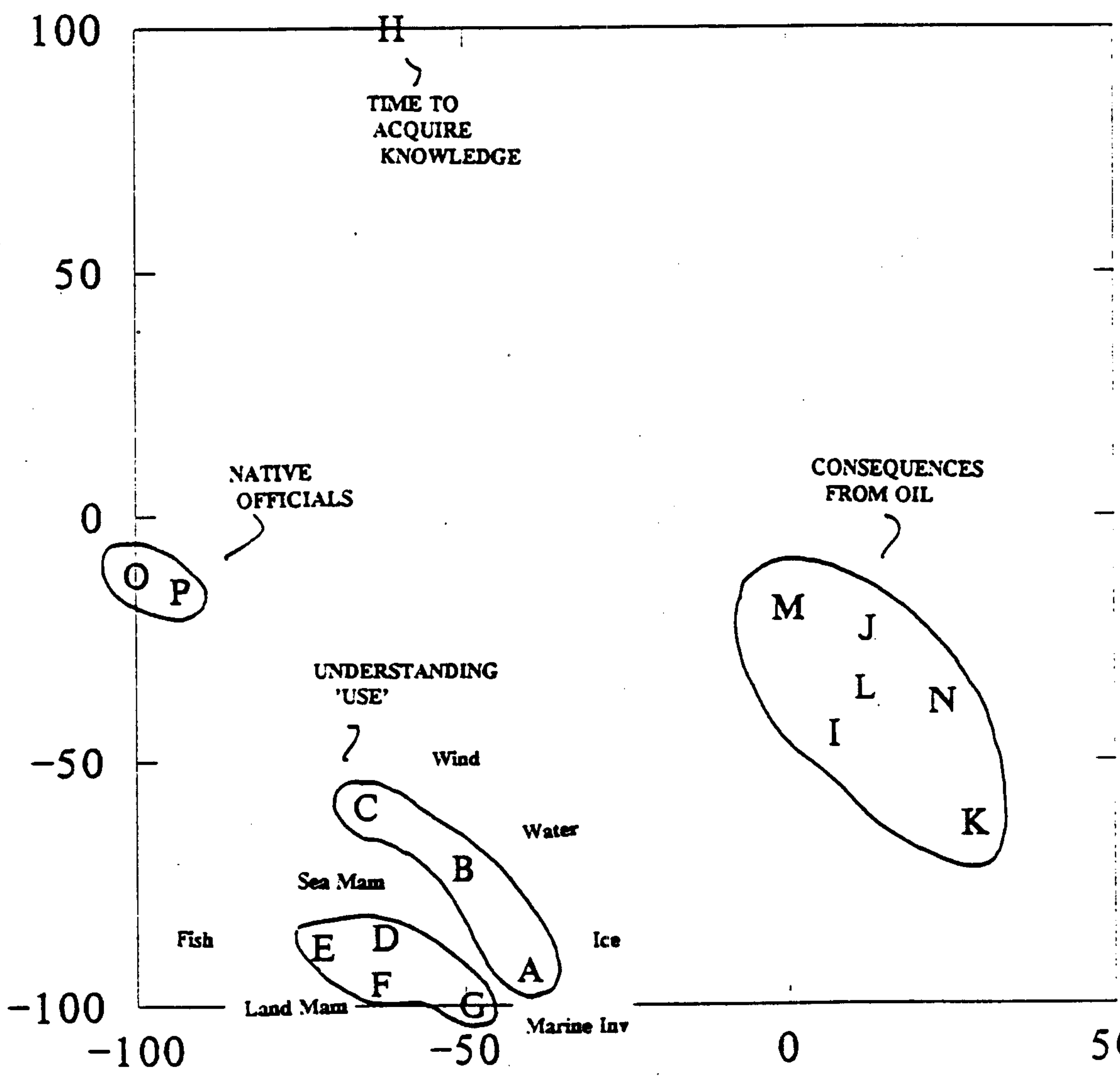

FIGURE 38. COGNITIVE ATTITUDES ABOUT KNOWLEDGE OF THE ENVIRONMENT AND THE CONSEQUENCES OF OIL-RELATED ACTIVITIES, GUTTMAN-LINGOES' SSA SOLUTION (2-D), 16 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

like this: about 85 percent of the respondents think Natives understand water, ice, and wind better than either employees of the ADF&G or employees of the MMS (or other Federal agencies). When any pair of variables measuring cognitive attitudes about abiological phenomena are correlated, almost all respondents who think Natives understand most about one of the abiological factors also think that Natives know most about the other (about 97%). About 10 percent of the respondents think ADF&G employees know most about abiological phenomena, and about 5 percent think employees of Federal agencies know most. The rationale for the ranking is that Natives benefit from experience but have the least formal educations, ADF&G benefits from some experience and from more widespread formal educations of employees as well as access to research; and Federal agencies also benefit from some experiences while having better access to the greater research resources of the ADF&G than Natives. Underlying this rationale, too, is the increase in the variable feature of governmental control--villages are subsumed by the State, and the State by the Federal Government. Federal power is not to be underestimated here, or in any analysis of the environment, including the law pertaining to it (the recent appropriation of control over fish and game in Alaska by the Federal Government, however short-lived it may prove to be, is sufficient evidence for this claim).

The relations between variables assessing understanding of abiological phenomena and variables assessing understanding of fauna (and flora, although "understanding of plants" is dropped from the matrix) are not identical to those assessing the relations between variables measuring abiological phenomena only. The reason for this is that almost all respondents who do *not* think Natives know the most about the biological item in question also do *not* think that employees of Federal agencies know the most about that item. Rather, respondents who think employees of Federal agencies understand the most about abiological phenomena think that ADF&G employees know the most about biological phenomena. The distributions of respondents in terms of those who think Natives know the most about the biological *and* abiological items, and those who think governmental employees understand the most about *both* do not change. Unreduced error varies between 1 and 5 percent.

Cognitive attitudes about the consequences of oil-related activities are structured in much the same way as the attitudes about knowledge of biological and abiological phenomena. Most respondents (about 60%) think that all oil-related activities are deleterious. Another 25 percent think that no significant changes will be occasioned by oil-related activities, and about 15 percent think oil-related activities will provide helpful benefits along with some unwanted consequences (mixed). Almost no respondents think that beneficial consequences, alone, will accompany any oil-related activity.

As for the comprehension by non-Native officials (elected and appointed) of Native understandings of issues related to their environments, the modal response (about 60%) is that comprehension is limited (neither complete understanding or total ignorance).[99] On the other hand, about 28 percent think Native officials "completely comprehend" Native positions, and the remainder think Native officials are "totally ignorant" of those positions. The relations between variables about understanding of environmental phenomena and comprehension by Native officials are especially interesting although there is little that can be said about them because of the large number of missing observations when the two are correlated. Respondents who think government officials (any and all kinds) know more than Natives about the environment, at a ratio of 3:1, also think Native officials possess complete comprehension (over limited comprehension) of Native positions.

As in the analyses of types of resources above (fish, sea mammals, etc.), race/ethnicity, modestly conditioned by age, sex, and income, exercises a major influence on cognitive attitudes. Here, rather than focusing on management, we focus on understanding of the environment and the consequences from oil-related activities. Income influences attitudes about understanding of the environment and the consequences from oil-related activities in a curvilinear fashion. No one earning

[99] Modal responses to questions about the comprehension by non-Native officials of Native understandings are also limited. The difference is that 25 percent of respondents think non-Native officials are totally ignorant as opposed to 3 percent who think they possess complete understanding.

less than $20,000 annually thinks government employees know the most about the environment, and only two of 13 respondents earning more than $60,000 annually think government employees know more than Natives about the environment. So, at the bottom and top of the income distribution, the largest ratios (2.5:1 and 2:1) of respondents think that oil-related changes will be deleterious, as opposed to occasioning no changes or causing mixed beneficial and harmful changes. Four of 28 persons earning between $20,000 and $40,000 think government employees know the most about the environment. Persons in this income category think oil-related activities cause deleterious effects, as opposed to no change or mixed benefits and harm, at a ratio of 1.5:1. Among persons earning between $40,000 and $60,000, six of 22 think government employees know most about the environment. Half of the earners in this category think oil-related activities are (or will be) deleterious.

So, if persons think government employees understand the environment best, they either foresee mixed benefits or no significant change from oil-related activities. High earners, many engaged in commercial fishing, are cautious in their judgments, inasmuch as 20 or 34 persons earning more than $40,000 annually think oil-related activities are (or will be) deleterious.

Controls for sex, too, provide results similar to those obtained above. Sixty-four percent of men and 59 percent of women think oil-related changes will be deleterious, and 16 percent of men and 20 percent of women think that oil-related activities will occasion mixed benefits and harm. Women are more conservative (and optimistic) than men. They also are more apt, slightly, to think government employees know more than Natives.

All age categories up to persons over 55 think that oil-related activities will be deleterious (the 18-29 age category thinks so at a ratio of 2:1; the 30-54 age category at a ratio of 2.5:1). The youngest persons are somewhat more optimistic than are middle-aged persons that change will not occur, or that changes will bring some beneficial consequences. Among persons 55 and over, at a ratio of 1.3:1, persons think oil-related activities will bring some benefits (and harmful effects), or will make no significant changes.

Controls for race/ethnicity tell us the most about relations between attitudes about who understands the most about the environment and the consequences from oil-related activities. Ninety-seven percent of Natives think Natives know the most, and about 70 percent of them think that changes will be deleterious (11% think mixed benefits and harm will occur). Among non-Natives, 59 percent think government employees know the most about the environment, but 68 percent think mixed benefits or no changes will occasion oil-related activities.

The responses by non-Natives are more cautious than the general optimism expressed by Anglo residents in western North America when confronting the prospect of an energy boom, but they are much more optimistic than the attitudes of their Native counterparts and fit the model of Western attitudes about economic development.

The variables assessed here for which we have only one wave of observations will be tested for reliability, stability, and statistical conclusion validity in the special analysis of villages directly affected by the Exxon Valdez oil spill (Social Indicators Study V, Research Methodology: Design, Sampling, Reliability, and Validity, Exxon Valdez Spill Area 1989-1992 [1993]).

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APPENDIX:
MATRICES OF CORRELATIONS AND SUBCLASSIFICATION TABLES FOR CHAPTERS 2-4

Table 1T

PEARSON CORRELATION MATRIX, 35 TRADITIONAL A0SIS VARIABLES, COMBINED PRETEST AND POSTTEST SAMPLES, 31 ALASKAN VILLAGES (*N* = 860), 1987-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	-0.047	1.000			
RHHTYPE	-0.035	0.297+	1.000		
CACT1	-0.035	0.133	-0.037	1.000	
CACT2	-0.043	0.191	0.067	0.348+	1.000
CACT4	-0.062	0.131	-0.049	0.441+	0.374+
CACT5	0.030	0.111	-0.002	0.308+	0.298+
CMN1	0.012	0.062	-0.043	0.628*	0.275+
CMN2	-0.024	0.128	0.101	0.201+	0.616*
CMN4	0.025	0.062	-0.057	0.369+	0.233+
CMN5	0.029	0.067	-0.045	0.260+	0.246+
CREL1	0.083	-0.057	-0.027	0.017	-0.088
CREL2	0.106	-0.064	-0.074	0.039	-0.138
CREL4	0.028	-0.065	-0.049	0.102	-0.071
CREL5	-0.000	-0.033	-0.056	0.103	-0.072
RDAY1	-0.082	0.104	-0.066	0.244+	0.174
RDAY2	-0.111	0.143	-0.015	0.089	0.313+
RDAY4	-0.083	0.094	-0.056	0.198	0.241+
RDAY5	-0.072	0.089	-0.056	0.164	0.211+
A26A	0.177	-0.047	-0.054	0.081	-0.072
A26B	0.094	0.036	-0.019	-0.113	-0.045
A28	-0.094	0.163	0.159	0.151	0.314+
A30	-0.061	0.165	0.062	0.120	0.225+
A31	0.056	-0.125	0.081	-0.316+	-0.150
A32	0.054	0.072	0.092	0.059	0.198
A33	-0.086	0.188	0.105	0.096	0.307+
A38	0.069	0.039	0.115	-0.019	0.217+
D2	-0.088	0.051	-0.104	0.124	-0.187
D13	0.076	-0.028	-0.018	0.058	0.118
D16	-0.047	0.072	0.033	0.088	0.071
D19	-0.170	0.052	0.021	0.090	0.083
D22	0.033	0.189	0.056	0.115	0.196
D25	-0.037	0.116	0.140	0.066	0.224+
E12	-0.031	0.047	0.084	0.009	0.043
E29	-0.072	-0.019	-0.050	-0.040	-0.068

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.393+	1.000			
CMN1	0.285+	0.268+	1.000		
CMN2	0.185	0.196	0.292+	1.000	
CMN4	0.675*	0.245+	0.424+	0.180	1.000
CMN5	0.381+	0.588*	0.292+	0.217+	0.402+
CREL1	0.084	0.066	-0.075	0.087	0.058
CREL2	0.020	-0.014	-0.038	-0.015	-0.002
CREL4	0.044	0.010	-0.003	0.030	0.015
CREL5	0.066	0.027	0.064	0.047	0.055
RDAY1	0.125	-0.094	0.653*	0.244+	0.331+
RDAY2	0.097	-0.128	0.307+	0.728*	0.236+
RDAY4	0.397+	0.103	0.259+	0.272+	0.577*
RDAY5	0.242+	0.282+	0.216+	0.249+	0.256+
A26A	0.048	0.035	0.060	-0.032	0.011
A26B	-0.076	-0.082	-0.051	0.063	-0.085
A28	0.183	0.149	0.100	0.167	0.066
A30	0.150	0.137	-0.015	0.092	0.074
A31	-0.139	-0.223+	-0.194	-0.078	-0.114
A32	0.149	0.059	0.039	0.132	0.079
A33	0.167	0.155	0.017	0.202+	0.052
A38	0.051	0.093	-0.049	0.194	-0.035
D2	-0.036	-0.042	0.113	-0.106	0.034
D13	0.079	0.055	0.100	0.105	0.130
D16	0.077	0.082	0.088	0.082	0.066
D19	0.068	0.045	0.027	0.079	0.023

D22	0.061	0.089	0.076	0.158	0.075
D25	0.054	0.017	0.090	0.155	0.053
E12	0.008	0.056	-0.003	0.053	-0.037
E29	-0.055	-0.023	-0.002	0.020	-0.018

	CMN5	CREL1	CREL2	CREL4	CREL5
CMN5	1.000				
CREL1	-0.005	1.000			
CREL2	-0.100	0.676*	1.000		
CREL4	-0.052	0.615*	0.711*	1.000	
CREL5	-0.006	0.493+	0.614*	0.585*	1.000
RDAY1	0.231+	0.017	0.053	0.095	0.139
RDAY2	0.170	-0.027	-0.114	-0.075	-0.076
RDAY4	0.327+	0.087	-0.009	0.030	0.020
RDAY5	0.624*	0.008	-0.115	-0.032	-0.020
A26A	-0.013	-0.044	0.019	-0.021	0.090
A26B	-0.035	-0.144	-0.236+	-0.204+	-0.200+
A28	0.150	-0.015	-0.071	-0.072	-0.062
A30	0.119	-0.054	-0.116	-0.087	-0.158
A31	-0.140	0.096	0.096	0.001	-0.022
A32	0.137	-0.060	-0.154	-0.150	-0.183
A33	0.100	-0.023	-0.102	-0.096	-0.111
A38	0.106	-0.006	-0.174	-0.120	-0.188
D2	-0.029	-0.025	0.087	0.045	0.081
D13	0.094	0.033	0.008	0.090	0.089
D16	0.133	0.023	-0.059	-0.033	-0.030
D19	0.021	-0.088	-0.088	-0.050	0.005
D22	0.141	-0.126	-0.145	-0.119	-0.043
D25	0.055	0.104	-0.010	0.056	0.029
E12	-0.030	0.014	-0.001	0.053	0.039
E29	0.030	0.034	-0.059	0.014	-0.019

	RDAY1	RDAY2	RDAY4	RDAY5	A26A
RDAY1	1.000				
RDAY2	0.857*	1.000			
RDAY4	0.434+	0.400+	1.000		
RDAY5	0.501*	0.494+	0.468+	1.000	
A26A	0.155	-0.031	0.064	0.030	1.000
A26B	-0.009	0.028	-0.002	0.010	0.335+
A28	0.102	0.142	0.098	0.146	-0.045
A30	0.071	0.120	0.092	0.100	-0.043
A31	-0.226+	-0.051	-0.105	-0.176	-0.152
A32	0.076	0.103	0.144	0.144	0.031
A33	0.086	0.166	0.150	0.151	-0.046
A38	0.093	0.155	0.102	0.088	-0.067
D2	-0.012	-0.080	0.001	-0.027	0.161
D13	0.099	0.089	0.088	0.056	0.049
D16	0.057	0.094	0.056	0.109	0.102
D19	0.111	0.139	0.077	0.087	-0.034
D22	0.084	0.094	0.149	0.111	0.012
D25	0.150	0.181	0.125	0.102	-0.045
E12	-0.168	-0.140	-0.061	-0.079	0.048
E29	-0.023	-0.020	-0.034	0.019	0.073

	A26B	A28	A30	A31	A32
A26B	1.000				
A28	-0.061	1.000			
A30	0.060	0.531*	1.000		
A31	-0.061	-0.115	-0.138	1.000	
A32	-0.007	0.279+	0.284+	0.089	1.000
A33	0.086	0.487+	0.494+	-0.045	0.276+
A38	0.070	0.387+	0.331+	0.104	0.263+
D2	0.040	-0.275+	-0.195	-0.187	-0.217+
D13	-0.018	0.068	0.056	-0.119	0.178
D16	0.053	0.086	0.110	-0.115	0.035
D19	-0.042	0.105	0.130	-0.143	0.040
D22	-0.003	0.191	0.102	-0.031	0.088
D25	0.011	0.274+	0.179	0.013	0.147
E12	0.086	0.031	0.036	0.001	0.043
E29	0.107	-0.099	-0.008	-0.111	-0.015

	A33	A38	D2	D13	D16
A33	1.000				
A38	0.429+	1.000			
D2	-0.252+	-0.364+	1.000		
D13	0.059	-0.067	-0.053	1.000	
D16	0.107	0.013	0.167	0.134	1.000
D19	0.129	0.060	0.149	-0.014	0.236+
D22	0.132	0.166	-0.033	0.021	0.098
D25	0.245+	0.191	-0.217+	0.065	0.051
E12	0.090	0.125	-0.023	-0.054	0.017
E29	-0.031	0.037	0.250+	-0.071	0.089

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.203+	1.000			
D25	0.183	0.204+	1.000		
E12	-0.035	0.017	0.021	1.000	
E29	0.066	-0.004	-0.029	0.197	1.000

[a] *PEARSONIAN r = .14 - 19 SIGNIFICANT AT FROM 0.025 - 0.001.*
PEARSONIAN r = .20 AND HIGHER SIGNIFICANT AT 0.000.

Table 1T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 35 TRADITIONAL AOSIS VARIABLES, PRETEST AND POSTTEST SAMPLES, 31 ALASKAN VILLAGES (N = 860), 1987-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.000	0.000		
CACT1	1.000	0.193	1.000	0.000	
CACT2	1.000	0.000	1.000	0.000	0.000
CACT4	1.000	0.109	1.000	0.000	0.000
CACT5	1.000	0.863	1.000	0.000	0.000
CMN1	1.000	1.000	1.000	0.000	0.000
CMN2	1.000	1.000	1.000	0.004	0.000
CMN4	1.000	1.000	1.000	0.000	0.000
CMN5	1.000	1.000	1.000	0.000	0.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	1.000	1.000	0.000	0.000
RDAY2	1.000	0.025	1.000	1.000	0.000
RDAY4	1.000	1.000	1.000	0.000	0.000
RDAY5	1.000	1.000	1.000	0.005	0.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	0.002	0.003	0.025	0.000
A30	1.000	0.001	1.000	0.671	0.000
A31	1.000	1.000	1.000	0.000	1.000
A32	1.000	1.000	1.000	1.000	0.000
A33	1.000	0.000	1.000	1.000	0.000
A38	1.000	1.000	1.000	1.000	0.000
D2	1.000	1.000	1.000	0.657	0.000
D13	1.000	1.000	1.000	1.000	0.513
D16	1.000	1.000	1.000	1.000	1.000
D19	0.011	1.000	1.000	1.000	1.000
D22	1.000	0.002	1.000	1.000	0.001
D25	1.000	0.552	0.039	1.000	0.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	0.000	0.000	0.000		
CMN2	0.021	0.007	0.000	0.000	
CMN4	0.000	0.000	0.000	0.036	0.000
CMN5	0.000	0.000	0.000	0.001	0.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
RDAY1	0.154	1.000	0.000	0.000	0.000
RDAY2	1.000	0.107	0.000	0.000	0.000
RDAY4	0.000	1.000	0.000	0.000	0.000
RDAY5	0.000	0.000	0.001	0.000	0.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	0.000	0.009	1.000	0.132	1.000
A30	0.007	0.041	1.000	1.000	1.000
A31	1.000	0.017	0.178	1.000	1.000
A32	0.011	1.000	1.000	1.000	1.000
A33	0.001	0.003	1.000	0.004	1.000
A38	1.000	1.000	1.000	0.057	1.000
D2	1.000	1.000	1.000	1.000	1.000

D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	0.380	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN5	CREL1	CREL2	CREL4	CREL5
CMN5	0.000				
CREL1	1.000	0.000			
CREL2	1.000	0.000	0.000		
CREL4	1.000	0.000	0.000	0.000	
CREL5	1.000	0.000	0.000	0.000	0.000
RDAY1	0.000	1.000	1.000	1.000	1.000
RDAY2	0.091	1.000	1.000	1.000	1.000
RDAY4	0.000	1.000	1.000	1.000	1.000
RDAY5	0.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	0.052	0.428	0.565
A28	0.554	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	0.996
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	RDAY1	RDAY2	RDAY4	RDAY5	A26A
RDAY1	0.000				
RDAY2	0.000	0.000			
RDAY4	0.000	0.000	0.000		
RDAY5	0.000	0.000	0.000	0.000	
A26A	0.776	1.000	1.000	1.000	0.000
A26B	1.000	1.000	1.000	1.000	0.000
A28	1.000	0.022	1.000	0.014	1.000
A30	1.000	0.311	1.000	1.000	1.000
A31	0.014	1.000	1.000	0.611	1.000
A32	1.000	1.000	0.023	0.024	1.000
A33	1.000	0.001	0.007	0.007	1.000
A38	1.000	0.019	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	0.756
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	0.736	0.035	1.000	1.000	1.000
D22	1.000	1.000	0.095	1.000	1.000
D25	0.008	0.000	0.178	1.000	1.000
E12	0.001	0.051	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A26B	A28	A30	A31	A32
A26B	0.000				
A28	1.000	0.000			
A30	1.000	0.000	0.000		
A31	1.000	1.000	1.000	0.000	
A32	1.000	0.000	0.000	1.000	0.000
A33	1.000	0.000	0.000	1.000	0.000
A38	1.000	0.000	0.000	1.000	0.000
D2	1.000	0.000	0.000	0.483	0.000
D13	1.000	1.000	1.000	1.000	0.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	0.091	1.000	1.000
D22	1.000	0.001	1.000	1.000	1.000
D25	1.000	0.000	0.000	1.000	0.015
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A33	A38	D2	D13	D16
A33	0.000				
A38	0.000	0.000			
D2	0.000	0.000	0.000		
D13	1.000	1.000	1.000	0.000	
D16	1.000	1.000	0.002	0.080	0.000
D19	0.102	1.000	0.015	1.000	0.000
D22	0.512	0.019	1.000	1.000	1.000
D25	0.000	0.000	0.000	1.000	1.000
E12	1.000	0.606	1.000	1.000	1.000
E29	1.000	1.000	0.000	1.000	1.000

	D19	D22	D25	E12	E29
D19	0.000				
D22	0.000	0.000			
D25	0.000	0.000	0.000		
E12	1.000	1.000	1.000	0.000	
E29	1.000	1.000	1.000	0.000	0.000

[a] *OF THE 595 CORRELATIONS, 24 PERCENT (142) ARE SIGNIFICANT ≤.05.*

Table 2T

PEARSON CORRELATION MATRIX, 34 TRADITIONAL AOSIS VARIABLES, *NATIVE* SUBSAMPLE, COMBINED PRETEST AND POSTTEST SAMPLES, 31 ALASKAN VILLAGES (N = 427), 1987-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	0.046	1.000			
RHHTYPE	0.091	0.237+	1.000		
CACT1	-0.085	0.157	0.008	1.000	
CACT2	0.052	0.168	0.016	0.440+	1.000
CACT4	-0.100	0.138	-0.074	0.404+	0.444+
CACT5	0.068	0.074	-0.015	0.276+	0.366+
CMN1	0.033	0.118	-0.042	0.571*	0.413+
CMN2	0.065	0.041	0.058	0.219+	0.531*
CMN4	-0.066	0.124	-0.058	0.288+	0.341+
CMN5	-0.015	0.053	-0.091	0.176	0.235+
CREL1	0.111	-0.045	0.112	-0.099	-0.108
CREL2	0.079	0.020	0.170	-0.053	-0.019
CREL4	-0.075	-0.112	0.002	-0.026	-0.058
CREL5	0.064	-0.042	-0.019	-0.026	-0.005
RDAY1	-0.092	0.114	-0.108	0.150	0.100
RDAY2	-0.059	0.122	-0.086	0.108	0.206+
RDAY4	-0.110	0.098	-0.085	0.131	0.203+
RDAY5	-0.030	0.056	-0.112	0.126	0.137
A26A	0.179	-0.061	0.068	0.048	-0.110
A26B	0.091	0.105	0.089	-0.116	-0.118
A28	0.016	0.089	0.081	0.199	0.248+
A30	-0.017	0.106	-0.008	0.165	0.090
A31	-0.058	-0.241+	0.064	-0.358+	-0.235+
A32	0.147	0.015	0.052	0.053	0.088
A38	0.148	-0.068	0.050	-0.008	0.046
D2	-0.133	0.093	-0.052	0.155	-0.058
D13	0.118	0.025	0.049	0.060	0.143
D16	0.044	0.064	-0.004	0.157	0.086
D19	-0.087	-0.015	-0.049	0.081	0.068
D22	0.032	0.132	0.043	0.087	0.162
D25	0.030	0.083	0.053	0.024	0.070
E12	-0.041	0.047	0.042	0.055	0.065
E29	-0.168	0.052	-0.069	-0.033	-0.043

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.382+	1.000			
CMN1	0.251+	0.265+	1.000		
CMN2	0.183	0.194	0.384+	1.000	
CMN4	0.598*	0.215+	0.408+	0.217+	1.000
CMN5	0.325+	0.570*	0.254+	0.172	0.331+
CREL1	0.008	0.176	-0.102	0.144	-0.022
CREL2	0.006	0.139	-0.057	0.101	-0.011
CREL4	0.057	0.114	-0.085	0.086	0.027
CREL5	0.066	0.212+	-0.015	0.140	0.043
RDAY1	0.123	-0.082	0.727*	0.293+	0.331+
RDAY2	0.143	-0.089	0.443+	0.697*	0.320+
RDAY4	0.359+	0.079	0.327+	0.308+	0.543*
RDAY5	0.306+	0.300+	0.192	0.223+	0.278+
A26A	-0.028	-0.010	0.057	-0.011	-0.102
A26B	-0.096	-0.142	0.024	0.092	-0.086
A28	0.206+	0.186	0.122	0.065	0.132
A30	0.135	0.164	-0.001	-0.045	0.068
A31	-0.186	-0.181	-0.225+	-0.084	-0.147
A32	0.130	0.068	0.115	0.056	0.074
A38	-0.008	0.085	-0.036	0.067	-0.064
D2	-0.016	-0.033	0.122	0.055	0.062
D13	0.105	0.115	0.184	0.188	0.143
D16	0.141	0.138	0.188	0.133	0.110
D19	0.068	0.064	0.023	0.121	0.015
D22	-0.005	0.009	0.153	0.104	0.102

D25	0.002	-0.072	0.060	0.064	0.030
E12	0.047	0.133	0.093	0.040	0.009
E29	-0.059	-0.023	0.019	0.057	-0.066

	CMN5	CREL1	CREL2	CREL4	CREL5
CMN5	1.000				
CREL1	0.042	1.000			
CREL2	0.014	0.801*	1.000		
CREL4	0.036	0.648*	0.724*	1.000	
CREL5	0.044	0.501*	0.596*	0.547*	1.000
RDAY1	0.240+	-0.033	0.003	0.029	0.027
RDAY2	0.158	0.012	0.015	-0.036	0.008
RDAY4	0.336+	0.047	0.030	0.064	0.035
RDAY5	0.621*	0.144	0.088	0.077	0.089
A26A	-0.040	-0.013	-0.016	-0.008	0.056
A26B	-0.032	-0.118	-0.140	-0.066	-0.083
A28	0.176	-0.032	-0.125	-0.141	-0.184
A30	0.055	-0.064	-0.186	-0.186	-0.117
A31	-0.154	0.218+	0.248+	0.030	0.130
A32	0.163	0.068	0.035	-0.065	-0.003
A38	-0.014	0.145	0.003	-0.119	-0.124
D2	0.053	-0.007	-0.009	0.112	0.004
D13	0.215+	-0.010	0.059	0.128	0.220+
D16	0.123	-0.001	-0.133	-0.063	-0.080
D19	-0.021	-0.104	-0.131	-0.046	-0.019
D22	0.103	-0.170	-0.182	-0.174	-0.020
D25	0.037	0.014	0.019	0.044	0.108
E12	-0.004	-0.105	-0.074	-0.047	-0.072
E29	0.023	0.098	0.081	0.123	-0.075

	RDAY1	RDAY2	RDAY4	RDAY5	A26A
RDAY1	1.000				
RDAY2	0.877*	1.000			
RDAY4	0.432+	0.430+	1.000		
RDAY5	0.405+	0.403+	0.501*	1.000	
A26A	0.119	-0.032	-0.025	-0.054	1.000
A26B	-0.019	0.024	-0.062	0.000	0.354+
A28	0.074	0.066	0.103	0.112	-0.097
A30	0.012	-0.008	0.010	0.006	-0.015
A31	-0.231+	-0.086	-0.093	-0.116	-0.082
A32	0.011	-0.003	0.089	0.089	0.042
A38	0.038	0.045	0.075	-0.007	-0.074
D2	0.004	0.005	0.028	0.004	0.093
D13	0.159	0.148	0.072	0.111	0.037
D16	0.014	0.050	0.072	0.054	0.090
D19	0.095	0.106	0.043	0.035	-0.059
D22	0.049	0.048	0.090	0.030	-0.008
D25	0.114	0.103	0.067	-0.012	0.021
E12	-0.208+	-0.186	-0.066	-0.040	0.053
E29	-0.068	-0.049	-0.034	-0.018	0.012

	A26B	A28	A30	A31	A32
A26B	1.000				
A28	-0.119	1.000			
A30	0.013	0.486+	1.000		
A31	-0.010	-0.125	-0.168	1.000	
A32	0.031	0.257+	0.236+	-0.033	1.000
A38	0.038	0.388+	0.341+	0.082	0.193
D2	0.114	-0.196	-0.132	-0.124	-0.066
D13	0.048	0.075	0.026	-0.082	0.219+
D16	0.026	0.053	0.154	-0.124	0.082
D19	-0.065	0.089	0.087	-0.121	0.049
D22	-0.053	0.097	-0.039	-0.064	-0.007
D25	0.028	0.149	-0.028	0.061	0.030
E12	0.112	0.057	0.051	-0.158	0.056
E29	0.063	-0.056	0.015	-0.042	0.023

	A38	D2	D13	D16	D19
A38	1.000				
D2	-0.288+	1.000			
D13	-0.082	-0.122	1.000		
D16	0.063	0.093	0.064	1.000	
D19	0.150	0.117	-0.021	0.216+	1.000
D22	0.091	0.036	0.036	0.130	0.246+
D25	0.118	-0.103	0.060	-0.010	0.095
E12	0.019	-0.018	-0.002	0.082	0.027
E29	0.100	0.259+	-0.122	0.094	0.020

	D22	D25	E12	E29
D22	1.000			
D25	0.187	1.000		
E12	0.026	-0.008	1.000	
E29	0.059	-0.042	0.143	1.000

[a] *PEARSONIAN r .20 - .24 SIGNIFICANT AT FROM 0.05 - 0.001.*
PEARSONIAN r .25 AND HIGHER SIGNIFICANT AT 0.000.

Table 2T

MATRIX OF ADJUSTED BONFERRONI PROBABILITIES FOR PEARSON CORRELATION MATRIX, 34 TRADITIONAL AOSIS VARIABLES, *NATIVE* SUBSAMPLE, PRETEST AND POSTTEST SAMPLES, 31 ALASKAN VILLAGES (N = 427), 1987-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.002	0.000		
CACT1	1.000	1.000	1.000	0.000	
CACT2	1.000	0.622	1.000	0.000	0.000
CACT4	1.000	1.000	1.000	0.000	0.000
CACT5	1.000	1.000	1.000	0.000	0.000
CMN1	1.000	1.000	1.000	0.000	0.000
CMN2	1.000	1.000	1.000	0.753	0.000
CMN4	1.000	1.000	1.000	0.012	0.000
CMN5	1.000	1.000	1.000	1.000	0.325
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	1.000	1.000	1.000	1.000
RDAY2	1.000	1.000	1.000	1.000	0.018
RDAY4	1.000	1.000	1.000	1.000	0.021
RDAY5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	0.076	0.000
A30	1.000	1.000	1.000	0.931	1.000
A31	1.000	1.000	1.000	0.001	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	0.129	0.056	0.000		
CMN2	1.000	1.000	0.000	0.000	
CMN4	0.000	0.958	0.000	0.835	0.000
CMN5	0.001	0.000	0.106	1.000	0.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	1.000	0.000	0.008	0.001
RDAY2	1.000	1.000	0.000	0.000	0.001
RDAY4	0.000	1.000	0.001	0.003	0.000
RDAY5	0.000	0.000	1.000	0.617	0.023
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	0.012	0.072	1.000	1.000	1.000
A30	1.000	0.443	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000

D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN5	CREL1	CREL2	CREL4	CREL5
CMN5	0.000				
CREL1	1.000	0.000			
CREL2	1.000	0.000	0.000		
CREL4	1.000	0.000	0.000	0.000	
CREL5	1.000	0.000	0.000	0.000	0.000
RDAY1	0.242	1.000	1.000	1.000	1.000
RDAY2	1.000	1.000	1.000	1.000	1.000
RDAY4	0.000	1.000	1.000	1.000	1.000
RDAY5	0.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	0.997	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	RDAY1	RDAY2	RDAY4	RDAY5	A26A
RDAY1	0.000				
RDAY2	0.000	0.000			
RDAY4	0.000	0.000	0.000		
RDAY5	0.000	0.000	0.000	0.000	
A26A	1.000	1.000	1.000	1.000	0.000
A26B	1.000	1.000	1.000	1.000	0.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	0.692	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	0.018	0.118	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A26B	A28	A30	A31	A32
A26B	0.000				
A28	1.000	0.000			
A30	1.000	0.000	0.000		
A31	1.000	1.000	1.000	0.000	
A32	1.000	0.000	0.001	1.000	0.000
A38	1.000	0.000	0.000	1.000	0.059
D2	1.000	0.052	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	0.006
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A38	D2	D13	D16	D19
A38	0.000				
D2	0.000	0.000			
D13	1.000	1.000	0.000		
D16	1.000	1.000	1.000	0.000	
D19	1.000	1.000	1.000	0.007	0.000
D22	1.000	1.000	1.000	1.000	0.001
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	0.000	1.000	1.000	1.000

	D22	D25	E12	E29
D22	0.000			
D25	0.167	0.000		
E12	1.000	1.000	0.000	
E29	1.000	1.000	1.000	0.000

[a] *OF THE 561 CORRELATIONS, 11 PERCENT (63) ARE SIGNIFICANT AT ≤.05.*

Table 3T

PEARSON CORRELATION MATRIX, 34 TRADITIONAL AOSIS VARIABLES, *MIXED* SUBSAMPLE, COMBINED PRETEST AND POSTTEST SAMPLES, 31 ALASKAN VILLAGES (N = 433), 1987-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	-0.082	1.000			
RHHTYPE	0.126	0.329+	1.000		
CACT1	0.017	0.098	-0.094	1.000	
CACT2	-0.085	0.096	0.033	0.261+	1.000
CACT4	-0.010	0.095	-0.045	0.475+	0.265+
CACT5	0.022	0.111	-0.018	0.336+	0.153
CMN1	-0.002	0.015	-0.049	0.677*	0.162
CMN2	-0.111	0.189	0.045	0.194	0.728*
CMN4	0.102	0.015	-0.053	0.440+	0.153
CMN5	0.085	0.036	-0.056	0.333+	0.167
CREL1	0.065	-0.050	-0.132	0.116	-0.022
CREL2	0.129	-0.080	-0.203	0.136	-0.055
CREL4	0.095	0.003	-0.053	0.217+	0.051
CREL5	-0.033	0.006	-0.041	0.210+	0.007
RDAY1	-0.061	0.073	-0.043	0.336+	0.235+
RDAY2	-0.125	0.100	0.001	0.057	0.340+
RDAY4	-0.048	0.079	-0.040	0.261+	0.298+
RDAY5	-0.087	0.068	-0.037	0.195	0.224+
A26A	0.168	-0.007	-0.143	0.113	0.064
A26B	0.101	-0.014	-0.123	-0.113	-0.002
A28	-0.137	0.144	0.173	0.103	0.230+
A30	-0.053	0.147	0.072	0.070	0.238+
A31	0.169	0.002	0.118	-0.270+	-0.032
A32	0.001	0.074	0.091	0.054	0.246+
A38	0.012	0.095	0.136	-0.037	0.319+
D2	-0.127	0.161	-0.074	0.146	-0.051
D13	0.045	-0.074	-0.084	0.057	0.143
D16	-0.117	0.066	0.059	0.019	0.036
D19	-0.231+	0.084	0.069	0.094	0.024
D22	0.039	0.251+	0.057	0.152	0.225+
D25	-0.044	0.065	0.155	0.081	0.217+
E12	-0.012	0.018	0.108	-0.039	-0.035
E29	-0.002	-0.056	-0.004	-0.041	-0.020

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.392+	1.000			
CMN1	0.314+	0.274+	1.000		
CMN2	0.216+	0.174	0.199	1.000	
CMN4	0.743*	0.274+	0.438+	0.160	1.000
CMN5	0.433+	0.600*	0.336+	0.247+	0.487+
CREL1	0.154	0.010	-0.043	0.095	0.148
CREL2	0.067	-0.036	0.003	0.021	0.032
CREL4	0.057	-0.016	0.086	0.103	0.020
CREL5	0.092	-0.031	0.150	0.100	0.089
RDAY1	0.115	-0.126	0.599*	0.295+	0.334+
RDAY2	0.024	-0.217+	0.164	0.761*	0.155
RDAY4	0.431+	0.119	0.203+	0.290+	0.607*
RDAY5	0.155	0.238+	0.245+	0.223+	0.242+
A26A	0.114	0.083	0.063	-0.010	0.097
A26B	-0.064	-0.043	-0.112	0.028	-0.085
A28	0.130	0.064	0.087	0.169	0.034
A30	0.132	0.065	-0.034	0.124	0.083
A31	-0.089	-0.261+	-0.161	-0.064	-0.078
A32	0.145	0.009	-0.032	0.141	0.093
A38	0.106	0.044	-0.060	0.293+	0.033
D2	0.018	0.041	0.123	-0.115	0.021
D13	0.057	0.001	0.039	0.071	0.122
D16	0.011	0.020	0.011	-0.036	0.037
D19	0.053	0.004	0.030	-0.038	0.031

D22	0.147	0.188	-0.003	0.232+	0.053
D25	0.045	0.016	0.109	0.148	0.070
E12	-0.040	-0.031	-0.064	-0.026	-0.067
E29	-0.031	0.001	-0.018	-0.020	0.022

	CMN5	CREL1	CREL2	CREL4	CREL5
CMN5	1.000				
CREL1	-0.026	1.000			
CREL2	-0.122	0.613*	1.000		
CREL4	-0.085	0.591*	0.695*	1.000	
CREL5	0.008	0.488+	0.603*	0.593*	1.000
RDAY1	0.244+	0.057	0.096	0.149	0.219+
RDAY2	0.103	-0.032	-0.107	-0.028	-0.065
RDAY4	0.324+	0.124	-0.015	0.019	0.025
RDAY5	0.607*	-0.087	-0.185	-0.065	-0.032
A26A	0.027	-0.066	0.061	-0.022	0.123
A26B	-0.042	-0.143	-0.248+	-0.262+	-0.237+
A28	0.065	0.025	0.052	0.021	0.063
A30	0.111	-0.016	0.026	0.033	-0.126
A31	-0.120	-0.044	-0.051	-0.033	-0.166
A32	0.059	-0.135	-0.210+	-0.173	-0.257+
A38	0.178	-0.093	-0.203+	-0.037	-0.150
D2	0.008	-0.076	0.031	-0.061	0.050
D13	0.013	0.058	-0.047	0.053	0.000
D16	0.125	0.050	0.014	0.003	0.017
D19	0.037	-0.068	-0.033	-0.036	0.040
D22	0.173	-0.057	-0.087	-0.035	-0.050
D25	0.003	0.181	0.076	0.118	0.061
E12	-0.103	0.109	0.099	0.150	0.138
E29	0.044	-0.004	-0.124	-0.045	0.027

	RDAY1	RDAY2	RDAY4	RDAY5	A26A
RDAY1	1.000				
RDAY2	0.849*	1.000			
RDAY4	0.433+	0.371+	1.000		
RDAY5	0.587*	0.553*	0.433+	1.000	
A26A	0.174	0.031	0.132	0.130	1.000
A26B	-0.000	0.024	0.042	0.014	0.328+
A28	0.083	0.101	0.073	0.108	0.034
A30	0.087	0.140	0.143	0.123	-0.024
A31	-0.224+	0.017	-0.118	-0.249	-0.233+
A32	0.120	0.145	0.189	0.161	0.054
A38	0.139	0.203+	0.149	0.135	-0.043
D2	0.042	-0.008	0.024	0.057	0.150
D13	0.044	0.044	0.105	0.008	0.043
D16	0.090	0.118	0.037	0.150	0.131
D19	0.113	0.138	0.100	0.114	0.003
D22	0.134	0.138	0.233+	0.215+	0.052
D25	0.143	0.146	0.149	0.121	-0.046
E12	-0.145	-0.137	-0.062	-0.141	0.075
E29	0.044	0.049	-0.022	0.090	0.123

	A26B	A28	A30	A31	A32
A26B	1.000				
A28	-0.044	1.000			
A30	0.086	0.504*	1.000		
A31	-0.111	-0.103	-0.107	1.000	
A32	-0.043	0.235+	0.276+	0.236+	1.000
A38	0.063	0.303+	0.247+	0.177	0.315+
D2	0.011	-0.185	-0.102	-0.275+	-0.260+
D13	-0.059	0.079	0.096	-0.160	0.143
D16	0.067	0.094	0.061	-0.106	-0.030
D19	-0.029	0.074	0.130	-0.163	0.003
D22	0.044	0.282+	0.254+	0.023	0.212+
D25	-0.001	0.245+	0.212+	-0.012	0.169
E12	0.066	-0.024	-0.008	0.164	0.006
E29	0.141	-0.090	0.020	-0.184	-0.024

	A38	D2	D13	D16	D19
A38	1.000				
D2	-0.311+	1.000			
D13	-0.027	-0.009	1.000		
D16	-0.094	0.279+	0.198	1.000	
D19	-0.088	0.261+	-0.004	0.247+	1.000
D22	0.253+	-0.085	0.012	0.042	0.138
D25	0.164	-0.132	0.079	0.072	0.216+
E12	0.216+	0.029	-0.097	-0.044	-0.101
E29	0.010	0.218+	-0.024	0.096	0.133

	D22	D25	E12	E29
D22	1.000			
D25	0.207+	1.000		
E12	-0.006	0.011	1.000	
E29	-0.088	0.036	0.271+	1.000

[a] *PEARSONIAN r .20 - .25 SIGNIFICANT AT FROM 0.02 - 0.001.*
PEARSONIAN r .26 AND HIGHER SIGNIFICANT AT 0.000.

Table 3T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 34 TRADITIONAL AOSIS VARIABLES, *MIXED* SUBSAMPLE, PRETEST AND POSTTEST SAMPLES, 31 ALASKAN VILLAGES (N = 860), 1987-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.000	0.000		
CACT1	1.000	1.000	1.000	0.000	
CACT2	1.000	1.000	1.000	0.000	0.000
CACT4	1.000	1.000	1.000	0.000	0.000
CACT5	1.000	1.000	1.000	0.000	0.969
CMN1	1.000	1.000	1.000	0.000	1.000
CMN2	1.000	0.876	1.000	0.582	0.000
CMN4	1.000	1.000	1.000	0.000	1.000
CMN5	1.000	1.000	1.000	0.000	1.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	1.000	1.000	0.000	0.001
RDAY2	1.000	1.000	1.000	1.000	0.000
RDAY4	1.000	1.000	1.000	0.000	0.000
RDAY5	1.000	1.000	1.000	0.087	0.002
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	0.220	1.000	0.001
A30	1.000	1.000	1.000	1.000	0.001
A31	1.000	1.000	1.000	0.211	1.000
A32	1.000	1.000	1.000	1.000	0.000
A38	1.000	1.000	1.000	1.000	0.000
D2	1.000	0.692	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	0.011	1.000	1.000	1.000	1.000
D22	1.000	0.025	1.000	1.000	0.212
D25	1.000	1.000	0.847	1.000	0.005
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	0.000	0.002	0.000		
CMN2	0.144	1.000	0.435	0.000	
CMN4	0.000	0.002	0.000	1.000	0.000
CMN5	0.000	0.000	0.000	0.015	0.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	1.000	0.000	0.000	0.000
RDAY2	1.000	0.003	1.000	0.000	1.000
RDAY4	0.000	1.000	0.338	0.000	0.000
RDAY5	0.689	0.000	0.019	0.087	0.023
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	0.335	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	0.019	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000

D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN5	CREL1	CREL2	CREL4	CREL5
CMN5	0.000				
CREL1	1.000	0.000			
CREL2	1.000	0.000	0.000		
CREL4	1.000	0.000	0.000	0.000	
CREL5	1.000	0.000	0.000	0.000	0.000
RDAY1	0.020	1.000	1.000	1.000	1.000
RDAY2	1.000	1.000	1.000	1.000	1.000
RDAY4	0.000	1.000	1.000	1.000	1.000
RDAY5	0.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	0.946	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	0.658
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	RDAY1	RDAY2	RDAY4	RDAY5	A26A
RDAY1	0.000				
RDAY2	0.000	0.000			
RDAY4	0.000	0.000	0.000		
RDAY5	0.000	0.000	0.000	0.000	
A26A	1.000	1.000	1.000	1.000	0.000
A26B	1.000	1.000	1.000	1.000	0.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	0.620	1.000
A32	1.000	1.000	0.066	0.599	1.000
A38	1.000	0.172	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	0.091	0.287	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A26B	A28	A30	A31	A32
A26B	0.000				
A28	1.000	0.000			
A30	1.000	0.000	0.000		
A31	1.000	1.000	1.000	0.000	
A32	1.000	0.001	0.000	1.000	0.000
A38	1.000	0.000	0.006	1.000	0.000
D2	1.000	0.114	1.000	0.269	0.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	0.002	0.020	1.000	0.396
D25	1.000	0.000	0.006	1.000	0.321
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A38	D2	D13	D16	D19
A38	0.000				
D2	0.000	0.000			
D13	1.000	1.000	0.000		
D16	1.000	0.000	0.030	0.000	
D19	1.000	0.000	1.000	0.000	0.000
D22	0.037	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	0.004
E12	0.092	1.000	1.000	1.000	1.000
E29	1.000	0.006	1.000	1.000	1.000

	D22	D25	E12	E29
D22	0.000			
D25	0.469	0.000		
E12	1.000	1.000	0.000	
E29	1.000	1.000	0.000	0.000

[a] *OF THE 561 CORRELATIONS, 14 PERCENT (79) ARE SIGNIFICANT ≤.02.*

Table 4T

PEARSON CORRELATION MATRIX, 30 TRADITIONAL AOSIS VARIABLES, TOTAL PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 550), 1987-1988 [a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	-0.121	1.000			
RHHTYPE	-0.055	0.265+	1.000		
CACT1	0.004	0.020	-0.101	1.000	
CACT2	-0.122	0.192	0.007	0.101	1.000
CACT4	-0.071	0.180	-0.026	0.050	0.390+
CACT5	0.073	0.127	-0.001	0.047	0.289+
CMN1	0.143	0.022	-0.111	0.717*	0.223+
CMN2	-0.083	0.300+	-0.007	0.327+	0.687*
CMN4	-0.011	0.058	-0.107	0.441+	0.185
CMN5	0.106	0.108	-0.019	0.294+	0.223+
RDAY1	-0.146	0.099	-0.002	0.368+	0.183
RDAY2	-0.232+	0.157	0.023	0.328+	0.268+
RDAY4	-0.171	0.077	-0.026	0.211+	0.113
RDAY5	-0.077	0.105	-0.062	0.252+	0.155
A26A	0.186	-0.211+	-0.140	-0.082	-0.236+
A26B	0.170	-0.221+	-0.199	-0.164	-0.204+
A28	-0.108	0.170	0.143	-0.028	0.289+
A30	-0.088	0.143	0.051	-0.021	0.215+
A31	-0.074	-0.094	0.260+	-0.337+	-0.198
A32	0.077	0.073	0.126	-0.060	0.082
A38	0.032	0.005	0.070	-0.101	0.205+
D2	-0.051	0.059	-0.100	0.179	-0.103
D13	0.068	-0.014	-0.039	0.033	0.068
D16	-0.040	0.083	0.080	0.109	-0.002
D19	-0.170	0.078	0.117	0.106	0.089
D22	-0.035	0.181	0.034	0.101	0.146
D25	-0.088	0.184	0.180	-0.028	0.175
E12	-0.024	0.024	0.058	-0.073	-0.025
E29	-0.086	-0.020	-0.044	-0.006	-0.070

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.410+	1.000			
CMN1	0.346+	0.351+	1.000		
CMN2	0.180	0.156	0.203+	1.000	
CMN4	0.661*	0.185	0.547*	0.130	1.000
CMN5	0.384+	0.645*	0.357+	0.145	0.304+
RDAY1	-0.002	-0.093	0.535*	0.218+	0.276+
RDAY2	0.021	-0.104	0.194	0.775*	0.193
RDAY4	0.167	0.037	0.308+	0.241+	0.443+
RDAY5	0.104	0.084	0.263+	0.146	0.152
A26A	-0.082	0.007	-0.049	-0.114	-0.068
A26B	-0.211+	-0.191	-0.157	-0.051	-0.175
A28	0.203+	0.211+	0.058	0.188	-0.049
A30	0.176	0.171	0.006	0.106	0.058
A31	0.009	-0.066	-0.200+	-0.102	0.003
A32	0.143	0.053	-0.074	0.021	-0.040
A38	0.088	0.155	-0.173	0.149	-0.109
D2	-0.042	-0.074	0.239+	0.002	0.111
D13	0.063	0.061	0.065	0.037	0.102
D16	0.095	0.086	0.108	0.067	0.038
D19	0.033	0.062	0.006	0.069	-0.077
D22	0.071	0.133	0.033	0.253+	0.027
D25	0.041	0.077	0.066	0.126	0.001
E12	0.069	0.038	-0.005	0.034	0.105
E29	-0.045	-0.105	0.032	0.027	0.035

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	1.000				
RDAY1	0.169	1.000			
RDAY2	0.196	0.896*	1.000		
RDAY4	0.250+	0.379+	0.318+	1.000	
RDAY5	0.649*	0.633*	0.617*	0.367+	1.000
A26A	-0.058	0.124	-0.148	0.019	0.067
A26B	-0.160	-0.017	-0.064	-0.033	-0.051
A28	0.116	0.074	0.118	0.055	0.106
A30	0.091	0.077	0.125	0.069	0.062
A31	0.030	-0.250+	-0.107	-0.083	-0.182
A32	0.147	0.012	0.011	0.099	0.093
A38	0.145	0.064	0.096	0.074	0.056
D2	0.055	0.056	0.027	0.078	0.063
D13	0.031	0.108	0.082	0.083	0.061
D16	0.188	0.096	0.121	0.097	0.148
D19	-0.083	0.071	0.118	0.033	0.031
D22	0.199	0.047	0.066	0.196	0.117
D25	0.053	0.054	0.081	0.087	0.062
E12	0.075	-0.047	-0.016	0.012	0.025
E29	-0.040	0.074	0.053	0.074	0.040

	A26A	A26B	A28	A30	A31
A26A	1.000				
A26B	0.435+	1.000			
A28	-0.102	-0.120	1.000		
A30	-0.128	-0.036	0.524*	1.000	
A31	-0.092	-0.092	-0.176	-0.164	1.000
A32	0.037	-0.015	0.269+	0.268+	0.093
A38	-0.118	0.045	0.383+	0.350+	0.069
D2	0.118	0.082	-0.285+	-0.237+	-0.261+
D13	0.012	-0.078	0.063	0.045	-0.156
D16	0.050	-0.069	0.097	0.099	-0.070
D19	-0.077	-0.078	0.090	0.115	-0.105
D22	-0.014	-0.023	0.210+	0.110	0.046
D25	-0.039	-0.129	0.341+	0.221+	-0.143
E12	0.011	-0.071	0.054	0.040	0.109
E29	-0.030	0.112	-0.116	-0.041	-0.144

	A32	A38	D2	D13	D16
A32	1.000				
A38	0.238+	1.000			
D2	-0.192	-0.313+	1.000		
D13	0.194	-0.055	-0.020	1.000	
D16	0.063	0.035	0.168	0.165	1.000
D19	0.064	0.072	0.142	-0.018	0.225+
D22	0.138	0.194	-0.022	-0.005	0.064
D25	0.171	0.194	-0.189	0.058	0.101
E12	0.086	0.132	-0.053	-0.053	0.003
E29	-0.004	0.093	0.246+	-0.059	0.053

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.178	1.000			
D25	0.211+	0.212+	1.000		
E12	0.038	-0.027	0.078	1.000	
E29	0.055	0.035	-0.000	0.132	1.000

[a] *PEARSONIAN r = .17-19 SIGNIFICANT AT FROM 0.04 - 0.005.*
PEARSONIAN r = .20 AND HIGHER SIGNIFICANT AT 0.000.

Table 4T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 30 TRADITIONAL AOSIS VARIABLES, TOTAL PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 550), 1987-1988[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.000	0.000		
CACT1	1.000	1.000	1.000	0.000	
CACT2	1.000	0.005	1.000	1.000	0.000
CACT4	1.000	0.017	1.000	1.000	0.000
CACT5	1.000	1.000	1.000	1.000	0.000
CMN1	1.000	1.000	1.000	0.000	0.998
CMN2	1.000	0.024	1.000	0.002	0.000
CMN4	1.000	1.000	1.000	0.000	1.000
CMN5	1.000	1.000	1.000	0.022	0.998
RDAY1	1.000	1.000	1.000	0.000	0.007
RDAY2	0.001	0.163	1.000	0.000	0.000
RDAY4	0.227	1.000	1.000	0.000	1.000
RDAY5	1.000	1.000	1.000	0.000	0.142
A26A	1.000	1.000	1.000	1.000	0.814
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	0.047	0.546	1.000	0.000
A30	1.000	0.531	1.000	1.000	0.000
A31	1.000	1.000	1.000	0.041	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	0.003
D2	1.000	1.000	1.000	0.023	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	0.224	1.000	1.000	1.000	1.000
D22	1.000	0.120	1.000	1.000	1.000
D25	1.000	0.012	0.019	1.000	0.017
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	0.001	0.000	0.000		
CMN2	1.000	1.000	1.000	0.000	
CMN4	0.000	1.000	0.000	1.000	0.000
CMN5	0.000	0.000	0.000	1.000	0.012
RDAY1	1.000	1.000	0.000	1.000	0.061
RDAY2	1.000	1.000	1.000	0.000	1.000
RDAY4	0.044	1.000	0.009	0.409	0.000
RDAY5	1.000	1.000	0.131	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	0.001	0.000	1.000	1.000	1.000
A30	0.017	0.029	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	0.437	1.000	1.000	1.000	1.000
A38	1.000	0.321	1.000	1.000	1.000
D2	1.000	1.000	0.883	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	0.000				
RDAY1	1.000	0.000			
RDAY2	1.000	0.000	0.000		
RDAY4	0.256	0.000	0.000	0.000	
RDAY5	0.000	0.000	0.000	0.000	0.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	0.378
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	0.024	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A26A	A26B	A28	A30	A31
A26A	0.000				
A26B	0.000	0.000			
A28	1.000	1.000	0.000		
A30	1.000	1.000	0.000	0.000	
A31	1.000	1.000	1.000	1.000	0.000
A32	1.000	1.000	0.000	0.000	1.000
A38	1.000	1.000	0.000	0.000	1.000
D2	1.000	1.000	0.000	0.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	0.006	1.000	1.000
D25	1.000	1.000	0.000	0.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A32	A38	D2	D13	D16
A32	0.000				
A38	0.000	0.000			
D2	0.009	0.000	0.000		
D13	0.005	1.000	1.000	0.000	
D16	1.000	1.000	0.104	0.087	0.000
D19	1.000	1.000	0.644	1.000	0.000
D22	1.000	0.036	1.000	1.000	1.000
D25	0.037	0.011	0.009	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	0.000	1.000	1.000

	D19	D22	D25	E12	E29
D19	0.000				
D22	0.097	0.000			
D25	0.000	0.005	0.000		
E12	1.000	1.000	1.000	0.000	
E29	1.000	1.000	1.000	1.000	0.000

[a] *OF THE 435 CORRELATIONS, 17 PERCENT (75) ARE SIGNIFICANT ≤ .04.*

Table 5T

PEARSON CORRELATION MATRIX, 30 TRADITIONAL AOSIS VARIABLES, *NATIVE* SUBSAMPLE OF TOTAL PRETEST SAMPLE, 31 ALASKAN VILLAGES ($N = 285$), 1987-1988

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	-0.009	1.000			
RHHTYPE	0.012	0.122	1.000		
CACT1	-0.027	0.021	-0.131	1.000	
CACT2	-0.013	0.167	-0.071	0.265+	1.000
CACT4	-0.066	0.210+	-0.074	0.113	0.469+
CACT5	0.117	0.093	-0.017	0.115	0.341+
CMN1	-0.034	0.144	-0.084	0.678*	0.553*
CMN2	0.139	0.176	-0.114	0.503*	0.622*
CMN4	-0.161	0.259+	-0.191	0.369+	0.394+
CMN5	0.111	0.100	-0.176	0.178	0.243+
RDAY1	-0.124	0.051	-0.056	0.295+	0.103
RDAY2	-0.146	0.072	-0.085	0.277+	0.146
RDAY4	-0.208+	0.075	-0.045	0.180	0.073
RDAY5	-0.016	0.078	-0.137	0.175	0.121
A26A	0.128	-0.351+	0.136	-0.234+	-0.316+
A26B	0.080	-0.210+	0.050	-0.285+	-0.334+
A28	-0.008	0.116	0.010	0.024	0.270+
A30	-0.027	0.096	-0.039	0.049	0.176
A31	-0.309+	-0.299+	0.289+	-0.416+	-0.370+
A32	0.155	-0.018	0.084	-0.064	0.002
A38	0.095	-0.142	0.011	0.095	0.159
D2	-0.097	0.159	-0.036	0.136	-0.019
D13	0.142	0.007	0.038	0.013	0.104
D16	0.057	-0.001	0.014	0.105	0.094
D19	-0.055	0.010	0.039	0.195	0.073
D22	-0.053	0.118	-0.011	0.110	0.116
D25	0.018	0.129	0.101	0.038	0.105
E12	-0.072	0.030	-0.009	-0.040	0.011
E29	-0.166	0.037	-0.092	-0.010	-0.048

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.394+	1.000			
CMN1	0.290+	0.360+	1.000		
CMN2	0.190	0.099	0.553*	1.000	
CMN4	0.576*	0.129	0.405+	0.255+	1.000
CMN5	0.378+	0.648*	0.240+	0.120	0.145
RDAY1	0.027	-0.014	0.534*	0.370+	0.288+
RDAY2	0.090	-0.006	0.473+	0.628*	0.402+
RDAY4	0.133	0.007	0.303+	0.262+	0.381+
RDAY5	0.200+	0.109	0.209+	0.031	0.155
A26A	-0.246+	-0.078	-0.206+	-0.215+	-0.245+
A26B	-0.293+	-0.330+	-0.198	-0.109	-0.218+
A28	0.204+	0.236+	0.224+	0.117	0.101
A30	0.179	0.208+	0.058	-0.011	0.162
A31	-0.065	-0.021	-0.364+	-0.240+	-0.154
A32	0.124	0.052	-0.108	-0.214+	-0.164
A38	0.042	0.155	-0.135	-0.136	-0.130
D2	-0.023	-0.072	0.107	0.196	-0.029
D13	0.083	0.121	0.048	0.080	0.111
D16	0.165	0.140	0.233+	0.220+	0.030
D19	0.033	0.096	0.109	0.134	-0.111
D22	0.006	0.055	0.144	0.167	0.109
D25	-0.001	-0.028	-0.184	-0.055	-0.123
E12	0.107	0.108	0.062	0.128	0.169
E29	0.003	-0.080	-0.017	0.165	-0.038

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	1.000				
RDAY1	0.230+	1.000			
RDAY2	0.227+	0.925	1.000		
RDAY4	0.342+	0.363+	0.352+	1.000	
RDAY5	0.671*	0.585*	0.596*	0.421+	1.000
A26A	-0.053	-0.154	-0.256+	-0.145	-0.081
A26B	-0.185	-0.208+	-0.167	-0.206+	-0.297+
A28	0.142	-0.010	0.016	0.040	0.043
A30	0.081	0.038	0.044	0.037	0.016
A31	-0.073	-0.234+	-0.206+	-0.119	-0.167
A32	0.148	-0.096	-0.107	0.019	0.026
A38	0.015	0.014	-0.019	0.054	-0.036
D2	0.087	0.089	0.118	0.083	0.076
D13	0.234+	0.146	0.126	0.042	0.104
D16	0.238+	0.032	0.058	0.099	0.073
D19	-0.092	0.053	0.051	-0.043	-0.010
D22	0.209+	-0.031	-0.041	0.150	0.046
D25	-0.005	-0.017	0.004	0.050	-0.027
E12	0.034	-0.058	-0.014	0.022	0.057
E29	0.048	0.073	0.068	0.103	0.031

	A26A	A26B	A28	A30	A31
A26A	1.000				
A26B	0.452+	1.000			
A28	-0.246+	-0.260+	1.000		
A30	-0.122	-0.063	0.486+	1.000	
A31	0.127	0.193	0.000	0.034	1.000
A32	0.139	0.217+	0.245+	0.231+	0.056
A38	-0.135	0.102	0.349+	0.359+	0.119
D2	-0.084	0.099	-0.173	-0.179	-0.269+
D13	-0.078	-0.153	0.099	0.068	-0.070
D16	0.060	-0.091	0.083	0.132	-0.056
D19	-0.102	0.055	0.055	0.108	-0.111
D22	-0.081	-0.151	0.073	-0.057	0.085
D25	0.119	-0.000	0.190	0.071	-0.081
E12	0.084	-0.122	0.099	0.054	0.143
E29	-0.293+	0.125	-0.038	-0.004	-0.012

	A32	A38	D2	D13	D16
A32	1.000				
A38	0.222+	1.000			
D2	-0.045	-0.284+	1.000		
D13	0.215+	-0.116	-0.092	1.000	
D16	0.092	0.083	0.067	0.060	1.000
D19	0.070	0.204+	0.098	-0.043	0.224
D22	0.016	0.121	0.066	0.005	0.043
D25	0.044	0.162	-0.071	0.013	0.018
E12	0.098	0.061	-0.059	-0.012	0.037
E29	0.049	0.207+	0.218	-0.102	0.066

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.232+	1.000			
D25	0.076	0.207+	1.000		
E12	0.071	-0.021	0.032	1.000	
E29	0.063	0.164	0.018	0.014	1.000

Table 5T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 30 TRADITIONAL AOSIS VARIABLES, *NATIVE* SUBSAMPLE OF TOTAL PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 285), 1987-1988

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	1.000	0.000		
CACT1	1.000	1.000	1.000	0.000	
CACT2	1.000	1.000	1.000	0.003	0.000
CACT4	1.000	0.343	1.000	1.000	0.000
CACT5	1.000	1.000	1.000	1.000	0.000
CMN1	1.000	1.000	1.000	0.000	0.000
CMN2	1.000	1.000	1.000	0.003	0.000
CMN4	1.000	1.000	1.000	0.661	0.293
CMN5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	1.000	1.000	0.000	1.000
RDAY2	1.000	1.000	1.000	0.001	1.000
RDAY4	1.000	1.000	1.000	1.000	1.000
RDAY5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	0.002
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	0.568	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	0.443	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	1.000	0.902	0.000		
CMN2	1.000	1.000	0.000	0.000	
CMN4	0.000	1.000	0.198	1.000	0.000
CMN5	0.505	0.000	1.000	1.000	1.000
RDAY1	1.000	1.000	0.001	0.643	1.000
RDAY2	1.000	1.000	0.014	0.000	0.224
RDAY4	1.000	1.000	1.000	1.000	0.448
RDAY5	0.358	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	0.249	0.029	1.000	1.000	1.000
A30	1.000	0.196	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

Table 6T

PEARSON CORRELATION MATRIX, 30 TRADITIONAL AOSIS VARIABLES, *MIXED* SUBSAMPLE OF TOTAL PRETEST SAMPLE, 31 ALASKAN VILLAGES (*N* = 265), 1987-1988

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	-0.147	1.000			
RHHTYPE	-0.090	0.360+	1.000		
CACT1	0.025	0.046	-0.067	1.000	
CACT2	-0.165	0.143	0.036	-0.056	1.000
CACT4	-0.044	0.120	0.004	-0.007	0.287+
CACT5	0.069	0.128	-0.009	-0.015	0.201+
CMN1	0.216+	0.014	-0.089	0.756*	0.134
CMN2	-0.213+	0.326+	-0.047	0.193	0.753*
CMN4	0.078	-0.002	-0.039	0.490+	0.057
CMN5	0.123	0.078	0.055	0.396+	0.143
RDAY1	-0.146	0.107	0.033	0.448+	0.242+
RDAY2	-0.264+	0.159	0.077	0.395+	0.330+
RDAY4	-0.122	0.069	-0.014	0.253+	0.153
RDAY5	-0.115	0.095	-0.002	0.333+	0.173
A26A	0.165	-0.063	-0.271+	0.018	0.045
A26B	0.184	-0.167	-0.308+	-0.094	0.037
A28	-0.124	0.118	0.205+	-0.067	0.219+
A30	-0.089	0.116	0.089	-0.082	0.182
A31	0.055	0.022	0.267+	-0.280+	-0.024
A32	0.036	0.107	0.136	-0.048	0.116
A38	0.011	0.091	0.102	-0.386+	0.189
D2	-0.109	0.162	-0.084	0.228+	-0.033
D13	0.008	-0.037	-0.122	0.055	0.030
D16	-0.119	0.146	0.140	0.114	-0.108
D19	-0.258+	0.099	0.171	0.025	0.068
D22	0.001	0.231+	0.075	0.080	0.160
D25	-0.110	0.141	0.197	-0.068	0.144
E12	0.035	-0.007	0.115	-0.107	-0.079
E29	-0.053	0.025	0.074	-0.013	0.004

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.419+	1.000			
CMN1	0.380+	0.357+	1.000		
CMN2	0.180	0.206	0.052	1.000+	
CMN4	0.718*	0.223+	0.623*	0.051	1.000
CMN5	0.400+	0.660*	0.480+	0.136	0.462+
RDAY1	-0.043	-0.192	0.526*	0.191	0.266+
RDAY2	-0.066	-0.229+	0.085	0.909*	0.049
RDAY4	0.204+	0.070	0.315+	0.244+	0.483+
RDAY5	-0.009	0.045	0.313+	0.257+	0.154
A26A	0.026	0.040	-0.024	0.049	0.026
A26B	-0.167	-0.127	-0.181	0.061	-0.186
A28	0.170	0.148	0.064	0.143	-0.071
A30	0.145	0.097	0.021	0.119	0.017
A31	0.063	-0.100	-0.121	0.025	0.133
A32	0.144	0.024	-0.019	0.142	0.069
A38	0.124	0.106	-0.123	0.379+	-0.031
D2	0.020	0.006	0.245+	0.034	0.164
D13	0.041	-0.006	0.060	0.045	0.090
D16	0.020	0.025	0.070	-0.055	0.048
D19	0.014	0.006	-0.022	-0.018	-0.048
D22	0.148	0.225+	0.032	0.288+	-0.025
D25	0.028	0.112	0.178	0.137	0.070
E12	0.021	-0.048	-0.010	-0.053	0.090
E29	-0.063	-0.098	0.019	0.014	0.064

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	1.000				
RDAY1	0.167	1.000			
RDAY2	0.131	0.878*	1.000		
RDAY4	0.181	0.397+	0.291+	1.000	
RDAY5	0.628*	0.677*	0.641*	0.305*	1.000
A26A	-0.024	0.227+	0.034	0.114	0.173
A26B	-0.126	0.041	0.095	0.071	0.105
A28	0.051	0.098	0.105	0.053	0.137
A30	0.063	0.082	0.132	0.089	0.086
A31	0.144	-0.280+	-0.009	-0.059	-0.200+
A32	0.107	0.103	0.074	0.185	0.154
A38	0.272+	0.109	0.172	0.112	0.143
D2	0.137	0.106	0.094	0.117	0.114
D13	-0.106	0.068	0.043	0.128	0.014
D16	0.153	0.155	0.169	0.094	0.222+
D19	-0.100	0.076	0.149	0.104	0.062
D22	0.157	0.142	0.170	0.258+	0.205+
D25	0.040	0.071	0.060	0.110	0.111
E12	0.087	-0.042	-0.035	0.000	-0.015
E29	-0.067	0.132	0.128	0.061	0.090

	A26A	A26B	A28	A30	A31
A26A	1.000				
A26B	0.387+	1.000			
A28	0.105	0.036	1.000		
A30	-0.052	0.059	0.499+	1.000	
A31	-0.279+	-0.294+	-0.257+	-0.280+	1.000
A32	0.043	-0.088	0.237+	0.266+	0.143
A38	0.025	0.068	0.338+	0.286+	0.100
D2	0.014	-0.067	-0.199	-0.157	-0.327+
D13	0.023	-0.077	0.039	0.026	-0.220+
D16	0.088	-0.032	0.102	0.065	-0.076
D19	0.002	-0.130	0.068	0.087	-0.089
D22	0.118	0.125	0.332+	0.291+	0.034
D25	-0.003	-0.111	0.341+	0.248+	-0.169
E12	-0.007	-0.027	-0.002	0.011	0.115
E29	0.076	0.042	-0.075	0.017	-0.268

	A32	A38	D2	D13	D16
A32	1.000				
A38	0.233+	1.000			
D2	-0.254+	-0.213+	1.000		
D13	0.170	0.035	0.053	1.000	
D16	0.022	-0.047	0.303+	0.270+	1.000
D19	0.030	-0.120	0.282+	0.008	0.224+
D22	0.298+	0.269+	-0.076	-0.010	0.084
D25	0.222+	0.147	-0.105	0.097	0.156
E12	0.064	0.237+	-0.026	-0.097	-0.034
E29	0.002	0.081	0.169	-0.006	0.053

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.102	1.000			
D25	0.281+	0.201+	1.000		
E12	-0.001	-0.033	0.105	1.000	
E29	0.094	-0.137	0.115	0.326+	1.000

Table 6T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 30 TRADITIONAL AOSIS VARIABLES, *MIXED* SUBSAMPLE OF PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 265), 1987-1988

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.000	0.000		
CACT1	1.000	1.000	1.000	0.000	
CACT2	1.000	1.000	1.000	1.000	0.000
CACT4	1.000	1.000	1.000	1.000	0.001
CACT5	1.000	1.000	1.000	1.000	0.429
CMN1	1.000	1.000	1.000	0.000	1.000
CMN2	1.000	0.178	1.000	1.000	0.000
CMN4	1.000	1.000	1.000	0.000	1.000
CMN5	1.000	1.000	1.000	0.006	1.000
RDAY1	1.000	1.000	1.000	0.000	0.031
RDAY2	0.042	1.000	1.000	0.000	0.000
RDAY4	1.000	1.000	1.000	0.015	1.000
RDAY5	1.000	1.000	1.000	0.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	0.943	1.000	1.000
A28	1.000	1.000	0.508	1.000	0.163
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	0.000	1.000
D2	1.000	1.000	1.000	0.145	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	0.062	1.000	1.000	1.000	1.000
D22	1.000	0.889	1.000	1.000	1.000
D25	1.000	1.000	0.742	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	0.013	0.041	0.000		
CMN2	1.000	1.000	1.000	0.000	
CMN4	0.000	1.000	0.000	1.000	0.000
CMN5	0.004	0.000	0.000	1.000	0.000
RDAY1	1.000	0.729	0.000	1.000	1.000
RDAY2	1.000	0.081	1.000	0.000	1.000
RDAY4	0.397	1.000	0.274	1.000	0.000
RDAY5	1.000	1.000	0.298	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	0.349	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	0.000				
RDAY1	1.000	0.000			
RDAY2	1.000	0.000	0.000		
RDAY4	1.000	0.000	0.001	0.000	
RDAY5	0.000	0.000	0.000	0.000	0.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	0.199
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	0.258	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A26A	A26B	A28	A30	A31
A26A	0.000				
A26B	0.055	0.000			
A28	1.000	1.000	0.000		
A30	1.000	1.000	0.000	0.000	
A31	1.000	1.000	1.000	1.000	0.000
A32	1.000	1.000	0.057	0.007	1.000
A38	1.000	1.000	0.001	0.025	1.000
D2	1.000	1.000	0.844	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	0.003	0.041	1.000
D25	1.000	1.000	0.000	0.022	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A32	A38	D2	D13	D16
A32	0.000				
A38	0.551	0.000			
D2	0.030	1.000	0.000		
D13	1.000	1.000	1.000	0.000	
D16	1.000	1.000	0.001	0.008	0.000
D19	1.000	1.000	0.004	1.000	0.176
D22	0.033	0.234	1.000	1.000	1.000
D25	0.151	1.000	1.000	1.000	1.000
E12	1.000	0.543	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	D19	D22	D25	E12	E29
D19	0.000				
D22	1.000	0.000			
D25	0.002	1.000	0.000		
E12	1.000	1.000	1.000	0.000	
E29	1.000	1.000	1.000	0.000	0.000

Table 7T

PEARSON CORRELATION MATRIX, 35 TRADITIONAL AOSIS VARIABLES, TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 310), 1989-1990 [a]

	PPEMP	RHHSI	RHHTYPE	A26A	A26B
PPEMP	1.000				
RHHSI	0.076	1.000			
RHHTYPE	0.008	0.353+	1.000		
A26A	0.143	0.078	0.014	1.000	
A26B	0.053	0.202	0.063	0.275+	1.000
A28	-0.082	0.148	0.195	-0.002	-0.023
A30	-0.018	0.202	0.085	0.030	0.122
A31	0.089	-0.137	0.017	-0.195	-0.039
A32	-0.009	0.065	0.073	0.014	0.004
A33	-0.013	0.270+	0.190	0.018	0.185
A38	0.127	0.093	0.209	-0.037	0.090
CACT1	-0.114	0.106	0.040	0.195	-0.079
CACT2	-0.011	0.125	0.151	0.049	0.053
CACT4	-0.055	0.039	-0.067	0.132	0.015
CACT5	-0.029	0.108	-0.061	0.072	-0.013
CMN1	-0.070	0.084	-0.015	0.118	0.006
CMN2	0.010	0.060	0.117	0.015	0.107
CMN4	0.004	0.076	-0.006	0.062	-0.011
CMN5	-0.047	0.041	-0.053	0.013	0.050
CREL1	0.083	-0.057	-0.027	-0.044	-0.144
CREL2	0.106	-0.064	-0.074	0.019	-0.236+
CREL4	0.028	-0.065	-0.049	-0.021	-0.204
CREL5	-0.000	-0.033	-0.056	0.090	-0.200
RDAY1	-0.101	0.118	0.023	0.167	-0.003
RDAY2	0.014	0.137	0.153	0.048	0.071
RDAY4	0.006	0.103	-0.028	0.076	0.021
RDAY5	-0.104	0.062	-0.001	0.018	0.041
D2	-0.150	0.046	-0.144	0.204	0.009
D13	0.089	-0.056	0.013	0.083	0.020
D16	-0.055	0.055	-0.034	0.152	0.125
D19	-0.187	0.001	-0.062	-0.005	-0.017
D22	0.150	0.200	0.102	0.026	0.013
D25	0.036	-0.026	0.156	-0.082	0.112
E12	-0.011	0.096	0.045	0.107	0.140
E29	-0.046	-0.011	-0.078	0.146	0.103

	A28	A30	A31	A32	A33
A28	1.000				
A30	0.541*	1.000			
A31	-0.074	-0.118	1.000		
A32	0.290+	0.313+	0.078	1.000	
A33	0.466+	0.483+	0.023	0.297+	1.000
A38	0.385+	0.293+	0.116	0.294+	0.454+
CACT1	0.109	0.054	-0.309+	0.056	0.076
CACT2	0.259+	0.180	-0.120	0.304+	0.294+
CACT4	0.139	0.099	-0.229+	0.149	0.177
CACT5	0.078	0.106	-0.310+	0.127	0.178
CMN1	0.122	-0.025	-0.192	0.103	0.079
CMN2	0.164	0.086	-0.065	0.200	0.211
CMN4	0.157	0.095	-0.205	0.168	0.184
CMN5	0.174	0.140	-0.237+	0.127	0.168
CREL1	-0.015	-0.054	0.096	-0.060	-0.023
CREL2	-0.071	-0.116	0.096	-0.154	-0.102
CREL4	-0.072	-0.087	0.001	-0.150	-0.096
CREL5	-0.062	-0.158	-0.022	-0.183	-0.111
RDAY1	0.103	0.003	-0.220+	0.086	0.095
RDAY2	0.179	0.090	-0.019	0.244+	0.281+
RDAY4	0.126	0.104	-0.125	0.172	0.187
RDAY5	0.175	0.135	-0.169	0.184	0.230+
D2	-0.247+	-0.119	-0.140	-0.248+	-0.265+
D13	0.073	0.074	-0.096	0.140	0.010
D16	0.069	0.130	-0.133	-0.018	0.130
D19	0.111	.0.143	-0.168	-0.037	0.088

D22	0.153	0.085	-0.079	-0.027	0.062
D25	0.132	0.084	0.086	0.047	0.164
E12	0.043	0.060	-0.016	0.054	0.109
E29	-0.072	0.040	-0.090	-0.011	-0.018

	A38	CACT1	CACT2	CACT4	CACT5
A38	1.000				
CACT1	-0.067	1.000			
CACT2	0.125	0.334+	1.000		
CACT4	-0.035	0.433+	0.315+	1.000	
CACT5	0.042	0.303+	0.250+	0.415+	1.000
CMN1	0.003	0.589*	0.301+	0.258+	0.232+
CMN2	0.221+	0.160	0.600*	0.201	0.211
CMN4	0.009	0.317+	0.289+	0.694*	0.322+
CMN5	0.080	0.236+	0.266+	0.378+	0.558*
CREL1	-0.006	0.017	-0.088	0.084	0.066
CREL2	-0.174	0.039	-0.138	0.020	-0.014
CREL4	-0.120	0.102	-0.071	0.044	0.010
CREL5	-0.188	0.103	-0.072	0.066	0.027
RDAY1	-0.031	0.760*	0.320+	0.402+	0.261+
RDAY2	0.180	0.226+	0.774*	0.238+	0.147
RDAY4	0.091	0.258+	0.335+	0.716*	0.320+
RDAY5	0.093	0.221+	0.314+	0.401+	0.652*
D2	-0.437+	0.076	-0.221+	-0.006	-0.037
D13	-0.093	0.106	0.122	0.103	0.059
D16	-0.024	0.000	0.078	0.049	0.069
D19	-0.001	0.041	0.045	0.112	0.072
D22	0.105	0.172	0.156	0.034	0.026
D25	0.130	0.025	0.227+	0.052	0.003
E12	0.191	0.016	0.119	-0.019	-0.016
E29	-0.014	-0.018	0.006	-0.055	0.044

	CMN1	CMN2	CMN4	CMN5	CREL1
CMN1	1.000				
CMN2	0.323+	1.000			
CMN4	0.369+	0.238+	1.000		
CMN5	0.263+	0.263+	0.494+	1.000	
CREL1	-0.075	0.087	0.058	-0.005	1.000
CREL2	-0.038	-0.015	-0.002	-0.100	0.676*
CREL4	-0.003	0.030	0.015	-0.052	0.615*
CREL5	0.064	0.047	0.055	-0.006	0.493+
RDAY1	0.706*	0.262+	0.377+	0.269+	0.017
RDAY2	0.352+	0.714*	0.297+	0.165	-0.027
RDAY4	0.239+	0.302+	0.684*	0.376+	0.087
RDAY5	0.198	0.281+	0.353+	0.624*	0.008
D2	0.060	-0.158	0.005	-0.074	-0.025
D13	0.118	0.131	0.162	0.138	0.033
D16	0.080	0.080	0.118	0.107	0.023
D19	0.038	0.087	0.101	0.091	-0.088
D22	0.098	0.123	0.111	0.101	-0.126
D25	0.104	0.191	0.071	0.050	0.104
E12	0.004	0.041	-0.074	-0.068	0.014
E29	-0.013	0.007	-0.026	0.074	0.034

	CREL2	CREL4	CREL5	RDAY1	RDAY2
CREL2	1.000				
CREL4	0.711*	1.000			
CREL5	0.614*	0.585*	1.000		
RDAY1	0.053	0.095	0.139	1.000	
RDAY2	-0.114	-0.075	-0.076	0.400+	1.000
RDAY4	-0.009	0.030	0.020	0.383+	0.397+
RDAY5	-0.115	-0.032	-0.020	0.265+	0.266+
D2	0.087	0.045	0.081	0.049	-0.184
D13	0.008	0.090	0.089	0.086	0.103
D16	-0.059	-0.033	-0.030	0.040	0.122
D19	-0.088	-0.050	0.005	0.032	0.045
D22	-0.145	-0.119	-0.043	0.156	0.158
D25	-0.010	0.056	0.029	0.073	0.167
E12	-0.001	0.053	0.039	0.010	0.040
E29	-0.059	0.014	-0.019	-0.043	-0.003

	RDAY4	RDAY5	D2	D13	D16
RDAY4	1.000				
RDAY5	0.502*	1.000			
D2	-0.037	-0.081	1.000		
D13	0.086	0.043	-0.104	1.000	
D16	0.017	0.080	0.161	0.081	1.000
D19	0.075	0.108	0.195	-0.016	0.264+
D22	0.074	0.099	-0.049	0.070	0.165
D25	0.083	0.076	-0.229+	0.071	-0.036
E12	-0.000	-0.062	-0.054	-0.036	0.034
E29	-0.093	0.039	0.248+	-0.085	0.135

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.239+	1.000			
D25	0.082	0.172	1.000		
E12	-0.043	0.107	0.072	1.000	
E29	0.104	-0.053	-0.031	0.224+	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 1924.641 DF = 595 PROB = .000.*
PEARSONIAN r = .22 - .29 SIGNIFICANT AT FROM 0.05 TO 0.001.
PEARSONIAN r = .30 OR HIGHER SIGNIFICANT AT 0.000.

Table 7T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 35 TRADITIONAL AOSIS VARIABLES, TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 310), 1989-1990 [a]

	PPEMP	RHHSI	RHHTYPE	A26A	A26B
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.000	0.000		
A26A	1.000	1.000	1.000	0.000	
A26B	1.000	0.507	1.000	0.006	0.000
A28	1.000	1.000	0.379	1.000	1.000
A30	1.000	0.265	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A33	1.000	0.001	0.555	1.000	1.000
A38	1.000	1.000	0.465	1.000	1.000
CACT1	1.000	1.000	1.000	1.000	1.000
CACT2	1.000	1.000	1.000	1.000	1.000
CACT4	1.000	1.000	1.000	1.000	1.000
CACT5	1.000	1.000	1.000	1.000	1.000
CMN1	1.000	1.000	1.000	1.000	1.000
CMN2	1.000	1.000	1.000	1.000	1.000
CMN4	1.000	1.000	1.000	1.000	1.000
CMN5	1.000	1.000	1.000	1.000	1.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	0.052
CREL4	1.000	1.000	1.000	1.000	0.428
CREL5	1.000	1.000	1.000	1.000	0.565
RDAY1	1.000	1.000	1.000	1.000	1.000
RDAY2	1.000	1.000	1.000	1.000	1.000
RDAY4	1.000	1.000	1.000	1.000	1.000
RDAY5	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	0.812	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A28	A30	A31	A32	A33
A28	0.000				
A30	0.000	0.000			
A31	1.000	1.000	0.000		
A32	0.000	0.000	1.000	0.000	
A33	0.000	0.000	1.000	0.000	0.000
A38	0.000	0.001	1.000	0.001	0.000
CACT1	1.000	1.000	0.002	1.000	1.000
CACT2	0.003	1.000	1.000	0.000	0.000
CACT4	1.000	1.000	0.436	1.000	1.000
CACT5	1.000	1.000	0.002	1.000	1.000
CMN1	1.000	1.000	1.000	1.000	1.000
CMN2	1.000	1.000	1.000	0.331	0.133
CMN4	1.000	1.000	1.000	1.000	0.787
CMN5	1.000	1.000	0.272	1.000	1.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	0.996	1.000
RDAY1	1.000	1.000	0.706	1.000	1.000
RDAY2	1.000	1.000	1.000	0.015	0.000
RDAY4	1.000	1.000	1.000	1.000	0.650
RDAY5	1.000	1.000	1.000	0.905	0.033
D2	0.012	1.000	1.000	0.015	0.003

D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A38	CACT1	CACT2	CACT4	CACT5
A38	0.000				
CACT1	1.000	0.000			
CACT2	1.000	0.000	0.000		
CACT4	1.000	0.000	0.000	0.000	
CACT5	1.000	0.000	0.005	0.000	0.000
CMN1	1.000	0.000	0.000	0.003	0.023
CMN2	0.218	1.000	0.000	0.227	0.117
CMN4	1.000	0.000	0.000	0.000	0.000
CMN5	1.000	0.017	0.001	0.000	0.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	0.000	0.000	0.000	0.002
RDAY2	1.000	0.038	0.000	0.015	1.000
RDAY4	1.000	0.003	0.000	0.000	0.000
RDAY5	1.000	0.057	0.000	0.000	0.000
D2	0.000	1.000	0.085	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	0.051	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN1	CMN2	CMN4	CMN5	CREL1
CMN1	0.000				
CMN2	0.000	0.000			
CMN4	0.000	0.015	0.000		
CMN5	0.002	0.002	0.000	0.000	
CREL1	1.000	1.000	1.000	1.000	0.000
CREL2	1.000	1.000	1.000	1.000	0.000
CREL4	1.000	1.000	1.000	1.000	0.000
CREL5	1.000	1.000	1.000	1.000	0.000
RDAY1	0.000	0.002	0.000	0.001	1.000
RDAY2	0.000	0.000	0.000	1.000	1.000
RDAY4	0.013	0.000	0.000	0.000	1.000
RDAY5	0.281	0.000	0.000	0.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	0.575	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CREL2	CREL4	CREL5	RDAY1	RDAY2
CREL2	0.000				
CREL4	0.000	0.000			
CREL5	0.000	0.000	0.000		
RDAY1	1.000	1.000	1.000	0.000	
RDAY2	1.000	1.000	1.000	0.000	0.000
RDAY4	1.000	1.000	1.000	0.000	0.000
RDAY5	1.000	1.000	1.000	0.001	0.001
D2	1.000	1.000	1.000	1.000	0.953
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	RDAY4	RDAY5	D2	D13	D16
RDAY4	0.000				
RDAY5	0.000	0.000			
D2	1.000	1.000	0.000		
D13	1.000	1.000	1.000	0.000	
D16	1.000	1.000	1.000	1.000	0.000
D19	1.000	1.000	0.487	1.000	0.002
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	0.060	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	0.011	1.000	1.000

	D19	D22	D25	E12	E29
D19	0.000				
D22	0.251	0.000			
D25	1.000	1.000	0.000		
E12	1.000	1.000	1.000	0.000	
E29	1.000	1.000	1.000	0.062	0.000

[a] *OF 595 COEFFICIENTS, 16 PERCENT (97) ARE SIGNIFICANT ≤ .05.*

Table 8T

MATRIX OF GAMMA COEFFICIENTS, 35 TRADITIONAL AOSIS VARIABLES, *NATIVE* SUBSAMPLE OF TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 142), 1989-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	0.218	1.000			
RHHTYPE	0.285	0.524*	1.000		
CACT1	-0.389	0.176	0.240	1.000	
CACT2	0.089	0.138	0.181	0.778*	1.000
CACT4	-0.330	-0.014	-0.091	0.668*	0.618*
CACT5	-0.118	0.162	-0.130	0.611*	0.549*
CMN1	-0.188	0.159	0.158	1.000*	0.755*
CMN2	0.126	0.111	0.134	0.562*	1.000*
CMN4	-0.174	-0.010	-0.048	0.522*	0.589*
CMN5	-0.115	0.097	-0.044	0.333	0.403
RDAY1	-0.275	0.150	0.157	1.000*	0.699*
RDAY2	0.167	0.129	0.134	0.535*	1.000*
RDAY4	-0.103	0.020	-0.059	0.504*	0.590*
RDAY5	-0.087	0.037	-0.081	0.269	0.327
CREL1	0.060	-0.027	0.192	0.398	0.106
CREL2	0.252	0.066	0.263	0.205	0.412
CREL4	-0.157	-0.122	0.015	0.236	0.075
CREL5	0.062	0.039	-0.071	0.252	0.153
A26A	0.362	0.104	0.060	0.369	0.036
A26B	0.239	0.312	0.123	-0.073	-0.009
A28	0.142	0.095	0.255	0.419	0.344
A30	0.020	0.253	0.046	0.160	-0.145
A31	0.029	-0.248	-0.024	-0.533*	-0.293
A32	0.186	-0.017	0.035	0.174	0.416
A33	0.156	0.313	0.167	0.197	0.311
A38	0.375	0.056	0.126	-0.208	-0.138
D2	-0.289	0.023	-0.071	0.169	-0.081
D13	0.066	0.036	0.110	0.231	0.318
D16	0.014	0.242	0.019	0.062	0.086
D19	-0.296	-0.135	-0.211	-0.060	0.042
D22	0.381	0.199	0.215	0.412	0.366
D25	0.173	-0.115	0.087	0.081	0.053
E12	-0.036	0.149	-0.008	0.120	0.303
E29	-0.294	0.155	-0.098	-0.039	0.016

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.811*	1.000			
CMN1	0.563*	0.574*	1.000		
CMN2	0.425	0.441	0.559*	1.000	
CMN4	1.000*	0.737*	0.476	0.428	1.000
CMN5	0.531*	1.000*	0.306	0.307	0.489
RDAY1	0.604*	0.544*	0.944*	0.541*	0.493
RDAY2	0.457	0.353	0.526*	0.898*	0.459
RDAY4	1.000*	0.765*	0.447	0.436	0.912*
RDAY5	0.611*	1.000*	0.227	0.279	0.525*
CREL1	0.261	0.499	0.347	0.142	0.219
CREL2	0.136	0.335	0.182	0.383	0.157
CREL4	0.574*	0.516*	0.166	0.064	0.550*
CREL5	0.387	0.744*	0.252	0.133	0.334
A26A	0.201	0.027	0.278	0.050	0.099
A26B	0.041	-0.256	-0.024	0.086	0.007
A28	0.436	0.340	0.360	0.210	0.380
A30	0.105	0.157	0.078	-0.130	0.045
A31	-0.388	-0.447	-0.416	-0.216	-0.242
A32	0.221	0.295	0.206	0.291	0.228
A33	0.241	0.285	0.156	0.254	0.249
A38	-0.192	-0.020	-0.105	-0.007	-0.090
D2	-0.000	-0.063	0.156	-0.019	0.001
D13	0.210	0.261	0.248	0.245	0.201
D16	0.173	0.222	0.125	0.170	0.173
D19	0.230	0.182	0.011	0.121	0.205

D22	-0.081	-0.113	0.422	0.326	0.018
D25	-0.074	-0.081	0.111	0.052	0.014
E12	0.072	-0.017	0.167	0.136	0.005
E29	-0.212	-0.106	-0.050	0.010	-0.156

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	1.000				
RDAY1	0.276	1.000			
RDAY2	0.253	0.599*	1.000		
RDAY4	0.451	0.496	0.485	1.000	
RDAY5	0.761*	0.275	0.279	0.621*	1.000
CREL1	0.240	0.370	0.119	0.191	0.236
CREL2	0.133	0.210	0.389	0.142	0.111
CREL4	0.294	0.243	0.072	0.541*	0.310
CREL5	0.515*	0.263	0.121	0.333	0.481
A26A	-0.040	0.334	0.042	0.073	-0.074
A26B	0.022	-0.018	0.047	0.020	0.040
A28	0.361	0.328	0.185	0.327	0.280
A30	0.066	0.027	-0.193	-0.007	-0.004
A31	-0.263	-0.388	-0.092	-0.189	-0.121
A32	0.178	0.106	0.234	0.180	0.150
A33	0.164	0.168	0.289	0.193	0.173
A38	-0.044	-0.160	-0.034	-0.073	0.011
D2	-0.008	0.117	-0.055	-0.007	-0.060
D13	0.232	0.197	0.213	0.104	0.127
D16	0.134	0.151	0.184	0.112	0.081
D19	0.062	-0.007	0.063	0.216	0.091
D22	0.009	0.349	0.294	-0.069	-0.034
D25	0.052	0.073	-0.001	-0.080	-0.072
E12	0.016	0.122	0.108	-0.000	-0.107
E29	-0.034	-0.018	0.031	-0.218	-0.061

	CREL1	CREL2	CREL4	CREL5	A26A
CREL1	1.000				
CREL2	0.812*	1.000			
CREL4	0.837*	0.767*	1.000		
CREL5	0.560*	0.511*	0.662*	1.000	
A26A	0.150	0.053	0.115	0.069	1.000
A26B	-0.127	-0.218	-0.140	-0.168	0.428
A28	0.057	-0.070	-0.040	-0.047	-0.041
A30	-0.026	-0.287	-0.216	-0.060	0.086
A31	-0.027	0.121	-0.093	-0.087	-0.246
A32	0.211	0.166	0.073	0.115	-0.031
A33	-0.054	-0.009	-0.062	-0.014	-0.047
A38	0.102	-0.002	-0.150	-0.145	-0.046
D2	0.047	-0.036	0.107	-0.028	0.198
D13	0.177	0.190	0.231	0.377	0.139
D16	0.079	-0.035	-0.013	0.058	0.120
D19	-0.181	-0.158	-0.043	0.053	-0.030
D22	-0.155	-0.146	-0.304	-0.008	0.067
D25	0.073	0.019	-0.005	0.109	-0.005
E12	-0.094	-0.062	-0.076	-0.064	-0.037
E29	0.119	0.056	0.056	-0.115	0.193

	A26B	A28	A30	A31	A32
A26B	1.000				
A28	-0.060	1.000			
A30	0.095	0.827*	1.000		
A31	-0.131	-0.381	-0.566*	1.000	
A32	-0.062	0.556*	0.518*	-0.142	1.000
A33	0.200	0.792*	0.776*	-0.171	0.324
A38	0.002	0.703*	0.511*	0.075	0.159
D2	0.068	-0.262	-0.063	-0.109	-0.078
D13	0.196	0.052	-0.068	-0.122	0.314
D16	0.113	0.019	0.379	-0.208	0.146
D19	-0.165	0.269	0.129	-0.223	0.031
D22	0.063	0.294	0.000	-0.210	-0.076
D25	0.172	-0.054	-0.560	0.184	-0.091
E12	0.167	0.146	0.121	-0.367	0.143
E29	-0.054	-0.107	0.065	-0.060	0.015

	A33	A38	D2	D13	D16
A33	1.000				
A38	0.544*	1.000			
D2	-0.266	-0.258	1.000		
D13	0.072	-0.015	-0.171	1.000	
D16	0.155	0.056	0.132	0.151	1.000
D19	0.024	0.055	0.293	-0.006	0.407
D22	0.091	0.041	0.027	0.134	0.547*
D25	-0.193	-0.088	-0.148	0.178	-0.060
E12	0.050	0.011	-0.075	0.137	0.223
E29	0.056	-0.028	0.328	-0.167	0.176

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.499	1.000			
D25	0.028	0.275	1.000		
E12	0.187	0.349	0.170	1.000	
E29	0.013	-0.128	-0.133	0.278	1.000

[a]OF 595 γ COEFFICIENTS, 11 PERCENT (64) REDUCE PREDICTION ERROR ≥ 50 PERCENT.

Table 8T

PEARSON CORRELATION MATRIX, 35 TRADITIONAL AOSIS VARIABLES, *NATIVE* SUBSAMPLE OF TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (*N* = 142), 1989-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	0.139	1.000			
RHHTYPE	0.205	0.391	1.000		
CACT1	-0.200	0.132	0.157	1.000	
CACT2	0.045	0.114	0.122	0.474	1.000
CACT4	-0.169	0.006	-0.060	0.382	0.345
CACT5	-0.053	0.100	-0.113	0.300	0.273
CMN1	0.057	0.118	-0.043	0.559	0.381
CMN2	0.049	0.020	0.081	0.150	0.524
CMN4	-0.030	0.070	-0.009	0.241	0.318
CMN5	-0.099	0.031	-0.056	0.177	0.233
RDAY1	-0.058	0.166	0.053	0.709	0.397
RDAY2	0.130	0.138	0.125	0.292	0.700
RDAY4	0.046	0.087	-0.055	0.234	0.350
RDAY5	-0.049	0.013	-0.068	0.169	0.230
CREL1	0.111	-0.045	0.112	-0.099	-0.108
CREL2	0.079	0.020	0.170	-0.053	-0.019
CREL4	-0.075	-0.112	0.002	-0.026	-0.058
CREL5	0.064	-0.042	-0.019	-0.026	-0.005
A26A	0.221	0.078	0.034	0.231	0.021
A26B	0.142	0.242	0.070	-0.035	-0.009
A28	0.064	0.040	0.193	0.193	0.159
A30	0.008	0.141	0.013	0.071	-0.065
A31	0.022	-0.224	0.005	-0.335	-0.177
A32	0.128	0.066	0.030	0.115	0.236
A33	0.091	0.238	0.135	0.119	0.192
A38	0.254	0.048	0.128	-0.139	-0.094
D2	-0.212	0.013	-0.124	0.123	-0.056
D13	0.067	0.045	0.091	0.157	0.213
D16	0.020	0.179	-0.050	0.026	0.032
D19	-0.148	-0.079	-0.112	-0.029	0.020
D22	0.189	0.142	0.135	0.200	0.178
D25	0.062	-0.057	0.077	0.042	0.080
E12	-0.009	0.127	-0.036	0.040	0.146
E29	-0.184	0.117	-0.118	-0.020	0.006

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.434	1.000			
CMN1	0.252	0.234	1.000		
CMN2	0.194	0.212	0.349	1.000	
CMN4	0.615	0.292	0.446	0.233	1.000
CMN5	0.294	0.537	0.281	0.208	0.471
RDAY1	0.337	0.252	0.777	0.275	0.367
RDAY2	0.232	0.133	0.432	0.710	0.312
RDAY4	0.705	0.354	0.352	0.345	0.641
RDAY5	0.449	0.656	0.179	0.258	0.367
CREL1	0.008	0.176	-0.102	0.144	-0.022
CREL2	0.006	0.139	-0.057	0.101	-0.011
CREL4	0.057	0.114	-0.085	0.086	0.027
CREL5	0.066	0.212	-0.015	0.140	0.043
A26A	0.116	0.014	0.142	0.045	0.021
A26B	0.016	-0.123	0.060	0.114	-0.018
A28	0.202	0.153	0.109	0.069	0.145
A30	0.047	0.066	-0.024	-0.064	0.012
A31	-0.240	-0.252	-0.187	-0.042	-0.149
A32	0.137	0.167	0.222	0.176	0.218
A33	0.149	0.164	0.088	0.143	0.193
A38	-0.125	-0.011	0.003	0.144	-0.030
D2	0.023	-0.034	0.110	-0.007	0.133
D13	0.141	0.156	0.224	0.218	0.169
D16	0.104	0.114	0.170	0.101	0.177
D19	0.112	0.083	0.003	0.129	0.088

D22	-0.038	-0.050	0.174	0.104	0.087
D25	-0.024	-0.039	0.162	0.139	0.105
E12	0.036	0.006	0.080	-0.011	-0.034
E29	-0.125	-0.054	-0.000	-0.002	-0.061

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	1.000				
RDAY1	0.255	1.000			
RDAY2	0.138	0.511	1.000		
RDAY4	0.337	0.442	0.429	1.000	
RDAY5	0.619	0.254	0.210	0.572	1.000
CREL1	0.042	-0.033	0.012	0.047	0.144
CREL2	0.014	0.003	0.015	0.030	0.088
CREL4	0.036	0.029	-0.036	0.064	0.077
CREL5	0.044	0.027	0.008	0.035	0.089
A26A	-0.025	0.265	0.059	0.058	-0.058
A26B	0.051	0.053	0.062	0.035	0.077
A28	0.198	0.166	0.077	0.158	0.185
A30	0.039	-0.012	-0.102	-0.022	-0.003
A31	-0.194	-0.228	-0.042	-0.088	-0.089
A32	0.174	0.189	0.149	0.186	0.179
A33	0.127	0.109	0.218	0.166	0.161
A38	-0.036	-0.072	0.071	0.065	0.014
D2	0.042	0.076	-0.000	0.014	-0.058
D13	0.207	0.172	0.154	0.088	0.118
D16	0.069	0.104	0.147	0.069	0.041
D19	0.021	-0.007	0.071	0.102	0.069
D22	0.041	0.161	0.173	-0.027	0.003
D25	0.062	0.090	0.026	-0.012	-0.026
E12	-0.006	0.124	0.018	0.015	-0.064
E29	0.026	0.028	0.054	-0.095	-0.030

	CREL1	CREL2	CREL4	CREL5	A26A
CREL1	1.000				
CREL2	0.801	1.000			
CREL4	0.648	0.724	1.000		
CREL5	0.501	0.596	0.547	1.000	
A26A	-0.013	-0.016	-0.008	0.056	1.000
A26B	-0.118	-0.140	-0.066	-0.083	0.288
A28	-0.032	-0.125	-0.141	-0.184	-0.006
A30	-0.064	-0.186	-0.186	-0.117	0.053
A31	0.218	0.248	0.030	0.130	-0.170
A32	0.068	0.035	-0.065	-0.003	-0.019
A33	-0.100	-0.145	-0.187	-0.156	-0.027
A38	0.145	0.003	-0.119	-0.124	-0.030
D2	-0.007	-0.009	0.112	0.004	0.157
D13	-0.010	0.059	0.128	0.220	0.102
D16	-0.001	-0.133	-0.063	-0.080	0.099
D19	-0.104	-0.131	-0.046	-0.019	-0.027
D22	-0.170	-0.182	-0.174	-0.020	0.044
D25	0.014	0.019	0.044	0.108	-0.003
E12	-0.105	-0.074	-0.047	-0.072	0.011
E29	0.098	0.081	0.123	-0.075	0.131

	A26B	A28	A30	A31	A32
A26B	1.000				
A28	-0.028	1.000			
A30	0.046	0.492	1.000		
A31	-0.079	-0.175	-0.261	1.000	
A32	-0.033	0.279	0.257	-0.087	1.000
A33	0.139	0.521	0.491	-0.128	0.244
A38	0.014	0.452	0.310	0.060	0.113
D2	0.045	-0.214	-0.049	-0.068	-0.097
D13	0.133	0.019	-0.064	-0.083	0.220
D16	0.062	0.005	0.197	-0.144	0.068
D19	-0.109	0.123	0.057	-0.131	-0.021
D22	0.030	0.130	-0.000	-0.123	-0.069
D25	0.140	0.021	-0.269	0.112	-0.067
E12	0.096	0.061	0.033	-0.239	0.058
E29	-0.036	-0.052	0.037	-0.038	0.020

	A33	A38	D2	D13	D16
A33	1.000				
A38	0.451	1.000			
D2	-0.264	-0.284	1.000		
D13	0.052	-0.023	-0.171	1.000	
D16	0.101	0.032	0.128	0.084	1.000
D19	0.024	0.030	0.195	-0.000	0.230
D22	0.051	0.022	-0.002	0.090	0.296
D25	-0.102	-0.018	-0.120	0.156	-0.056
E12	0.062	0.027	-0.074	0.073	0.136
E29	0.039	-0.021	0.292	-0.140	0.118

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.255	1.000			
D25	0.059	0.118	1.000		
E12	0.087	0.149	0.127	1.000	
E29	0.014	-0.069	-0.053	0.162	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 1221.772 DF = 595 PROB = .000.*
PEARSONIAN r = .32 - .39 SIGNIFICANT AT FROM .01 TO .001.
PEARSONIAN r = .40 OR HIGHER, SIGNIFICANT AT .000.

Table 8T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 35 TRADITIONAL VARIABLES, *NATIVE* SUBSAMPLE OF TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 142), 1989-1990 [a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.001	0.000		
CACT1	1.000	1.000	1.000	0.000	
CACT2	1.000	1.000	1.000	0.000	0.000
CACT4	1.000	1.000	1.000	0.002	0.018
CACT5	1.000	1.000	1.000	0.187	0.662
CMN1	1.000	1.000	1.000	0.000	0.002
CMN2	1.000	1.000	1.000	1.000	0.000
CMN4	1.000	1.000	1.000	1.000	0.079
CMN5	1.000	1.000	1.000	1.000	1.000
RDAY1	1.000	1.000	1.000	0.000	0.001
RDAY2	1.000	1.000	1.000	0.278	0.000
RDAY4	1.000	1.000	1.000	1.000	0.013
RDAY5	1.000	1.000	1.000	1.000	1.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	0.127	1.000
A32	1.000	1.000	1.000	1.000	1.000
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	1.000	1.000	0.000		
CMN2	1.000	1.000	0.014	0.000	
CMN4	0.000	0.275	0.000	1.000	0.000
CMN5	0.246	0.000	0.467	1.000	0.000
RDAY1	0.027	1.000	0.000	0.600	0.005
RDAY2	1.000	1.000	0.000	0.000	0.103
RDAY4	0.000	0.011	0.012	0.018	0.000
RDAY5	0.000	0.000	1.000	1.000	0.005
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000

D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	0.000				
RDAY1	1.000	0.000			
RDAY2	1.000	0.000	0.000		
RDAY4	0.027	0.000	0.000	0.000	
RDAY5	0.000	1.000	1.000	0.000	0.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CREL1	CREL2	CREL4	CREL5	A26A
CREL1	0.000				
CREL2	0.000	0.000			
CREL4	0.000	0.000	0.000		
CREL5	0.000	0.000	0.000	0.000	
A26A	1.000	1.000	1.000	1.000	0.000
A26B	1.000	1.000	1.000	1.000	0.696
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A26B	A28	A30	A31	A32
A26B	0.000				
A28	1.000	0.000			
A30	1.000	0.000	0.000		
A31	1.000	1.000	1.000	0.000	
A32	1.000	0.573	1.000	1.000	0.000
A33	1.000	0.000	0.000	1.000	1.000
A38	1.000	0.000	0.148	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A33	A38	D2	D13	D16
A33	0.000				
A38	0.000	0.000			
D2	1.000	0.618	0.000		
D13	1.000	1.000	1.000	0.000	
D16	1.000	1.000	1.000	1.000	0.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	0.382
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	0.451	1.000	1.000

	D19	D22	D25	E12	E29
D19	0.000				
D22	1.000	0.000			
D25	1.000	1.000	0.000		
E12	1.000	1.000	1.000	0.000	
E29	1.000	1.000	1.000	1.000	0.000

[a] *OF 595 r COEFFICIENTS, 8 PERCENT (48) ARE SIGNIFICANT ≤ .01.*

Table 9T

MATRIX OF GAMMA COEFFICIENTS, 35 TRADITIONAL AOSIS VARIABLES, *MIXED* SUBSAMPLE OF TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 168), 1989-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	0.086	1.000			
RHHTYPE	-0.260	0.519*	1.000		
CACT1	-0.097	0.102	-0.109	1.000	
CACT2	-0.285	0.087	0.079	0.503*	1.000
CACT4	0.068	0.089	-0.156	0.780*	0.791*
CACT5	-0.027	0.137	-0.046	0.555*	0.375
CMN1	-0.152	0.068	-0.059	1.000*	0.452
CMN2	-0.278	0.095	0.087	0.500*	1.000*
CMN4	0.078	0.098	-0.091	0.676*	0.615*
CMN5	-0.022	0.112	-0.077	0.444	0.379
RDAY1	-0.166	0.081	-0.054	1.000*	0.557*
RDAY2	-0.365	0.071	0.144	0.386	1.000*
RDAY4	0.018	0.091	-0.080	0.620*	0.665*
RDAY5	-0.213	0.054	0.015	0.426	0.462
CREL1	0.068	-0.050	-0.236	0.481	0.038
CREL2	0.210	-0.108	-0.281	0.291	0.130
CREL4	0.052	0.012	-0.139	0.512*	0.335
CREL5	-0.110	0.035	-0.073	0.410	0.085
A26A	0.121	0.061	-0.077	0.276	0.188
A26B	-0.039	0.207	0.069	-0.234	-0.037
A28	-0.365	0.283	0.251	0.023	0.599*
A30	-0.042	0.296	0.178	-0.003	0.633*
A31	0.298	-0.005	0.055	-0.465	-0.102
A32	-0.158	0.060	0.155	-0.068	0.612*
A33	-0.163	0.359	0.271	0.010	0.341
A38	-0.047	0.204	0.260	-0.023	0.442
D2	-0.199	0.135	-0.027	0.125	-0.279
D13	0.152	-0.178	-0.048	0.116	0.330
D16	-0.175	-0.186	-0.152	-0.028	0.270
D19	-0.418	0.062	-0.025	0.184	-0.014
D22	0.179	0.483	0.116	0.258	0.261
D25	0.102	-0.095	0.188	-0.056	0.413
E12	-0.019	-0.013	0.033	-0.030	-0.218
E29	0.081	-0.202	-0.119	-0.042	-0.184

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.700*	1.000			
CMN1	0.645*	0.472	1.000		
CMN2	0.776*	0.372	0.447	1.000	
CMN4	1.000*	0.636*	0.557*	0.605*	1.000
CMN5	0.695*	1.000*	0.362	0.377	0.603*
RDAY1	0.731*	0.494	0.932*	0.547*	0.608*
RDAY2	0.731*	0.256	0.387	0.970*	0.579*
RDAY4	1.000*	0.586*	0.485	0.643*	0.906*
RDAY5	0.566*	1.000*	0.360	0.444	0.473
CREL1	0.453	0.146	0.344	0.062	0.378
CREL2	0.191	-0.064	0.255	0.142	0.159
CREL4	0.407	0.116	0.449	0.338	0.341
CREL5	0.344	0.333	0.420	0.096	0.313
A26A	0.244	0.191	0.278	0.156	0.190
A26B	-0.003	0.018	-0.238	-0.027	-0.015
A28	0.129	-0.105	0.106	0.592*	0.176
A30	0.208	0.094	-0.007	0.605*	0.212
A31	-0.352	-0.588*	-0.408	-0.125	-0.352
A32	0.304	0.017	-0.110	0.571*	0.238
A33	0.318	0.199	0.014	0.329	0.279
A38	0.115	0.033	-0.018	0.432	0.093
D2	0.048	0.118	0.117	-0.295	0.005
D13	0.120	0.014	0.097	0.324	0.150
D16	-0.009	0.057	0.010	0.245	0.032
D19	0.206	0.081	0.155	-0.031	0.183

D22	0.295	0.255	0.204	0.293	0.260
D25	0.081	-0.087	-0.028	0.404	0.053
E12	-0.109	-0.085	-0.040	-0.196	-0.124
E29	-0.016	0.161	-0.053	-0.175	-0.016

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	1.000				
RDAY1	0.393	1.000			
RDAY2	0.252	0.471	1.000		
RDAY4	0.554*	0.578*	0.680*	1.000	
RDAY5	0.795*	0.386	0.449	0.502*	1.000
CREL1	0.035	0.391	-0.047	0.353	0.052
CREL2	-0.210	0.251	0.091	0.130	-0.196
CREL4	-0.014	0.441	0.272	0.343	0.053
CREL5	0.295	0.391	-0.034	0.251	0.285
A26A	0.159	0.208	0.172	0.214	0.114
A26B	0.026	-0.156	-0.193	-0.047	-0.064
A28	-0.014	0.054	0.514*	0.096	-0.024
A30	0.138	0.031	0.531*	0.184	0.095
A31	-0.483	-0.409	0.070	-0.267	-0.481
A32	0.068	-0.063	0.613*	0.273	0.096
A33	0.153	0.054	0.316	0.306	0.122
A38	0.084	0.024	0.463	0.125	0.072
D2	0.082	0.103	-0.327	0.067	0.090
D13	0.058	0.087	0.355	0.097	0.026
D16	0.107	-0.013	0.149	-0.087	0.092
D19	0.145	0.149	-0.168	0.091	0.105
D22	0.260	0.279	0.332	0.289	0.281
D25	-0.131	-0.017	0.444	0.111	0.030
E12	-0.157	-0.060	-0.156	-0.058	-0.103
E29	0.131	-0.085	-0.298	-0.062	0.142

	CREL1	CREL2	CREL4	CREL5	A26A
CREL1	1.000				
CREL2	0.881*	1.000			
CREL4	0.851*	0.967*	1.000		
CREL5	0.646*	0.774*	0.755*	1.000	
A26A	0.006	0.111	0.033	0.212	1.000
A26B	-0.195	-0.370	-0.380	-0.278	0.356
A28	0.047	0.145	0.159	0.226	-0.030
A30	0.044	0.086	0.208	0.014	-0.000
A31	-0.153	-0.064	-0.095	-0.327	-0.331
A32	-0.222	-0.356	-0.181	-0.384	0.069
A33	0.193	0.144	0.197	0.169	0.074
A38	-0.207	-0.260	-0.078	-0.249	-0.152
D2	-0.067	-0.032	-0.043	0.073	0.315
D13	0.066	-0.028	0.114	0.014	0.083
D16	0.050	0.094	0.075	0.096	0.265
D19	-0.121	-0.070	-0.023	0.116	0.027
D22	-0.194	-0.222	-0.078	-0.037	-0.014
D25	0.200	0.144	0.142	0.102	-0.189
E12	0.057	0.096	0.146	0.099	0.266
E29	-0.108	-0.223	-0.174	-0.019	0.202

	A26B	A28	A30	A31	A32
A26B	1.000				
A28	-0.180	1.000			
A30	0.171	0.813*	1.000		
A31	0.007	0.096	0.060	1.000	
A32	-0.023	0.463	0.560*	0.444	1.000
A33	0.125	0.579*	0.620*	0.293	0.448
A38	0.009	0.388	0.258	0.317	0.642*
D2	0.104	-0.210	0.010	-0.279	-0.383
D13	-0.063	0.215	0.301	-0.135	0.286
D16	0.202	0.143	0.125	-0.210	-0.253
D19	0.076	0.151	0.353	-0.350	-0.177
D22	-0.013	0.350	0.352	0.027	0.121
D25	0.034	0.123	0.222	0.133	0.084
E12	0.183	-0.089	-0.022	0.307	-0.062
E29	0.274	-0.186	0.033	-0.209	-0.096

	A33	A38	D2	D13	D16
A33	1.000				
A38	0.443	1.000			
D2	-0.163	-0.544*	1.000		
D13	0.053	-0.085	-0.092	1.000	
D16	0.175	-0.250	0.324	0.124	1.000
D19	0.213	-0.161	0.373	-0.047	0.499
D22	0.091	0.382	-0.157	0.085	-0.123
D25	0.236	0.132	-0.172	0.059	-0.054
E12	0.075	0.268	0.051	-0.106	-0.037
E29	-0.164	-0.213	0.327	-0.058	0.213

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.408	1.000			
D25	0.095	0.443	1.000		
E12	-0.283	0.026	-0.025	1.000	
E29	0.279	-0.074	-0.057	0.403	1.000

[a] *OF 595 γ COEFFICIENTS, 11 PERCENT (66) REDUCE PREDICTION ERROR ≥ 50 PERCENT.*

Table 9T

PEARSON CORRELATION MATRIX, 35 TRADITIONAL AOSIS VARIABLES, *MIXED* SUBSAMPLE OF TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 168), 1989-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	1.000				
RHHSI	0.031	1.000			
RHHTYPE	-0.158	0.282	1.000		
CACT1	-0.047	0.064	-0.107	1.000	
CACT2	-0.083	0.030	0.045	0.163	1.000
CACT4	0.034	0.054	-0.102	0.470	0.288
CACT5	-0.014	0.079	-0.072	0.291	0.110
CMN1	-0.165	0.028	-0.005	0.622	0.181
CMN2	-0.063	0.053	0.084	0.195	0.713
CMN4	0.042	0.070	-0.021	0.402	0.261
CMN5	0.005	0.009	-0.113	0.281	0.185
RDAY1	-0.138	0.070	-0.014	0.807	0.315
RDAY2	-0.136	0.050	0.084	0.111	0.849
RDAY4	-0.026	0.111	-0.014	0.273	0.383
RDAY5	-0.160	0.063	-0.003	0.252	0.258
CREL1	0.065	-0.050	-0.132	0.116	-0.022
CREL2	0.129	-0.080	-0.203	0.136	-0.055
CREL4	0.095	0.003	-0.053	0.217	0.051
CREL5	-0.033	0.006	-0.041	0.210	0.007
A26A	0.075	0.074	-0.018	0.159	0.073
A26B	-0.013	0.137	0.012	-0.134	-0.029
A28	-0.183	0.193	0.135	0.011	0.190
A30	-0.020	0.208	0.065	-0.001	0.207
A31	0.187	-0.001	0.041	-0.278	-0.037
A32	-0.108	0.017	0.053	-0.032	0.262
A33	-0.089	0.254	0.159	-0.010	0.140
A38	-0.041	0.116	0.213	-0.036	0.174
D2	-0.138	0.158	-0.076	0.099	-0.137
D13	0.105	-0.138	-0.043	0.077	0.131
D16	-0.110	-0.077	-0.043	-0.030	0.074
D19	-0.217	0.064	-0.036	0.089	-0.004
D22	0.083	0.310	0.023	0.125	0.092
D25	0.028	-0.065	0.149	-0.028	0.152
E12	-0.014	0.042	0.071	-0.018	-0.050
E29	0.054	-0.142	-0.057	-0.026	-0.067

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	1.000				
CACT5	0.389	1.000			
CMN1	0.258	0.220	1.000		
CMN2	0.245	0.150	0.325	1.000	
CMN4	0.792	0.353	0.258	0.294	1.000
CMN5	0.451	0.561	0.225	0.352	0.521
RDAY1	0.459	0.272	0.641	0.384	0.395
RDAY2	0.231	0.054	0.217	0.633	0.272
RDAY4	0.724	0.288	0.119	0.330	0.741
RDAY5	0.340	0.633	0.200	0.202	0.328
CREL1	0.154	0.010	-0.043	0.095	0.148
CREL2	0.067	-0.036	0.003	0.021	0.032
CREL4	0.057	-0.016	0.086	0.103	0.020
CREL5	0.092	-0.031	0.150	0.100	0.089
A26A	0.144	0.114	0.090	-0.089	0.103
A26B	-0.007	0.023	-0.081	-0.007	-0.022
A28	0.063	-0.052	0.107	0.197	0.154
A30	0.102	0.047	-0.073	0.129	0.152
A31	-0.213	-0.384	-0.201	-0.146	-0.288
A32	0.136	0.031	-0.055	0.135	0.096
A33	0.167	0.094	0.024	0.116	0.159
A38	0.064	0.005	-0.034	0.225	0.072
D2	0.023	0.070	0.065	-0.231	-0.076
D13	0.083	0.012	0.028	0.095	0.169
D16	-0.006	0.015	-0.015	-0.013	0.062

D19	0.101	0.041	0.064	-0.059	0.110
D22	0.144	0.126	-0.023	0.179	0.156
D25	0.054	-0.066	0.040	0.149	0.023
E12	-0.079	-0.076	-0.070	0.003	-0.133
E29	-0.009	0.097	-0.033	-0.041	0.003

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	1.000				
RDAY1	0.290	1.000			
RDAY2	0.079	0.321	1.000		
RDAY4	0.414	0.332	0.411	1.000	
RDAY5	0.597	0.287	0.204	0.442	1.000
CREL1	-0.026	0.057	-0.032	0.124	-0.087
CREL2	-0.122	0.096	-0.107	-0.015	-0.185
CREL4	-0.085	0.149	-0.028	0.019	-0.065
CREL5	0.008	0.219	-0.065	0.025	-0.032
A26A	0.040	0.072	0.015	0.091	0.083
A26B	0.010	-0.053	-0.027	-0.003	-0.050
A28	0.080	0.049	0.151	0.087	0.067
A30	0.145	0.001	0.111	0.181	0.135
A31	-0.298	-0.208	0.036	-0.167	-0.286
A32	0.010	-0.014	0.269	0.148	0.108
A33	0.107	0.071	0.156	0.196	0.167
A38	0.123	0.014	0.169	0.153	0.059
D2	-0.065	0.050	-0.209	-0.041	0.046
D13	0.102	0.020	0.119	0.090	0.006
D16	0.120	-0.014	0.051	-0.030	0.084
D19	0.137	0.063	-0.054	0.046	0.116
D22	0.188	0.152	0.112	0.208	0.239
D25	-0.046	0.054	0.134	0.115	0.025
E12	-0.178	-0.071	-0.053	-0.022	-0.138
E29	0.103	-0.103	-0.139	-0.097	0.081

	CREL1	CREL2	CREL4	CREL5	A26A
CREL1	1.000				
CREL2	0.613	1.000			
CREL4	0.591	0.695	1.000		
CREL5	0.488	0.603	0.593	1.000	
A26A	-0.066	0.061	-0.022	0.123	1.000
A26B	-0.143	-0.248	-0.262	-0.237	0.263
A28	0.025	0.052	0.021	0.063	-0.010
A30	-0.016	0.026	0.033	-0.126	0.004
A31	-0.044	-0.051	-0.033	-0.166	-0.231
A32	-0.135	-0.210	-0.173	-0.257	0.036
A33	0.074	0.056	0.040	-0.006	0.047
A38	-0.093	-0.203	-0.037	-0.150	-0.107
D2	-0.076	0.031	-0.061	0.050	0.268
D13	0.058	-0.047	0.053	0.000	0.072
D16	0.050	0.014	0.003	0.017	0.197
D19	-0.068	-0.033	-0.036	0.040	0.012
D22	-0.057	-0.087	-0.035	-0.050	-0.008
D25	0.181	0.076	0.118	0.061	-0.150
E12	0.109	0.099	0.150	0.138	0.183
E29	-0.004	-0.124	-0.045	0.027	0.156

	A26B	A28	A30	A31	A32
A26B	1.000				
A28	-0.096	1.000			
A30	0.109	0.511	1.000		
A31	0.009	0.042	0.032	1.000	
A32	-0.026	0.230	0.281	0.303	1.000
A33	0.145	0.333	0.373	0.211	0.247
A38	0.058	0.237	0.163	0.213	0.451
D2	0.076	-0.162	-0.015	-0.233	-0.259
D13	-0.047	0.139	0.200	-0.112	0.101
D16	0.155	0.082	0.053	-0.122	-0.123
D19	0.044	0.075	0.179	-0.215	-0.074
D22	-0.018	0.176	0.177	0.015	0.025
D25	0.047	0.085	0.130	0.073	0.024
E12	0.133	-0.034	0.004	0.238	-0.011
E29	0.193	-0.112	0.021	-0.152	-0.065

	A33	A38	D2	D13	D16
A33	1.000				
A38	0.324	1.000			
D2	-0.120	-0.473	1.000		
D13	0.016	-0.114	-0.092	1.000	
D16	0.119	-0.181	0.248	0.088	1.000
D19	0.103	-0.095	0.249	-0.022	0.282
D22	0.055	0.217	-0.104	0.055	-0.050
D25	0.182	0.133	-0.156	0.054	-0.062
E12	0.057	0.249	0.055	-0.093	-0.052
E29	-0.098	-0.074	0.271	-0.040	0.142

	D19	D22	D25	E12	E29
D19	1.000				
D22	0.208	1.000			
D25	0.078	0.223	1.000		
E12	-0.153	0.039	-0.011	1.000	
E29	0.170	-0.042	-0.045	0.261	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 755.938 DF = 595 PROB = .000.*
PEARSONIAN r = .30 - 39 SIGNIFICANT AT FROM 0.008 TO 0.001.
PEARSONIAN R ≥ .40 SIGNIFICANT AT 0.000.

Table 9T

MATRIX OF BONFERRONI ADJUSTED PROBABILITIES FOR PEARSON CORRELATION MATRIX, 35 TRADITIONAL VARIABLES *MIXED* SUBSAMPLE OF TOTAL POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 168), 1989-1990[a]

	PPEMP	RHHSI	RHHTYPE	CACT1	CACT2
PPEMP	0.000				
RHHSI	1.000	0.000			
RHHTYPE	1.000	0.153	0.000		
CACT1	1.000	1.000	1.000	0.000	
CACT2	1.000	1.000	1.000	1.000	0.000
CACT4	1.000	1.000	1.000	0.000	0.090
CACT5	1.000	1.000	1.000	0.078	1.000
CMN1	1.000	1.000	1.000	0.000	1.000
CMN2	1.000	1.000	1.000	1.000	0.000
CMN4	1.000	1.000	1.000	0.000	0.375
CMN5	1.000	1.000	1.000	0.137	1.000
RDAY1	1.000	1.000	1.000	0.000	0.019
RDAY2	1.000	1.000	1.000	1.000	0.000
RDAY4	1.000	1.000	1.000	0.204	0.000
RDAY5	1.000	1.000	1.000	0.582	0.430
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	0.554
A33	1.000	0.649	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CACT4	CACT5	CMN1	CMN2	CMN4
CACT4	0.000				
CACT5	0.000	0.000			
CMN1	0.432	1.000	0.000		
CMN2	0.819	1.000	0.010	0.000	
CMN4	0.000	0.002	0.433	0.064	0.000
CMN5	0.000	0.000	1.000	0.002	0.000
RDAY1	0.000	0.213	0.000	0.000	0.000
RDAY2	1.000	1.000	1.000	0.000	0.213
RDAY4	0.000	0.089	1.000	0.008	0.000
RDAY5	0.004	0.000	1.000	1.000	0.008
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	0.060	1.000	1.000	1.000
A32	1.000	1.000	1.000	1.000	1.000
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000

D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CMN5	RDAY1	RDAY2	RDAY4	RDAY5
CMN5	0.000				
RDAY1	0.082	0.000			
RDAY2	1.000	0.013	0.000		
RDAY4	0.000	0.006	0.000	0.000	
RDAY5	0.000	0.097	1.000	0.000	0.000
CREL1	1.000	1.000	1.000	1.000	1.000
CREL2	1.000	1.000	1.000	1.000	1.000
CREL4	1.000	1.000	1.000	1.000	1.000
CREL5	1.000	1.000	1.000	1.000	1.000
A26A	1.000	1.000	1.000	1.000	1.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	0.389	1.000	1.000
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	CREL1	CREL2	CREL4	CREL5	A26A
CREL1	0.000				
CREL2	0.000	0.000			
CREL4	0.000	0.000	0.000		
CREL5	0.000	0.000	0.000	0.000	
A26A	1.000	1.000	1.000	1.000	0.000
A26B	1.000	1.000	1.000	1.000	1.000
A28	1.000	1.000	1.000	1.000	1.000
A30	1.000	1.000	1.000	1.000	1.000
A31	1.000	1.000	1.000	1.000	1.000
A32	1.000	1.000	1.000	0.698	1.000
A33	1.000	1.000	1.000	1.000	1.000
A38	1.000	1.000	1.000	1.000	1.000
D2	1.000	1.000	1.000	1.000	1.000
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A26B	A28	A30	A31	A32
A26B	0.000				
A28	1.000	0.000			
A30	1.000	0.000	0.000		
A31	1.000	1.000	1.000	0.000	
A32	1.000	1.000	0.217	1.000	0.000
A33	1.000	0.008	0.001	1.000	1.000
A38	1.000	1.000	1.000	1.000	0.000
D2	1.000	1.000	1.000	1.000	0.762
D13	1.000	1.000	1.000	1.000	1.000
D16	1.000	1.000	1.000	1.000	1.000
D19	1.000	1.000	1.000	1.000	1.000
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	1.000	1.000	1.000

	A33	A38	D2	D13	D16
A33	0.000				
A38	0.201	0.000			
D2	1.000	0.000	0.000		
D13	1.000	1.000	1.000	0.000	
D16	1.000	1.000	0.980	1.000	0.000
D19	1.000	1.000	0.965	1.000	0.155
D22	1.000	1.000	1.000	1.000	1.000
D25	1.000	1.000	1.000	1.000	1.000
E12	1.000	1.000	1.000	1.000	1.000
E29	1.000	1.000	0.326	1.000	1.000

	D19	D22	D25	E12	E29
D19	0.000				
D22	1.000	0.000			
D25	1.000	1.000	0.000		
E12	1.000	1.000	1.000	0.000	
E29	1.000	1.000	1.000	0.552	0.000

[a] *OF THE 595 CORRELATIONS IN THE TABLE, 7.6 PERCENT (45) ARE SIGNIFICANT ≤ .008.*

Table 10T

MATRIX OF GAMMA COEFFICIENTS, 25 TRADITIONAL AOSIS VARIABLES, TOTAL AOSIS PANEL (N = 170), FIRST RESEARCH WAVE, 1987-1988

	CACT1	CACT2	CACT4	CACT5	RDAY1
CACT1	1.000				
CACT2	0.661	1.000			
CACT4	0.778	0.698	1.000		
CACT5	0.711	0.625	0.758	1.000	
RDAY1	0.095	0.233	-0.075	-0.163	1.000
RDAY2	0.079	0.453	-0.025	-0.161	0.926
RDAY4	0.147	-0.053	0.043	-0.077	0.368
RDAY5	0.116	0.260	0.088	0.020	0.702
A28	0.458	0.771	0.454	0.357	0.026
A30	0.435	0.528	0.459	0.316	-0.088
A31	-0.289	0.026	-0.068	-0.094	0.382
A32	0.141	0.002	0.195	0.048	-0.145
A33	0.025	0.525	0.216	0.049	0.038
A38	-0.018	0.210	0.003	-0.148	-0.005
D2	0.189	-0.218	-0.089	0.024	0.018
D3	0.310	0.457	0.217	0.287	-0.195
D22	0.095	0.443	0.203	0.282	-0.045
D25	0.296	0.569	0.181	0.043	0.102
D28	-0.619	-0.904	-0.710	-0.507	0.020
D29A	-0.261	-0.632	-0.572	-0.236	0.054
E29	0.027	-0.187	-0.017	-0.071	0.118
RHHTYPE	-0.149	-0.024	-0.161	-0.016	0.029
PPEMP	0.356	-0.118	0.152	0.152	-0.168
RHHSIZE	0.256	0.444	0.242	0.269	0.075
C6N	0.549	0.583	0.359	0.359	0.192

	RDAY2	RDAY4	RDAY5	A28	A30
RDAY2	1.000				
RDAY4	0.294	1.000			
RDAY5	0.693	0.386	1.000		
A28	0.162	-0.097	-0.033	1.000	
A30	0.019	-0.066	-0.239	0.732	1.000
A31	0.484	0.126	0.264	0.156	-0.343
A32	-0.117	0.102	0.050	0.398	0.315
A33	0.140	0.094	-0.013	0.764	0.787
A38	0.134	0.067	-0.044	0.582	0.480
D2	-0.011	0.154	0.074	-0.361	-0.231
D3	-0.173	-0.137	0.012	0.397	0.228
D22	-0.021	0.259	-0.003	0.285	0.005
D25	0.190	0.032	0.192	0.515	0.315
D28	-0.195	-0.005	0.058	-0.744	-0.654
D29A	-0.213	-0.020	0.018	-0.711	-0.614
E29	-0.033	0.096	0.171	-0.320	-0.187
RHHTYPE	0.108	-0.128	-0.052	0.107	0.132
PPEMP	-0.249	-0.127	-0.135	-0.229	0.009
RHHSIZE	0.182	-0.025	0.096	0.146	0.268
C6N	0.402	0.188	0.356	-0.380	-0.130

	A31	A32	A33	A38	D2
A31	1.000				
A32	0.111	1.000			
A33	-0.007	0.358	1.000		
A38	-0.014	0.200	0.435	1.000	
D2	-0.077	-0.183	-0.281	-0.316	1.000
D3	-0.254	0.226	0.135	-0.001	-0.027
D22	-0.112	0.063	0.221	0.138	-0.063
D25	0.002	0.247	0.430	0.319	-0.364
D28	0.006	-0.591	-0.729	-0.590	0.606
D29A	0.071	-0.480	-0.657	-0.340	0.436
E29	-0.046	-0.053	-0.114	0.234	0.345
RHHTYPE	0.231	0.179	0.038	0.057	-0.060

PPEMP	-0.246	0.364	-0.313	0.079	0.103
RHHSIZE	0.031	-0.040	0.210	0.075	0.106
C6N	0.024	-0.092	-0.335	-0.317	0.482

	D3	D22	D25	D28	D29A
D3	1.000				
D22	0.153	1.000			
D25	-0.065	0.516	1.000		
D28	-0.047	-1.000	-0.821	1.000	
D29A	-0.451	-0.277	-0.526	0.897	1.000
E29	0.151	0.148	-0.101	0.447	0.423
RHHTYPE	-0.209	0.115	0.379	-0.448	-0.171
PPEMP	0.483	-0.013	-0.112	-0.101	-0.244
RHHSIZE	-0.028	0.226	0.218	-0.472	-0.592
C6N	0.373	0.070	-0.517	0.210	0.511

	E29	RHHTYPE	PPEMP	RHHSIZE	C6N
E29	1.000				
RHHTYPE	-0.049	1.000			
PPEMP	0.206	-0.037	1.000		
RHHSIZE	-0.152	0.410	-0.113	1.000	
C6N	0.227	0.020	-0.137	-0.055	1.000

Table 11T

MATRIX OF GAMMA COEFFICIENTS, 25 TRADITIONAL AOSIS VARIABLES, TOTAL AOSIS PANEL (N = 170), SECOND RESEARCH WAVE, 1988-1989

	CACT1B	CACT2B	CACT4B	CACT5B	RDAY1B
CACT1B	1.000				
CACT2B	0.572	1.000			
CACT4B	0.780	0.716	1.000		
CACT5B	0.643	0.726	0.750	1.000	
RDAY1B	0.917	0.297	0.473	0.222	1.000
RDAY2B	0.197	0.898	0.389	0.333	0.448
RDAY4B	0.441	0.504	0.873	0.423	0.595
RDAY5B	0.127	0.587	0.461	0.831	0.286
BA28	0.305	0.492	0.346	0.263	0.441
BA30	0.355	0.592	0.126	0.265	0.469
BA31	-0.598	-0.505	-0.518	-0.623	-0.577
BA32	-0.199	0.346	-0.116	-0.014	-0.039
BA33	-0.016	0.541	-0.068	-0.010	0.275
BA38	0.000	0.504	-0.024	-0.046	0.130
BD2	0.097	-0.091	0.190	0.110	0.015
BD3	0.475	0.446	0.426	0.563	0.275
BD22	0.375	0.343	0.043	-0.083	0.258
BD25	0.048	-0.171	-0.276	-0.328	0.218
BD28	-0.377	-0.587	-0.118	-0.037	-0.569
BD29A	-0.368	-0.850	0.020	-0.333	-0.457
BE29	-0.123	0.012	-0.219	0.125	-0.162
BRHHTYPE	0.072	0.357	0.151	-0.208	0.102
BPPEMP	0.126	0.398	0.215	0.409	0.112
BRHHSIZE	0.222	0.394	0.249	0.030	0.202
BC6N	0.182	0.686	0.278	0.486	0.210

	RDAY2B	RDAY4B	RDAY5B	BA28	BA30
RDAY2B	1.000				
RDAY4B	0.537	1.000			
RDAY5B	0.576	0.542	1.000		
BA28	0.631	0.465	0.292	1.000	
BA30	0.654	0.365	0.278	0.798	1.000
BA31	-0.508	-0.474	-0.541	-0.051	-0.237
BA32	0.316	0.055	0.077	0.399	0.270
BA33	0.615	0.283	0.213	0.747	0.759
BA38	0.476	0.104	0.118	0.655	0.585
BD2	-0.122	0.058	-0.040	-0.430	-0.245
BD3	0.201	0.187	0.435	0.143	-0.025
BD22	0.180	0.016	-0.131	0.220	-0.066
BD25	0.214	-0.009	-0.066	0.123	-0.011
BD28	-0.685	-0.379	-0.110	-0.753	-0.436
BD29A	-0.784	-0.314	-0.418	-0.680	-0.503
BE29	-0.059	-0.124	0.035	-0.052	-0.101
BRHHTYPE	0.248	0.185	-0.140	0.272	0.250
BPPEMP	0.256	0.116	0.351	0.086	-0.065
BRHHSIZE	0.294	0.273	0.136	0.283	0.105
BC6N	0.662	0.109	0.390	-0.117	-0.172

	BA31	BA32	BA33	BA38	BD2
BA31	1.000				
BA32	0.024	1.000			
BA33	0.075	0.472	1.000		
BA38	0.045	0.404	0.629	1.000	
BD2	-0.096	-0.187	-0.482	-0.314	1.000
BD3	-0.598	-0.249	-0.202	-0.104	0.280
BD22	-0.107	0.272	0.124	0.137	-0.238
BD25	-0.202	0.424	0.150	0.221	-0.185
BD28	0.067	-0.875	-0.782	-0.745	0.607
BD29A	0.130	-0.706	-0.760	-0.647	0.697
BE29	0.261	0.116	0.028	-0.002	0.183
BRHHTYPE	0.048	0.245	0.242	0.380	-0.180
BPPEMP	-0.476	0.035	-0.283	-0.086	0.175
BRHHSIZE	-0.135	0.060	0.106	0.241	0.066
BC6N	-0.552	-0.133	-0.454	0.060	0.339

	BD3	BD22	BD25	BD28	BD29A
BD3	1.000				
BD22	-0.043	1.000			
BD25	-0.028	0.568	1.000		
BD28	0.179	-1.000	-0.740	1.000	
BD29A	-0.122	-0.752	-0.639	0.942	1.000
BE29	0.050	-0.070	-0.088	0.140	-0.111
BRHHTYPE	-0.304	0.324	0.178	-0.569	-0.508
BPPEMP	0.570	0.111	-0.038	0.031	0.124
BRHHSIZE	-0.057	0.257	0.116	-0.456	-0.439
BC6N	0.810	0.272	-0.429	-0.163	0.043

	BE29	BRHHTYPE	BPPEMP	BRHHSIZE	BC6N
BE29	1.000				
BRHHTYPE	-0.166	1.000			
BPPEMP	-0.189	-0.073	1.000		
BRHHSIZE	-0.205	0.512	0.040	1.000	
BC6N	-0.493	0.016	0.822	0.142	1.000

Table 12T

MATRIX OF GAMMA COEFFICIENTS, 25 TRADITIONAL AOSIS VARIABLES, TOTAL AOSIS PANEL (N = 170), THIRD RESEARCH WAVE, 1989-1990

	CACT1C	CACT2C	CACT4C	CACT5C	RDAY1C
CACT1C	1.000				
CACT2C	0.070	1.000			
CACT4C	0.795	0.483	1.000		
CACT5C	0.664	0.446	0.771	1.000	
RDAY1C	1.000	0.079	0.692	0.595	1.000
RDAY2C	0.134	1.000	0.478	0.423	0.141
RDAY4C	0.617	0.500	1.000	0.747	0.517
RDAY5C	0.480	0.466	0.702	1.000	0.409
A28C	0.066	0.625	0.319	0.399	0.102
A30C	0.067	0.652	0.333	0.379	0.016
A31C	-0.457	-0.335	-0.071	-0.507	-0.412
A32C	-0.078	0.491	0.202	0.120	-0.033
A33C	0.096	0.691	0.422	0.382	0.123
A38C	-0.238	0.336	-0.042	0.012	-0.181
D2C	0.326	-0.326	0.102	0.017	0.286
D3C	0.442	0.097	0.695	0.635	0.303
D22C	-0.016	-0.016	-0.300	-0.527	-0.037
D25C	0.035	0.187	0.076	-0.061	0.021
D28C	0.213	-0.897	-0.223	0.006	0.117
D29AC	0.194	-0.588	-0.109	-0.153	0.143
E29C	0.053	-0.354	-0.271	-0.195	0.032
RHHTYPEC	-0.091	0.201	0.000	-0.208	-0.045
PPEMPC	0.066	0.280	0.216	0.301	0.045
RHHSIZEC	0.172	0.313	0.236	0.287	0.175
C6NC	0.407	0.078	0.465	0.393	0.366

	RDAY2C	RDAY4C	RDAY5C	A28C	A30C
RDAY2C	1.000				
RDAY4C	0.473	1.000			
RDAY5C	0.416	0.623	1.000		
A28C	0.610	0.280	0.372	1.000	
A30C	0.633	0.294	0.355	0.879	1.000
A31C	-0.292	0.018	-0.301	-0.085	0.015
A32C	0.402	0.186	0.229	0.579	0.478
A33C	0.677	0.358	0.405	0.703	0.765
A38C	0.274	-0.031	0.102	0.608	0.584
D2C	-0.308	0.040	-0.071	-0.362	-0.392
D3C	0.031	0.525	0.548	0.003	0.036
D22C	-0.024	-0.172	-0.206	0.194	0.129
D25C	0.142	0.071	-0.035	0.107	0.067
D28C	-0.881	-0.319	-0.312	-0.768	-0.574
D29AC	-0.495	-0.143	-0.272	-0.600	-0.490
E29C	-0.325	-0.242	-0.186	-0.296	-0.227
RHHTYPEC	0.154	0.058	-0.043	0.313	0.208
PPEMPC	0.222	0.132	0.231	0.006	-0.038
RHHSIZEC	0.298	0.267	0.291	0.545	0.166
C6NC	-0.039	0.347	0.380	-0.134	-0.480

	A31C	A32C	A33C	A38C	D2C
A31C	1.000				
A32C	0.032	1.000			
A33C	-0.087	0.418	1.000		
A38C	-0.053	0.248	0.437	1.000	
D2C	-0.159	-0.145	-0.439	-0.413	1.000
D3C	-0.332	0.086	-0.008	-0.006	0.169
D22C	0.125	-0.022	-0.024	-0.077	-0.001
D25C	0.023	0.059	-0.048	-0.011	0.016
D28C	-0.181	-0.680	-0.599	-0.731	0.714
D29AC	0.080	-0.399	-0.502	-0.642	0.616
E29C	-0.015	-0.283	-0.203	-0.139	0.296
RHHTYPEC	0.255	0.310	0.234	0.147	-0.197
PPEMPC	-0.251	0.055	-0.018	-0.058	0.089
RHHSIZEC	0.013	0.391	0.283	0.062	0.043
C6NC	-0.179	0.114	-0.141	-0.308	0.534

	D3C	D22C	D25C	D28C	D29AC
D3C	1.000				
D22C	0.062	1.000			
D25C	0.073	0.004	1.000		
D28C	0.119	-1.000	-0.339	1.000	
D29AC	-0.146	0.224	-0.509	0.853	1.000
E29C	-0.011	-0.241	0.105	0.292	0.063
RHHTYPEC	-0.277	0.118	0.088	-0.500	-0.461
PPEMPC	0.500	0.126	-0.049	0.119	0.269
RHHSIZEC	-0.009	0.043	0.053	-0.381	-0.585
C6NC	0.638	0.377	-0.192	0.207	0.580

	E29C	RHHTYPEC	PPEMPC	RHHSIZEC	C6NC
E29C	1.000				
RHHTYPEC	-0.222	1.000			
PPEMPC	-0.400	0.023	1.000		
RHHSIZEC	-0.273	0.510	0.228	1.000	
C6NC	-0.286	0.105	0.808	0.280	1.000

Table 13W

PEARSON CORRELATION MATRIX, 31 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 548), 1987-1988[a]

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	1.000				
RAGES	-0.141	1.000			
PPEMP	-0.211	0.023	1.000		
RHHTYPE	0.187	0.061	-0.057	1.000	
RHHSIZE	0.075	-0.025	-0.121	0.265	1.000
COMFISH	-0.146	0.014	-0.252	0.075	0.173
RACEVIL	0.129	-0.076	0.125	-0.112	-0.214
TOTACT	-0.327	-0.029	0.000	-0.063	0.234
B1	0.062	-0.214	-0.041	-0.103	-0.049
B3	0.101	-0.213	-0.014	0.003	-0.022
B8	0.012	-0.312	0.024	-0.119	-0.084
B9	0.029	0.143	0.092	0.118	0.012
C1	0.077	-0.328	-0.094	-0.108	-0.039
C6N	-0.059	-0.309	0.014	-0.083	0.051
C12	-0.151	-0.066	0.167	-0.125	-0.145
C12M	-0.016	0.010	0.111	-0.062	0.032
D2	0.038	-0.061	-0.050	-0.101	0.059
D3	-0.220	-0.057	0.306	-0.119	-0.002
D4	0.102	0.001	-0.105	-0.037	0.171
D6	0.037	-0.142	-0.084	-0.087	-0.061
D8	0.089	0.113	0.049	-0.033	0.142
D19	-0.060	0.167	-0.169	0.116	0.078
D24	-0.135	0.098	-0.081	0.129	0.165
D25	-0.080	0.168	-0.076	0.170	0.175
D26	-0.158	0.099	-0.091	0.088	0.153
D27	-0.104	0.001	0.018	0.015	0.119
D28	0.066	-0.105	0.007	-0.192	-0.225
D29	-0.017	0.089	-0.010	-0.162	0.417
D29A	0.212	-0.163	-0.032	-0.136	-0.271
E50	0.041	-0.053	-0.007	0.007	-0.057
E52	0.047	0.061	-0.052	0.105	0.091

	COMFISH	RACEVIL	TOTACT	B1	B3
COMFISH	1.000				
RACEVIL	-0.331	1.000			
TOTACT	0.138	-0.119	1.000		
B1	-0.051	0.191	0.036	1.000	
B3	0.036	0.119	0.012	0.367	1.000
B8	-0.026	0.168	0.086	0.256	0.176
B9	-0.032	-0.076	0.007	-0.296	-0.266
C1	-0.152	0.322	0.031	0.375	0.231
C6N	-0.054	0.112	0.254	0.172	0.078
C12	-0.053	0.164	0.034	0.161	0.112
C12M	-0.253	0.034	-0.049	0.083	-0.018
D2	-0.159	0.381	0.072	0.294	0.099
D3	-0.238	0.032	0.240	0.071	-0.068
D4	-0.152	0.330	-0.030	0.221	0.108
D6	0.053	0.150	-0.064	0.178	0.118
D8	-0.177	0.170	0.039	0.112	0.006
D19	0.109	-0.100	0.095	-0.001	-0.062
D24	0.419	-0.402	0.244	-0.191	-0.065
D25	0.191	-0.245	0.090	-0.102	-0.097
D26	0.382	-0.403	0.262	-0.208	-0.024
D27	0.174	-0.001	0.278	0.036	0.036
D28	-0.280	0.441	-0.232	0.274	0.081
D29	-0.086	-0.039	0.147	0.019	-0.017
D29A	-0.241	0.468	-0.245	0.295	0.161
E50	-0.011	0.010	-0.120	-0.031	0.024
E52	0.140	-0.067	0.128	-0.069	-0.033

	B8	B9	C1	C6N	C12
B8	1.000				
B9	-0.146	1.000			
C1	0.378	-0.175	1.000		
C6N	0.217	-0.115	0.284	1.000	
C12	0.083	-0.053	0.219	0.146	1.000
C12M	-0.037	0.005	0.070	0.086	0.206
D2	0.244	-0.086	0.477	0.221	0.104
D3	0.070	0.008	0.095	0.221	0.125
D4	0.155	-0.113	0.396	0.136	0.051
D6	0.196	-0.082	0.176	0.078	0.009
D8	0.143	0.045	0.177	-0.009	-0.031
D19	0.007	-0.004	0.005	0.063	-0.067
D24	-0.092	0.036	-0.329	-0.044	-0.128
D25	-0.102	0.038	-0.268	-0.090	-0.143
D26	-0.084	0.030	-0.319	-0.058	-0.106
D27	0.047	-0.028	0.020	0.200	0.077
D28	0.176	-0.113	0.450	0.121	0.095
D29	-0.015	0.030	0.040	0.085	-0.067
D29A	0.226	-0.072	0.443	0.058	0.065
E50	0.005	0.028	-0.047	-0.101	-0.096
E52	-0.107	0.008	-0.074	-0.036	-0.043

	C12M	D2	D3	D4	D6
C12M	1.000				
D2	-0.014	1.000			
D3	0.165	0.042	1.000		
D4	-0.061	0.631	-0.001	1.000	
D6	-0.072	0.206	-0.085	0.148	1.000
D8	0.013	0.424	0.058	0.389	0.093
D19	-0.060	0.142	-0.048	0.119	0.025
D24	-0.039	-0.316	-0.080	-0.306	-0.136
D25	-0.037	-0.169	0.005	-0.137	-0.109
D26	-0.078	-0.315	-0.085	-0.296	-0.115
D27	-0.043	0.082	0.087	0.036	0.051
D28	-0.043	0.419	-0.026	0.377	0.184
D29	0.038	0.200	0.113	0.264	0.069
D29A	-0.034	0.343	-0.060	0.333	0.275
E50	-0.119	-0.010	-0.164	0.044	0.117
E52	0.042	-0.160	0.055	-0.114	-0.121

	D8	D19	D24	D25	D26
D8	1.000				
D19	0.156	1.000			
D24	-0.161	0.106	1.000		
D25	-0.009	0.196	0.482	1.000	
D26	-0.142	0.053	0.837	0.457	1.000
D27	-0.005	0.092	0.126	0.072	0.093
D28	0.186	-0.083	-0.756	-0.527	-0.677
D29	0.270	0.105	-0.119	-0.014	-0.084
D29A	0.183	-0.145	-0.480	-0.332	-0.457
E50	-0.029	-0.015	-0.006	0.005	-0.029
E52	-0.022	0.025	0.215	0.122	0.243

	D27	D28	D29	D29A	E50	E52
D27	1.000					
D28	-0.129	1.000				
D29	0.067	0.050	1.000			
D29A	-0.150	0.623	0.049	1.000		
E50	-0.072	-0.008	-0.034	-0.017	1.000	
E52	0.022	-0.226	0.014	-0.197	-0.367	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 2153.174 DF = 465 PROB = .000.*
PEARSON r = .08 P≤.05; r = .11 P≤.01; r = .14 P≤.001.
P≤.05 FOR 255 (55%) OF 465 PEARSON'S r COEFFICIENTS IN THIS MATRIX.

Table 13W

MATRIX OF PROBABILITIES, 31 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 548), 1987-1988

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	0.000				
RAGES	0.001	0.000			
PPEMP	0.000	0.646	0.000		
RHHTYPE	0.000	0.173	0.258	0.000	
RHHSIZE	0.089	0.573	0.016	0.000	0.000
COMFISH	0.001	0.751	0.000	0.090	0.000
RACEVIL	0.002	0.082	0.011	0.011	0.000
TOTACT	0.000	0.572	0.994	0.225	0.000
B1	0.146	0.000	0.405	0.020	0.268
B3	0.020	0.000	0.784	0.952	0.622
B8	0.786	0.000	0.632	0.007	0.057
B9	0.502	0.001	0.062	0.008	0.785
C1	0.074	0.000	0.055	0.015	0.376
C6N	0.167	0.000	0.773	0.061	0.249
C12	0.001	0.136	0.001	0.005	0.001
C12M	0.710	0.820	0.025	0.166	0.476
D2	0.399	0.181	0.327	0.029	0.201
D3	0.000	0.202	0.000	0.008	0.957
D4	0.026	0.986	0.042	0.437	0.000
D6	0.395	0.001	0.093	0.053	0.175
D8	0.039	0.010	0.324	0.456	0.001
D19	0.160	0.000	0.001	0.009	0.080
D24	0.002	0.025	0.099	0.003	0.000
D25	0.063	0.000	0.120	0.000	0.000
D26	0.000	0.025	0.067	0.049	0.001
D27	0.016	0.987	0.721	0.737	0.007
D28	0.130	0.018	0.885	0.000	0.000
D29	0.692	0.044	0.841	0.000	0.000
D29A	0.000	0.003	0.612	0.016	0.000
E50	0.407	0.289	0.894	0.897	0.261
E52	0.289	0.175	0.308	0.022	0.046

	COMFISH	RACEVIL	TOTACT	B1	B3
COMFISH	0.000				
RACEVIL	0.000	0.000			
TOTACT	0.006	0.017	0.000		
B1	0.234	0.000	0.473	0.000	
B3	0.404	0.006	0.818	0.000	0.000
B8	0.548	0.000	0.086	0.000	0.000
B9	0.457	0.079	0.898	0.000	0.000
C1	0.000	0.000	0.540	0.000	0.000
C6N	0.209	0.009	0.000	0.000	0.074
C12	0.224	0.000	0.508	0.000	0.011
C12M	0.000	0.430	0.332	0.053	0.689
D2	0.000	0.000	0.167	0.000	0.030
D3	0.000	0.462	0.000	0.107	0.128
D4	0.001	0.000	0.568	0.000	0.020
D6	0.225	0.001	0.213	0.000	0.008
D8	0.000	0.000	0.434	0.009	0.886
D19	0.011	0.019	0.059	0.982	0.158
D24	0.000	0.000	0.000	0.000	0.139
D25	0.000	0.000	0.070	0.017	0.026
D26	0.000	0.000	0.000	0.000	0.583
D27	0.000	0.975	0.000	0.406	0.414
D28	0.000	0.000	0.000	0.000	0.069
D29	0.045	0.361	0.003	0.659	0.694
D29A	0.000	0.000	0.000	0.000	0.003
E50	0.818	0.840	0.036	0.528	0.630
E52	0.002	0.131	0.012	0.118	0.460

	B8	B9	C1	C6N	C12
B8	0.000				
B9	0.001	0.000			
C1	0.000	0.000	0.000		
C6N	0.000	0.008	0.000	0.000	
C12	0.059	0.233	0.000	0.001	0.000
C12M	0.394	0.903	0.109	0.048	0.000
D2	0.000	0.056	0.000	0.000	0.021
D3	0.112	0.853	0.033	0.000	0.005
D4	0.001	0.015	0.000	0.003	0.269
D6	0.000	0.064	0.000	0.075	0.838
D8	0.001	0.297	0.000	0.837	0.474
D19	0.879	0.934	0.914	0.141	0.123
D24	0.032	0.412	0.000	0.303	0.003
D25	0.017	0.385	0.000	0.037	0.001
D26	0.054	0.505	0.000	0.182	0.016
D27	0.276	0.521	0.643	0.000	0.079
D28	0.000	0.011	0.000	0.006	0.031
D29	0.731	0.488	0.351	0.049	0.126
D29A	0.000	0.190	0.000	0.292	0.244
E50	0.924	0.570	0.348	0.042	0.055
E52	0.017	0.859	0.098	0.421	0.339

	C12M	D2	D3	D4	D6
C12M	0.000				
D2	0.749	0.000			
D3	0.000	0.361	0.000		
D4	0.185	0.000	0.990	0.000	
D6	0.100	0.000	0.056	0.001	0.000
D8	0.769	0.000	0.189	0.000	0.034
D19	0.168	0.001	0.281	0.009	0.565
D24	0.362	0.000	0.070	0.000	0.002
D25	0.389	0.000	0.916	0.003	0.012
D26	0.077	0.000	0.055	0.000	0.010
D27	0.323	0.068	0.050	0.435	0.245
D28	0.331	0.000	0.559	0.000	0.000
D29	0.384	0.000	0.010	0.000	0.115
D29A	0.534	0.000	0.282	0.000	0.000
E50	0.017	0.843	0.001	0.399	0.018
E52	0.344	0.000	0.231	0.015	0.007

	D8	D19	D24	D25	D26
D8	0.000				
D19	0.000	0.000			
D24	0.000	0.013	0.000		
D25	0.834	0.000	0.000	0.000	
D26	0.001	0.223	0.000	0.000	0.000
D27	0.901	0.033	0.004	0.095	0.034
D28	0.000	0.056	0.000	0.000	0.000
D29	0.000	0.015	0.006	0.736	0.055
D29A	0.001	0.008	0.000	0.000	0.000
E50	0.557	0.755	0.905	0.921	0.567
E52	0.618	0.582	0.000	0.006	0.000

	D27	D28	D29	D29A	E50	E52
D27	0.000					
D28	0.003	0.000				
D29	0.122	0.253	0.000			
D29A	0.006	0.000	0.376	0.000		
E50	0.144	0.870	0.494	0.784	0.000	
E52	0.625	0.000	0.746	0.000	0.000	0.000

Table 13W

FREQUENCY TABLE, 31 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 548), 1987-1988

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	547				
RAGES	524	524			
PPEMP	416	401	416		
RHHTYPE	514	494	394	514	
RHHSIZE	516	496	395	486	516
COMFISH	547	524	416	514	516
RACEVIL	547	524	416	514	516
TOTACT	402	381	297	372	390
B1	546	523	415	513	516
B3	527	505	401	496	499
B8	542	519	412	509	512
B9	531	509	409	501	501
C1	537	514	412	505	506
C6N	542	519	413	509	512
C12	527	507	411	497	496
C12M	538	516	407	506	507
D2	504	486	392	474	476
D3	518	499	400	490	495
D4	478	459	378	449	458
D6	528	505	405	497	497
D8	542	519	415	509	511
D19	543	520	413	510	512
D24	545	522	416	512	515
D25	547	524	416	514	516
D26	527	506	404	495	497
D27	537	516	412	505	508
D28	528	507	399	495	497
D29	542	519	414	510	511
D29A	337	323	258	314	311
E50	412	395	325	389	394
E52	509	490	390	477	480

	COMFISH	RACEVIL	TOTACT	B1	B3
COMFISH	548				
RACEVIL	548	548			
TOTACT	402	402	402		
B1	547	547	401	547	
B3	528	528	390	527	528
B8	543	543	399	542	523
B9	532	532	387	531	514
C1	538	538	394	537	518
C6N	543	543	397	542	524
C12	528	528	385	527	511
C12M	539	539	393	538	519
D2	505	505	369	505	487
D3	519	519	384	518	502
D4	478	478	359	478	463
D6	529	529	386	528	510
D8	543	543	397	542	523
D19	544	544	400	543	524
D24	546	546	401	545	527
D25	548	548	402	547	528
D26	528	528	383	527	512
D27	538	538	393	538	520
D28	529	529	383	528	509
D29	543	543	397	542	523
D29A	337	337	240	336	326
E50	412	412	306	412	397
E52	510	510	379	509	493

	B8	B9	C1	C6N	C12
B8	543				
B9	529	532			
C1	535	526	538		
C6N	538	527	533	543	
C12	523	515	519	524	528
C12M	534	523	529	534	519
D2	503	493	499	501	491
D3	516	506	511	514	502
D4	475	466	472	473	464
D6	525	516	521	524	511
D8	538	527	533	538	523
D19	540	529	535	539	524
D24	541	530	536	541	526
D25	543	532	538	543	528
D26	523	512	519	524	510
D27	533	525	529	533	520
D28	524	513	519	524	509
D29	538	529	534	538	525
D29A	334	332	332	334	324
E50	409	401	407	407	398
E52	506	495	501	505	492

	C12M	D2	D3	D4	D6
C12M	539				
D2	496	505			
D3	510	483	519		
D4	469	454	457	478	
D6	520	492	504	468	529
D8	534	501	515	475	524
D19	535	502	516	476	526
D24	537	504	517	477	527
D25	539	505	519	478	529
D26	519	488	504	460	510
D27	529	501	509	475	521
D28	522	489	500	461	510
D29	534	502	515	474	525
D29A	333	310	324	295	328
E50	403	386	393	376	403
E52	501	474	485	457	493

	D8	D19	D24	D25	D26
D8	543				
D19	539	544			
D24	541	542	546		
D25	543	544	546	548	
D26	523	524	528	528	528
D27	533	534	536	538	518
D28	525	526	527	529	509
D29	538	539	541	543	523
D29A	334	335	336	337	327
E50	410	410	411	412	396
E52	505	508	509	510	493

	D27	D28	D29	D29A	E50	E52
D27	538					
D28	520	529				
D29	535	524	543			
D29A	330	332	335	337		
E50	410	394	409	258	412	
E52	502	491	505	319	394	510

Table 14W

PEARSON CORRELATION MATRIX, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *NATIVE* PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 285), 1987-1988[a]

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	1.000				
PPEMP	0.014	1.000			
RHHTYPE	0.038	0.007	1.000		
RHHSIZE	-0.117	-0.009	0.122	1.000	
TOTACT	-0.015	0.064	-0.106	0.279	1.000
B1	-0.287	-0.080	-0.029	0.081	0.077
B3	-0.241	-0.071	0.011	-0.070	0.052
B8	-0.278	0.040	-0.104	0.007	0.127
B9	0.158	0.181	0.094	-0.067	-0.029
C1	-0.476	-0.061	-0.031	0.114	0.082
C6N	-0.303	0.040	-0.106	0.171	0.414
C12	-0.048	0.200	-0.076	-0.082	0.073
C12M	-0.087	0.109	-0.006	0.109	-0.059
D2	-0.029	-0.092	-0.040	0.159	0.086
D3	-0.063	0.338	-0.094	0.103	0.365
D4	0.057	-0.233	-0.046	0.264	0.020
D6	-0.121	-0.124	-0.053	-0.110	-0.135
D8	0.141	0.031	-0.091	0.163	0.071
D19	0.196	-0.052	0.037	0.010	0.136
D24	0.097	-0.051	0.012	0.042	0.198
D25	0.100	-0.028	0.098	0.104	0.019
D26	0.058	-0.113	-0.048	0.105	0.190
D27	0.029	0.042	-0.083	0.124	0.326
D28	-0.087	-0.083	-0.115	-0.091	-0.116
D29	0.160	0.044	-0.266	0.399	0.261
D29A	-0.085	-0.009	-0.073	-0.071	-0.152
E50	-0.036	-0.105	-0.054	-0.097	-0.114

	B1	B3	B8	B9	C1
B1	1.000				
B3	0.348	1.000			
B8	0.177	0.116	1.000		
B9	-0.318	-0.302	-0.109	1.000	
C1	0.301	0.219	0.308	-0.230	1.000
C6N	0.183	0.066	0.174	-0.169	0.280
C12	0.188	0.137	0.084	-0.046	0.159
C12M	0.111	-0.010	-0.037	-0.027	0.066
D2	0.160	0.034	0.138	-0.046	0.268
D3	0.015	-0.124	0.072	0.031	0.062
D4	0.151	0.060	0.073	-0.115	0.234
D6	0.182	0.164	0.222	-0.065	0.145
D8	0.086	-0.029	0.105	0.109	0.039
D19	-0.072	-0.161	-0.056	0.020	-0.090
D24	-0.017	0.021	-0.009	-0.036	-0.200
D25	0.039	-0.116	-0.103	0.027	-0.214
D26	-0.045	0.056	0.012	-0.043	-0.158
D27	0.031	0.014	0.059	-0.011	0.011
D28	0.124	0.059	0.119	-0.120	0.378
D29	-0.022	-0.069	-0.043	0.018	-0.075
D29A	0.228	0.159	0.086	-0.111	0.342
E50	-0.032	0.030	0.016	0.173	0.008

	C6N	C12	C12M	D2	D3
C6N	1.000				
C12	0.118	1.000			
C12M	0.065	0.038	1.000		
D2	0.212	0.031	-0.009	1.000	
D3	0.288	0.047	0.154	-0.047	1.000
D4	0.123	0.075	-0.064	0.573	-0.030
D6	-0.002	-0.073	-0.114	0.100	-0.139
D8	-0.049	-0.062	-0.014	0.291	0.052
D19	0.046	0.043	-0.087	0.101	-0.019
D24	0.136	-0.048	-0.010	-0.087	-0.075

D25	-0.037	-0.130	0.052	-0.013	-0.012
D26	0.095	-0.048	-0.063	-0.063	-0.099
D27	0.264	0.149	-0.052	0.110	0.171
D28	0.054	0.066	-0.061	0.231	-0.103
D29	0.133	-0.125	0.111	0.133	0.179
D29A	0.099	-0.097	-0.016	0.217	-0.059
E50	-0.143	-0.112	-0.084	0.042	-0.211

	D4	D6	D8	D19	D24
D4	1.000				
D6	0.057	1.000			
D8	0.261	0.057	1.000		
D19	0.172	0.045	0.096	1.000	
D24	-0.163	0.013	-0.003	0.106	1.000
D25	-0.089	0.011	0.041	0.107	0.447
D26	-0.099	0.056	0.055	0.063	0.779
D27	0.127	-0.006	0.012	0.070	0.073
D28	0.275	0.099	0.130	-0.059	-0.525
D29	0.175	-0.006	0.146	0.108	-0.099
D29A	0.176	0.163	0.090	-0.146	-0.258
E50	0.023	0.155	0.008	0.021	-0.074

	D25	D26	D27	D28	D29
D25	1.000				
D26	0.465	1.000			
D27	0.007	0.057	1.000		
D28	-0.435	-0.458	-0.080	1.000	
D29	-0.008	-0.047	0.111	0.050	1.000
D29A	-0.293	-0.274	-0.087	0.589	0.052
E50	-0.057	-0.017	-0.046	-0.084	-0.006

	D29A	E50
D29A	1.000	
E50	-0.149	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 846.314 DF = 351 PROB = .000.*
PEARSONS r = .11 P≤>05; r = .15 P≤.01;r = .19 P≤.001.
P≤.05 FOR 108 (31%) OF 351 PEARSON'S r COEFFICIENTS IN THIS MATRIX.

Table 14W

MATRIX OF PROBABILITIES, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *NATIVE* PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 285), 1987-1988

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	0.000				
PPEMP	0.849	0.000			
RHHTYPE	0.548	0.923	0.000		
RHHSIZE	0.065	0.901	0.061	0.000	
TOTACT	0.830	0.438	0.141	0.000	0.000
B1	0.000	0.258	0.644	0.198	0.265
B3	0.000	0.322	0.866	0.270	0.449
B8	0.000	0.577	0.094	0.907	0.065
B9	0.010	0.010	0.136	0.294	0.683
C1	0.000	0.391	0.622	0.074	0.239
C6N	0.000	0.576	0.089	0.006	0.000
C12	0.432	0.004	0.230	0.204	0.296
C12M	0.152	0.122	0.923	0.084	0.390
D2	0.642	0.206	0.539	0.015	0.230
D3	0.315	0.000	0.140	0.111	0.000
D4	0.385	0.002	0.497	0.000	0.781
D6	0.051	0.086	0.402	0.088	0.055
D8	0.019	0.664	0.143	0.010	0.304
D19	0.001	0.468	0.551	0.871	0.048
D24	0.107	0.471	0.845	0.503	0.004
D25	0.096	0.698	0.113	0.098	0.784
D26	0.343	0.114	0.450	0.103	0.007
D27	0.639	0.559	0.185	0.051	0.000
D28	0.149	0.238	0.063	0.148	0.091
D29	0.008	0.537	0.000	0.000	0.000
D29A	0.258	0.915	0.353	0.378	0.080
E50	0.624	0.213	0.475	0.201	0.172

	B1	B3	B8	B9	C1
B1	0.000				
B3	0.000	0.000			
B8	0.003	0.056	0.000		
B9	0.000	0.000	0.072	0.000	
C1	0.000	0.000	0.000	0.000	0.000
C6N	0.002	0.272	0.004	0.005	0.000
C12	0.002	0.025	0.170	0.450	0.009
C12M	0.063	0.868	0.533	0.652	0.271
D2	0.010	0.590	0.027	0.464	0.000
D3	0.806	0.048	0.245	0.615	0.320
D4	0.019	0.356	0.259	0.079	0.000
D6	0.003	0.008	0.000	0.292	0.018
D8	0.152	0.630	0.080	0.072	0.520
D19	0.232	0.008	0.347	0.741	0.134
D24	0.771	0.733	0.879	0.557	0.001
D25	0.511	0.055	0.086	0.653	0.000
D26	0.458	0.364	0.851	0.480	0.010
D27	0.607	0.821	0.333	0.858	0.863
D28	0.037	0.329	0.047	0.047	0.000
D29	0.716	0.256	0.478	0.769	0.217
D29A	0.002	0.036	0.252	0.141	0.000
E50	0.659	0.677	0.830	0.017	0.918

	C6N	C12	C12M	D2	D3
C6N	0.000				
C12	0.051	0.000			
C12M	0.278	0.529	0.000		
D2	0.001	0.619	0.888	0.000	
D3	0.000	0.452	0.012	0.457	0.000
D4	0.057	0.248	0.324	0.000	0.654
D6	0.973	0.237	0.062	0.111	0.027
D8	0.410	0.311	0.819	0.000	0.404
D19	0.441	0.481	0.145	0.105	0.753
D24	0.023	0.429	0.862	0.162	0.228

D25	0.533	0.031	0.385	0.835	0.849
D26	0.117	0.436	0.297	0.319	0.113
D27	0.000	0.014	0.389	0.077	0.006
D28	0.368	0.276	0.304	0.000	0.095
D29	0.026	0.038	0.063	0.032	0.004
D29A	0.183	0.205	0.831	0.005	0.442
E50	0.047	0.125	0.243	0.573	0.004

	D4	D6	D8	D19	D24
D4	0.000				
D6	0.388	0.000			
D8	0.000	0.353	0.000		
D19	0.007	0.461	0.110	0.000	
D24	0.011	0.826	0.963	0.075	0.000
D25	0.168	0.851	0.488	0.074	0.000
D26	0.131	0.364	0.362	0.297	0.000
D27	0.050	0.929	0.847	0.245	0.224
D28	0.000	0.103	0.029	0.323	0.000
D29	0.006	0.918	0.014	0.070	0.096
D29A	0.029	0.031	0.229	0.049	0.000
E50	0.764	0.034	0.917	0.775	0.308

	D25	D26	D27	D28	D29
D25	0.000				
D26	0.000	0.000			
D27	0.909	0.349	0.000		
D28	0.000	0.000	0.185	0.000	
D29	0.900	0.440	0.064	0.400	0.000
D29A	0.000	0.000	0.250	0.000	0.491
E50	0.427	0.815	0.526	0.246	0.932

	D29A	E50
D29A	0.000	
E50	0.094	0.000

Table 14W

FREQUENCY TABLE, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *NATIVE* PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 285), 1987-1988

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	276				
PPEMP	198	202			
RHHTYPE	257	187	262		
RHHSIZE	249	182	235	253	
TOTACT	208	151	195	202	213
B1	275	201	261	253	212
B3	268	197	254	248	210
B8	272	199	258	250	211
B9	268	199	254	246	206
C1	269	199	255	246	208
C6N	275	202	261	253	212
C12	267	201	254	244	206
C12M	275	201	261	252	212
D2	255	191	241	234	199
D3	258	191	246	241	204
D4	237	183	222	223	190
D6	263	194	250	240	202
D8	274	202	260	251	211
D19	274	201	260	251	213
D24	275	202	261	253	213
D25	276	202	262	253	213
D26	266	197	252	244	204
D27	271	199	256	249	208
D28	276	202	262	253	213
D29	275	201	261	252	212
D29A	178	134	166	157	133
E50	191	142	180	177	145

	B1	B3	B8	B9	C1
B1	283				
B3	275	276			
B8	279	272	280		
B9	275	269	274	276	
C1	276	269	275	271	277
C6N	282	275	279	275	276
C12	274	267	271	267	268
C12M	282	275	279	275	276
D2	262	255	260	256	258
D3	263	256	262	257	259
D4	242	237	240	235	237
D6	270	264	268	265	265
D8	281	274	278	274	275
D19	281	274	279	275	276
D24	282	276	279	275	276
D25	283	276	280	276	277
D26	273	267	270	266	268
D27	278	272	274	271	271
D28	283	276	280	276	277
D29	282	275	279	275	276
D29A	181	175	179	178	178
E50	194	191	192	188	190

	C6N	C12	C12M	D2	D3
C6N	283				
C12	274	275			
C12M	282	274	283		
D2	261	255	261	262	
D3	263	256	263	248	264
D4	241	237	241	230	229
D6	270	263	270	253	255
D8	281	273	281	260	262
D19	281	273	281	261	263
D24	282	274	282	261	263
D25	283	275	283	262	264
D26	273	265	273	253	257

D27	277	269	277	258	258
D28	283	275	283	262	264
D29	282	274	282	261	263
D29A	181	174	182	167	171
E50	193	188	193	182	182

	D4	D6	D8	D19	D24
D4	242				
D6	235	271			
D8	241	269	282		
D19	242	270	280	282	
D24	242	270	281	281	283
D25	242	271	282	282	283
D26	234	262	272	272	274
D27	240	265	276	276	277
D28	242	271	282	282	283
D29	241	270	281	281	282
D29A	155	176	182	181	181
E50	175	187	194	194	194

	D25	D26	D27	D28	D29
D25	284				
D26	274	274			
D27	278	268	278		
D28	284	274	278	284	
D29	283	273	277	283	283
D29A	182	177	177	182	181
E50	194	187	193	194	193

	D29A	E50
D29A	182	
E50	128	194

Table 15W

PEARSON CORRELATION MATRIX, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *MIXED* PRETEST SAMPLE, 31 ALASKAN VILLAGES (N = 265), 1987-1988[a]

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	1.000				
PPEMP	0.040	1.000			
RHHTYPE	0.068	-0.090	1.000		
RHHSIZE	0.022	-0.147	0.360	1.000	
TOTACT	-0.057	-0.013	-0.045	0.135	1.000
B1	-0.110	-0.049	-0.135	-0.090	0.027
B3	-0.162	0.022	0.029	0.083	-0.009
B8	-0.344	-0.047	-0.101	-0.120	0.076
B9	0.111	0.012	0.127	0.062	0.038
C1	-0.163	-0.213	-0.118	-0.037	0.054
C6N	-0.302	-0.024	-0.030	-0.021	0.062
C12	-0.061	0.115	-0.130	-0.141	0.031
C12M	0.129	0.101	-0.114	-0.016	-0.022
D2	-0.036	-0.109	-0.084	0.162	0.174
D3	-0.045	0.279	-0.137	-0.083	0.090
D4	-0.009	-0.081	0.064	0.278	0.001
D6	-0.145	-0.097	-0.094	0.038	0.060
D8	0.114	0.026	0.057	0.206	0.063
D19	0.126	-0.258	0.171	0.099	0.030
D24	0.054	-0.015	0.155	0.122	0.250
D25	0.203	-0.062	0.189	0.152	0.120
D26	0.090	0.025	0.129	0.048	0.287
D27	-0.037	0.006	0.127	0.111	0.204
D28	-0.088	-0.035	-0.197	-0.196	-0.278
D29	0.000	-0.039	-0.066	0.447	0.002
D29A	-0.155	-0.128	-0.128	-0.258	-0.218
E50	-0.072	0.062	0.052	-0.028	-0.111

	B1	B3	B8	B9	C1
B1	1.000				
B3	0.360	1.000			
B8	0.303	0.221	1.000		
B9	-0.253	-0.203	-0.175	1.000	
C1	0.373	0.186	0.393	-0.082	1.000
C6N	0.120	0.067	0.245	-0.014	0.248
C12	0.087	0.059	0.022	-0.037	0.191
C12M	0.041	-0.032	-0.051	0.054	0.059
D2	0.311	0.064	0.267	-0.091	0.517
D3	0.117	-0.020	0.059	-0.013	0.112
D4	0.162	0.084	0.138	-0.071	0.403
D6	0.125	0.027	0.109	-0.081	0.124
D8	0.079	-0.003	0.134	0.009	0.212
D19	0.106	0.066	0.121	-0.047	0.156
D24	-0.214	-0.049	-0.043	0.039	-0.253
D25	-0.136	-0.032	-0.029	0.011	-0.201
D26	-0.232	-0.010	-0.053	0.031	-0.257
D27	0.044	0.067	0.032	-0.051	0.031
D28	0.286	0.032	0.127	-0.067	0.391
D29	0.077	0.047	0.034	0.041	0.183
D29A	0.224	0.101	0.240	0.029	0.361
E50	-0.036	0.017	-0.013	-0.115	-0.105

	C6N	C12	C12M	D2	D3
C6N	1.000				
C12	0.151	1.000			
C12M	0.109	0.336	1.000		
D2	0.185	0.050	-0.057	1.000	
D3	0.139	0.185	0.175	0.101	1.000
D4	0.108	-0.058	-0.087	0.583	0.001
D6	0.145	0.027	-0.037	0.234	-0.048
D8	-0.002	-0.062	0.027	0.493	0.056
D19	0.110	-0.130	-0.026	0.282	-0.070
D24	-0.121	-0.080	-0.043	-0.256	-0.073
D25	-0.095	-0.092	-0.098	-0.124	0.032
D26	-0.119	-0.032	-0.075	-0.277	-0.065

D27	0.112	0.011	-0.032	0.076	-0.007
D28	0.117	0.012	-0.064	0.363	-0.015
D29	0.036	-0.012	-0.039	0.334	0.050
D29A	-0.026	0.000	-0.048	0.152	-0.083
E50	-0.060	-0.088	-0.148	-0.065	-0.125

	D4	D6	D8	D19	D24
D4	1.000				
D6	0.148	1.000			
D8	0.439	0.082	1.000		
D19	0.145	0.039	0.249	1.000	
D24	-0.230	-0.160	-0.173	0.052	1.000
D25	-0.032	-0.146	0.029	0.230	0.424
D26	-0.252	-0.160	-0.185	-0.027	0.820
D27	-0.037	0.118	-0.022	0.118	0.200
D28	0.303	0.170	0.153	-0.040	-0.804
D29	0.399	0.164	0.416	0.094	-0.185
D29A	0.216	0.237	0.056	-0.096	-0.409
E50	0.062	0.086	-0.066	-0.044	0.045

	D25	D26	D27	D28	D29
D25	1.000				
D26	0.361	1.000			
D27	0.137	0.149	1.000		
D28	-0.523	-0.706	-0.212	1.000	
D29	-0.039	-0.165	0.016	0.111	1.000
D29A	-0.252	-0.355	-0.236	0.494	0.085
E50	0.050	-0.021	-0.098	0.016	-0.058

	D29A	E50
D29A	1.000	
E50	0.042	1.000

[a] BARTLETT CHI-SQUARE STATISTIC: 814.801 DF = 351 PROB = .000.
PEARSON'S $r = .12$ $P \leq .05$; $r = .16$ $P \leq .01$; $r = .21$ $P \leq .001$.
$P \leq .05$ FOR 133 (38%) OF 351 PEARSON'S COEFFICIENTS IN THIS MATRIX.

Table 15W

MATRIX OF PROBABILITIES, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *MIXED* PRETEST SAMPLE, 31 ALASKAN VILLAGES ($N = 265$), 1987-1988

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	0.000				
PPEMP	0.575	0.000			
RHHTYPE	0.294	0.196	0.000		
RHHSIZE	0.736	0.032	0.000	0.000	
TOTACT	0.453	0.876	0.553	0.065	0.000
B1	0.083	0.474	0.033	0.147	0.713
B3	0.013	0.757	0.656	0.192	0.902
B8	0.000	0.498	0.112	0.052	0.301
B9	0.086	0.862	0.046	0.325	0.610
C1	0.010	0.002	0.062	0.555	0.468
C6N	0.000	0.724	0.634	0.738	0.403
C12	0.346	0.096	0.043	0.025	0.680
C12M	0.045	0.148	0.074	0.804	0.768
D2	0.587	0.124	0.202	0.012	0.023
D3	0.485	0.000	0.033	0.185	0.231
D4	0.899	0.262	0.337	0.000	0.989
D6	0.024	0.162	0.141	0.543	0.417
D8	0.076	0.710	0.373	0.001	0.390
D19	0.049	0.000	0.007	0.109	0.681
D24	0.402	0.831	0.014	0.049	0.001
D25	0.001	0.367	0.003	0.014	0.100
D26	0.166	0.726	0.044	0.444	0.000
D27	0.562	0.929	0.045	0.074	0.005
D28	0.181	0.628	0.003	0.002	0.000
D29	0.995	0.574	0.300	0.000	0.976
D29A	0.062	0.156	0.121	0.001	0.024
E50	0.304	0.407	0.457	0.676	0.162

	B1	B3	B8	B9	C1
B1	0.000				
B3	0.000	0.000			
B8	0.000	0.000	0.000		
B9	0.000	0.001	0.005	0.000	
C1	0.000	0.003	0.000	0.193	0.000
C6N	0.054	0.294	0.000	0.819	0.000
C12	0.167	0.362	0.725	0.562	0.002
C12M	0.517	0.624	0.416	0.401	0.350
D2	0.000	0.333	0.000	0.162	0.000
D3	0.063	0.758	0.350	0.844	0.075
D4	0.012	0.207	0.035	0.286	0.000
D6	0.045	0.675	0.081	0.200	0.048
D8	0.202	0.964	0.031	0.884	0.001
D19	0.088	0.300	0.051	0.456	0.012
D24	0.000	0.437	0.485	0.537	0.000
D25	0.028	0.611	0.635	0.855	0.001
D26	0.000	0.880	0.399	0.626	0.000
D27	0.482	0.290	0.612	0.420	0.622
D28	0.000	0.627	0.048	0.307	0.000
D29	0.213	0.460	0.584	0.513	0.003
D29A	0.005	0.216	0.003	0.721	0.000
E50	0.594	0.810	0.852	0.094	0.123

	C6N	C12	C12M	D2	D3
C6N	0.000				
C12	0.017	0.000			
C12M	0.084	0.000	0.000		
D2	0.004	0.440	0.382	0.000	
D3	0.028	0.004	0.006	0.122	0.000
D4	0.102	0.388	0.191	0.000	0.982
D6	0.021	0.669	0.556	0.000	0.454
D8	0.968	0.328	0.665	0.000	0.376
D19	0.077	0.039	0.680	0.000	0.270
D24	0.052	0.206	0.494	0.000	0.248

D25	0.128	0.145	0.120	0.054	0.608
D26	0.061	0.620	0.239	0.000	0.307
D27	0.073	0.866	0.618	0.235	0.914
D28	0.070	0.853	0.323	0.000	0.823
D29	0.569	0.846	0.537	0.000	0.425
D29A	0.746	0.996	0.562	0.070	0.307
E50	0.381	0.204	0.032	0.353	0.071

	D4	D6	D8	D19	D24
D4	0.000				
D6	0.024	0.000			
D8	0.000	0.191	0.000		
D19	0.027	0.533	0.000	0.000	
D24	0.000	0.010	0.005	0.405	0.000
D25	0.630	0.019	0.638	0.000	0.000
D26	0.000	0.011	0.003	0.673	0.000
D27	0.571	0.059	0.730	0.057	0.001
D28	0.000	0.009	0.017	0.535	0.000
D29	0.000	0.009	0.000	0.131	0.003
D29A	0.011	0.003	0.490	0.234	0.000
E50	0.384	0.206	0.338	0.516	0.513

	D25	D26	D27	D28	D29
D25	0.000				
D26	0.000	0.000			
D27	0.028	0.018	0.000		
D28	0.000	0.000	0.001	0.000	
D29	0.526	0.009	0.796	0.087	0.000
D29A	0.002	0.000	0.003	0.000	0.294
E50	0.463	0.763	0.149	0.827	0.399

	D29A	E50
D29A	0.000	
E50	0.636	0.000

Table 15W

FREQUENCY TABLE, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *MIXED* PRETEST SAMPLE, 31 ALASKAN VILLAGES (*N* = 265), 1987-1988

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	248				
PPEMP	203	214			
RHHTYPE	237	207	252		
RHHSIZE	247	213	251	263	
TOTACT	173	146	177	188	189
B1	248	214	252	263	189
B3	237	204	242	251	180
B8	247	213	251	262	188
B9	241	210	247	255	181
C1	245	213	250	260	186
C6N	244	211	248	259	185
C12	240	210	243	252	179
C12M	241	206	245	255	181
D2	231	201	233	242	170
D3	241	209	244	254	180
D4	222	195	227	235	169
D6	242	211	247	257	184
D8	245	213	249	260	186
D19	246	212	250	261	187
D24	247	214	251	262	188
D25	248	214	252	263	189
D26	240	207	243	253	179
D27	245	213	249	259	185
D28	231	197	233	244	170
D29	244	213	249	259	185
D29A	145	124	148	154	107
E50	204	183	209	217	161

	B1	B3	B8	B9	C1
B1	264				
B3	252	252			
B8	263	251	263		
B9	256	245	255	256	
C1	261	249	260	255	261
C6N	260	249	259	252	257
C12	253	244	252	248	251
C12M	256	244	255	248	253
D2	243	232	243	237	241
D3	255	246	254	249	252
D4	236	226	235	231	235
D6	258	246	257	251	256
D8	261	249	260	253	258
D19	262	250	261	254	259
D24	263	251	262	255	260
D25	264	252	263	256	261
D26	254	245	253	246	251
D27	260	248	259	254	258
D28	245	233	244	237	242
D29	260	248	259	254	258
D29A	155	151	155	154	154
E50	218	206	217	213	217

	C6N	C12	C12M	D2	D3
C6N	260				
C12	250	253			
C12M	252	245	256		
D2	240	236	235	243	
D3	251	246	247	235	255
D4	232	227	228	224	228
D6	254	248	250	239	249
D8	257	250	253	241	253
D19	258	251	254	241	253
D24	259	252	255	243	254

D25	260	253	256	243	255
D26	251	245	246	235	247
D27	256	251	252	243	251
D28	241	234	239	227	236
D29	256	251	252	241	252
D29A	153	150	151	143	153
E50	214	210	210	204	211

	D4	D6	D8	D19	D24
D4	236				
D6	233	258			
D8	234	255	261		
D19	234	256	259	262	
D24	235	257	260	261	263
D25	236	258	261	262	263
D26	226	248	251	252	254
D27	235	256	257	258	259
D28	219	239	243	244	244
D29	233	255	257	258	259
D29A	140	152	152	154	155
E50	201	216	216	216	217

	D25	D26	D27	D28	D29
D25	264				
D26	254	254			
D27	260	250	260		
D28	245	235	242	245	
D29	260	250	258	241	260
D29A	155	150	153	150	154
E50	218	209	217	200	216

	D29A	E50
D29A	155	
E50	130	218

Table 16W

PEARSON CORRELATION MATRIX, 31 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 308), 1989-1990[a]

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	1.000				
RAGES	-0.087	1.000			
PPEMP	0.014	-0.091	1.000		
RHHTYPE	0.050	0.122	0.078	1.000	
RHHSIZE	0.034	-0.040	0.085	0.099	1.000
COMFISH	-0.125	0.129	-0.288	0.186	0.195
RACEVIL	0.197	-0.162	-0.023	-0.183	-0.120
TOTACT	-0.299	-0.111	-0.032	-0.022	0.172
B1	-0.057	-0.260	-0.070	-0.158	-0.005
B3	-0.074	-0.378	-0.104	-0.039	0.124
B8	-0.115	-0.298	-0.092	-0.177	0.106
B9	0.094	0.141	0.082	0.042	-0.109
C1	-0.082	-0.308	-0.156	-0.175	-0.105
C6N	-0.055	-0.446	0.017	-0.200	0.016
C12	-0.144	-0.076	0.070	-0.109	-0.091
C12M	-0.162	-0.114	0.093	-0.019	-0.136
D2	-0.060	-0.015	-0.149	-0.251	0.046
D3	-0.117	-0.045	0.102	-0.165	0.046
D4	-0.030	-0.076	0.017	-0.264	0.164
D6	-0.047	-0.006	0.031	-0.129	0.073
D8	0.076	0.005	0.094	-0.157	0.227
D19	-0.108	0.143	-0.186	-0.067	-0.007
D24	-0.028	0.107	-0.008	0.144	0.239
D25	-0.082	0.308	0.002	0.159	0.106
D26	-0.105	0.107	-0.007	0.133	0.238
D27	0.007	-0.003	-0.079	-0.137	-0.021
D28	-0.050	-0.137	-0.008	-0.166	-0.222
D29A	0.062	-0.177	0.093	-0.104	-0.198
D29	-0.043	0.021	0.094	-0.397	0.352
E50	-0.025	0.011	0.005	0.043	0.008
C12C	-0.149	-0.128	0.048	-0.036	-0.106

	COMFISH	RACEVIL	TOTACT	B1	B3
COMFISH	1.000				
RACEVIL	-0.409	1.000			
TOTACT	0.209	-0.240	1.000		
B1	-0.109	0.117	0.072	1.000	
B3	0.072	-0.003	0.136	0.483	1.000
B8	-0.081	0.158	0.129	0.252	0.296
B9	-0.005	-0.031	-0.145	-0.345	-0.424
C1	-0.152	0.295	0.026	0.428	0.301
C6N	-0.149	0.119	0.103	0.413	0.398
C12	-0.153	0.144	0.070	0.094	0.078
C12M	-0.148	0.065	-0.011	0.117	0.087
D2	-0.141	0.298	-0.105	0.239	0.124
D3	-0.208	0.147	0.168	0.155	0.081
D4	-0.138	0.290	-0.089	0.216	0.074
D6	-0.075	-0.055	-0.064	0.050	0.019
D8	-0.166	0.179	-0.120	0.024	0.048
D19	0.132	-0.060	0.111	0.004	-0.017
D24	0.438	-0.535	0.191	-0.283	-0.135
D25	0.201	-0.392	0.155	-0.270	-0.206
D26	0.371	-0.535	0.193	-0.240	-0.142
D27	0.108	-0.051	0.178	0.157	0.175
D28	-0.393	0.457	-0.212	0.264	0.143
D29A	-0.426	0.409	-0.198	0.221	0.115
D29	-0.107	0.181	-0.039	0.097	0.027
E50	-0.022	-0.035	-0.073	0.012	-0.032
C12C	-0.132	0.085	0.018	0.150	0.092

	B8	B9	C1	C6N	C12
B8	1.000				
B9	-0.202	1.000			
C1	0.323	-0.177	1.000		
C6N	0.333	-0.245	0.475	1.000	
C12	0.192	-0.065	0.320	0.269	1.000
C12M	0.123	-0.026	0.174	0.187	0.654
D2	0.226	-0.120	0.470	0.309	0.150
D3	0.132	-0.090	0.100	0.247	0.190
D4	0.147	-0.043	0.351	0.272	0.240
D6	0.015	0.037	0.001	0.103	0.090
D8	0.218	-0.000	0.268	0.187	0.072
D19	0.094	-0.023	0.108	0.030	-0.041
D24	-0.153	0.051	-0.514	-0.270	-0.165
D25	-0.174	0.079	-0.370	-0.235	-0.235
D26	-0.080	0.051	-0.441	-0.257	-0.110
D27	0.147	-0.083	0.162	0.103	0.091
D28	0.171	-0.101	0.532	0.291	0.185
D29A	0.165	-0.066	0.493	0.282	0.241
D29	0.069	-0.053	0.076	0.129	0.032
E50	-0.005	0.039	-0.087	0.010	0.003
C12C	0.155	-0.022	0.205	0.195	0.599

	C12M	D2	D3	D4	D6
C12M	1.000				
D2	0.025	1.000			
D3	0.084	0.126	1.000		
D4	0.087	0.561	0.248	1.000	
D6	0.094	0.213	-0.034	0.087	1.000
D8	-0.023	0.396	0.163	0.295	0.059
D19	-0.118	0.190	0.063	0.135	0.003
D24	-0.127	-0.416	-0.048	-0.342	-0.036
D25	-0.246	-0.211	0.025	-0.199	-0.047
D26	-0.080	-0.371	-0.056	-0.306	-0.034
D27	0.037	0.148	0.074	0.116	0.123
D28	0.147	0.472	0.034	0.403	0.105
D29A	0.191	0.372	-0.068	0.347	0.029
D29	-0.066	0.305	0.096	0.340	0.144
E50	0.094	-0.034	-0.008	-0.020	-0.026
C12C	0.964	0.056	0.091	0.100	0.095

	D8	D19	D24	D25	D26
D8	1.000				
D19	-0.012	1.000			
D24	-0.135	-0.010	1.000		
D25	-0.034	0.193	0.506	1.000	
D26	-0.153	-0.010	0.817	0.535	1.000
D27	0.073	0.100	0.013	0.034	0.025
D28	0.159	0.045	-0.795	-0.463	-0.681
D29A	0.289	-0.052	-0.537	-0.349	-0.511
D29	0.267	0.071	-0.149	-0.087	-0.146
E50	0.013	-0.064	-0.007	-0.012	0.028
C12C	-0.011	-0.101	-0.126	-0.218	-0.076

	D27	D28	D29A	D29	E50	
C12C						
D27	1.000					
D28	-0.081	1.000				
D29A	-0.093	0.572	1.000			
D29	-0.004	0.161	0.185	1.000		
E50	-0.125	-0.027	0.014	-0.031	1.000	
C12C	0.058	0.149	0.184	-0.054	0.112	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 1996.934 DF = 465 PROB = .000.*
PEARSON r = .11 P<.05; r = .14 P<.01; r = .19 P<.001.
P≤.05 FOR 245 (52%) OF 465 PEARSON'S r COEFFICIENTS IN THIS MATRIX.

Table 16W

MATRIX OF PROBABILITIES, 31 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 308), 1989-1990

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	0.000				
RAGES	0.133	0.000			
PPEMP	0.833	0.183	0.000		
RHHTYPE	0.414	0.050	0.280	0.000	
RHHSIZE	0.558	0.491	0.207	0.107	0.000
COMFISH	0.029	0.025	0.000	0.002	0.001
RACEVIL	0.000	0.005	0.738	0.003	0.036
TOTACT	0.000	0.055	0.631	0.717	0.003
B1	0.321	0.000	0.296	0.010	0.924
B3	0.201	0.000	0.127	0.527	0.033
B8	0.044	0.000	0.173	0.004	0.065
B9	0.103	0.015	0.224	0.500	0.059
C1	0.152	0.000	0.021	0.004	0.069
C6N	0.337	0.000	0.800	0.001	0.784
C12	0.013	0.197	0.306	0.082	0.118
C12M	0.004	0.048	0.169	0.760	0.018
D2	0.303	0.798	0.028	0.000	0.438
D3	0.046	0.445	0.137	0.009	0.435
D4	0.608	0.192	0.798	0.000	0.005
D6	0.417	0.919	0.647	0.037	0.210
D8	0.188	0.928	0.165	0.011	0.000
D19	0.059	0.014	0.005	0.279	0.906
D24	0.619	0.063	0.908	0.018	0.000
D25	0.153	0.000	0.982	0.009	0.066
D26	0.068	0.066	0.921	0.030	0.000
D27	0.901	0.960	0.242	0.027	0.720
D28	0.382	0.019	0.905	0.007	0.000
D29A	0.368	0.010	0.245	0.138	0.004
D29	0.453	0.715	0.164	0.000	0.000
E50	0.670	0.859	0.941	0.504	0.887
C12C	0.009	0.027	0.475	0.556	0.064

	COMFISH	RACEVIL	TOTACT	B1	B3
COMFISH	0.000				
RACEVIL	0.000	0.000			
TOTACT	0.000	0.000	0.000		
B1	0.056	0.040	0.207	0.000	
B3	0.212	0.956	0.018	0.000	0.000
B8	0.160	0.006	0.024	0.000	0.000
B9	0.933	0.595	0.011	0.000	0.000
C1	0.008	0.000	0.649	0.000	0.000
C6N	0.009	0.036	0.071	0.000	0.000
C12	0.008	0.013	0.232	0.107	0.185
C12M	0.009	0.256	0.854	0.040	0.132
D2	0.016	0.000	0.072	0.000	0.036
D3	0.000	0.012	0.004	0.008	0.171
D4	0.017	0.000	0.123	0.000	0.207
D6	0.192	0.345	0.268	0.393	0.741
D8	0.004	0.002	0.035	0.682	0.406
D19	0.021	0.295	0.053	0.951	0.771
D24	0.000	0.000	0.001	0.000	0.019
D25	0.000	0.000	0.007	0.000	0.000
D26	0.000	0.000	0.001	0.000	0.014
D27	0.061	0.380	0.002	0.006	0.003
D28	0.000	0.000	0.000	0.000	0.014
D29A	0.000	0.000	0.003	0.001	0.097
D29	0.063	0.002	0.499	0.091	0.646
E50	0.704	0.558	0.215	0.841	0.596
C12C	0.020	0.136	0.752	0.008	0.113

	B8	B9	C1	C6N	C12
B8	0.000				
B9	0.000	0.000			
C1	0.000	0.002	0.000		
C6N	0.000	0.000	0.000	0.000	
C12	0.001	0.269	0.000	0.000	0.000
C12M	0.031	0.647	0.002	0.001	0.000
D2	0.000	0.041	0.000	0.000	0.012
D3	0.024	0.125	0.088	0.000	0.001
D4	0.011	0.463	0.000	0.000	0.000
D6	0.794	0.522	0.990	0.074	0.126
D8	0.000	0.995	0.000	0.001	0.216
D19	0.103	0.688	0.059	0.599	0.484
D24	0.007	0.372	0.000	0.000	0.004
D25	0.002	0.169	0.000	0.000	0.000
D26	0.165	0.379	0.000	0.000	0.060
D27	0.010	0.152	0.005	0.072	0.120
D28	0.003	0.081	0.000	0.000	0.002
D29A	0.016	0.339	0.000	0.000	0.000
D29	0.233	0.359	0.187	0.025	0.587
E50	0.926	0.508	0.143	0.861	0.963
C12C	0.007	0.702	0.000	0.001	0.000

	C12M	D2	D3	D4	D6
C12M	0.000				
D2	0.666	0.000			
D3	0.150	0.036	0.000		
D4	0.135	0.000	0.000	0.000	
D6	0.104	0.000	0.567	0.136	0.000
D8	0.684	0.000	0.005	0.000	0.309
D19	0.039	0.001	0.282	0.020	0.958
D24	0.026	0.000	0.413	0.000	0.532
D25	0.000	0.000	0.675	0.001	0.421
D26	0.162	0.000	0.344	0.000	0.555
D27	0.516	0.012	0.210	0.047	0.035
D28	0.010	0.000	0.567	0.000	0.072
D29A	0.005	0.000	0.333	0.000	0.674
D29	0.251	0.000	0.105	0.000	0.013
E50	0.112	0.579	0.889	0.743	0.668
C12C	0.000	0.339	0.122	0.083	0.100

	D8	D19	D24	D25	D26
D8	0.000				
D19	0.841	0.000			
D24	0.018	0.862	0.000		
D25	0.551	0.001	0.000	0.000	
D26	0.008	0.867	0.000	0.000	0.000
D27	0.207	0.083	0.824	0.552	0.667
D28	0.006	0.441	0.000	0.000	0.000
D29A	0.000	0.452	0.000	0.000	0.000
D29	0.000	0.216	0.009	0.132	0.011
E50	0.831	0.281	0.904	0.832	0.633
C12C	0.854	0.077	0.027	0.000	0.184

	D27	D28	D29A	D29	E50	C12C
D27	0.000					
D28	0.163	0.000				
D29A	0.177	0.000	0.000			
D29	0.945	0.005	0.007	0.000		
E50	0.035	0.655	0.842	0.597	0.000	
C12C	0.317	0.010	0.007	0.350	0.057	0.000

Table 16W

FREQUENCY TABLE, 31 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, POSTTEST SAMPLE, 31 ALASKAN VILLAGES (*N* = 308), 1989-1990

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	308				
RAGES	300	300			
PPEMP	222	216	222		
RHHTYPE	267	259	192	267	
RHHSIZE	305	297	220	265	305
COMFISH	308	300	222	267	305
RACEVIL	308	300	222	267	305
TOTACT	308	300	222	267	305
B1	308	300	222	267	305
B3	301	293	216	260	298
B8	306	298	221	266	303
B9	306	298	221	265	303
C1	306	298	221	266	303
C6N	308	300	222	267	305
C12	297	289	217	257	294
C12M	308	300	222	267	305
D2	293	286	217	253	290
D3	292	285	213	251	289
D4	300	293	217	262	297
D6	300	292	215	260	297
D8	305	297	219	266	302
D19	306	298	222	266	303
D24	308	300	222	267	305
D25	308	300	222	267	305
D26	306	298	222	265	303
D27	303	295	219	262	300
D28	302	294	216	261	299
D29A	216	211	157	205	215
D29	304	296	220	263	301
E50	289	281	210	250	286
C12C	307	299	222	266	304

	COMFISH	RACEVIL	TOTACT	B1	B3
COMFISH	308				
RACEVIL	308	308			
TOTACT	308	308	308		
B1	308	308	308	308	
B3	301	301	301	301	301
B8	306	306	306	306	299
B9	306	306	306	306	299
C1	306	306	306	306	299
C6N	308	308	308	308	301
C12	297	297	297	297	290
C12M	308	308	308	308	301
D2	293	293	293	293	286
D3	292	292	292	292	288
D4	300	300	300	300	294
D6	300	300	300	300	294
D8	305	305	305	305	298
D19	306	306	306	306	299
D24	308	308	308	308	301
D25	308	308	308	308	301
D26	306	306	306	306	299
D27	303	303	303	303	296
D28	302	302	302	302	296
D29A	216	216	216	216	210
D29	304	304	304	304	297
E50	289	289	289	289	283
C12C	307	307	307	307	300

	B8	B9	C1	C6N	C12
B8	306				
B9	304	306			
C1	304	304	306		
C6N	306	306	306	308	
C12	295	295	295	297	297
C12M	306	306	306	308	297
D2	291	291	291	293	282
D3	290	290	290	292	284
D4	299	298	298	300	289
D6	298	298	298	300	289
D8	303	303	303	305	294
D19	304	304	304	306	295
D24	306	306	306	308	297
D25	306	306	306	308	297
D26	304	304	304	306	295
D27	301	301	301	303	294
D28	300	300	300	302	291
D29A	214	214	215	216	207
D29	302	302	302	304	293
E50	287	287	288	289	278
C12C	305	305	305	307	296

	C12M	D2	D3	D4	D6
C12M	308				
D2	293	293			
D3	292	278	292		
D4	300	287	285	300	
D6	300	286	286	293	300
D8	305	290	289	298	297
D19	306	291	290	298	298
D24	308	293	292	300	300
D25	308	293	292	300	300
D26	306	291	290	298	298
D27	303	288	288	295	295
D28	302	287	289	294	294
D29A	216	207	205	212	210
D29	304	291	289	296	296
E50	289	274	274	281	283
C12C	307	293	291	299	299

	D8	D19	D24	D25	D26
D8	305				
D19	303	306			
D24	305	306	308		
D25	305	306	308	308	
D26	303	305	306	306	306
D27	300	301	303	303	302
D28	299	300	302	302	300
D29A	215	215	216	216	215
D29	301	302	304	304	302
E50	286	288	289	289	288
C12C	304	305	307	307	305

	D27	D28	D29A	D29	E50	C12C
D27	303					
D28	297	302				
D29A	213	214	216			
D29	299	299	214	304		
E50	284	283	203	285	289	
C12C	302	301	216	303	288	307

Table 19W

GOODMAN-KRUSKAL GAMMA MATRIX, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *NATIVE* POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 142), 1989-1990[a]

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	1.000				
PPEMP	-0.013	1.000			
RHHTYPE	0.097	0.244	1.000		
RHHSIZE	-0.164	0.141	0.203	1.000	
TOTACT	-0.275	0.053	-0.030	0.209	1.000
B1	-0.402	-0.066	-0.129	0.164	0.186
B3	-0.760	-0.168	-0.161	0.280	0.428
B8	-0.592	-0.410	-0.257	0.201	0.433
B9	0.468	0.479	0.283	-0.270	-0.349
C1	-0.656	-0.228	-0.192	-0.048	0.191
C6N	-0.898	0.206	-0.296	0.253	0.338
C12	-0.289	0.287	-0.199	-0.023	0.295
C12M	-0.446	0.553	-0.075	0.057	0.164
D2	0.008	-0.204	-0.178	0.094	-0.010
D3	-0.184	0.605	-0.224	0.273	0.381
D4	-0.037	-0.060	-0.254	0.237	0.049
D6	-0.093	-0.077	-0.166	0.208	0.003
D8	-0.053	0.317	-0.051	0.237	-0.140
D19	0.137	-0.279	-0.161	-0.148	0.098
D24	0.176	0.201	0.289	0.286	-0.127
D25	0.550	0.139	0.469	0.177	-0.004
D26	0.036	0.003	0.195	0.353	0.095
D27	-0.131	-0.132	-0.199	0.077	0.432
D28	-0.241	-0.500	-0.399	-0.407	-0.015
D29A	-0.189	-0.059	-0.194	-0.114	-0.035
D29	0.080	-0.080	-0.487	0.559	-0.016
E50	-0.066	0.430	0.020	0.149	-0.040

	B1	B3	B8	B9	C1
B1	1.000				
B3	0.678	1.000			
B8	0.404	0.601	1.000		
B9	-0.748	-0.924	-0.462	1.000	
C1	0.402	0.477	0.545	-0.474	1.000
C6N	0.481	0.668	0.656	-0.682	0.815
C12	0.099	0.048	0.539	-0.147	0.505
C12M	0.252	0.243	0.447	-0.076	0.349
D2	0.157	0.162	0.230	-0.172	0.320
D3	0.087	0.515	0.477	-0.379	-0.048
D4	0.006	-0.059	-0.007	0.161	0.111
D6	0.023	-0.063	0.023	0.096	0.058
D8	-0.080	0.027	0.171	0.063	0.197
D19	-0.053	-0.177	0.124	-0.048	0.049
D24	-0.161	-0.262	-0.171	0.083	-0.543
D25	-0.503	-0.554	-0.283	0.634	-0.791
D26	-0.161	-0.146	0.172	0.032	-0.453
D27	0.127	0.435	0.462	-0.406	0.155
D28	0.665	0.268	0.400	-0.586	0.840
D29A	0.531	0.365	-0.008	-1.000	0.789
D29	0.091	0.030	-0.146	-0.226	-0.058
E50	0.219	-0.024	-0.043	-0.010	0.005

	C6N	C12	C12M	D2	D3
C6N	1.000				
C12	0.835	1.000			
C12M	0.781	0.973	1.000		
D2	0.385	0.220	-0.029	1.000	
D3	0.785	0.185	0.229	0.047	1.000
D4	0.085	0.221	0.035	0.329	0.174
D6	0.119	0.328	0.172	0.385	-0.199
D8	0.329	-0.102	0.112	0.210	0.467
D19	0.004	-0.198	-0.465	0.313	-0.188
D24	-0.301	0.029	-0.042	-0.376	0.031
D25	-0.655	-0.412	-0.349	-0.309	0.275
D26	-0.347	-0.080	-0.082	-0.287	0.132

D27	0.261	0.363	0.365	0.150	0.134
D28	1.000	0.214	0.007	0.772	-0.030
D29A	0.663	0.043	0.143	0.443	-0.043
D29	0.138	-0.165	-0.182	0.351	0.164
E50	0.038	-0.249	-0.024	-0.089	0.242

	D4	D6	D8	D19	D24
D4	1.000				
D6	0.112	1.000			
D8	0.086	-0.035	1.000		
D19	0.219	0.172	-0.352	1.000	
D24	-0.009	-0.027	-0.031	-0.255	1.000
D25	-0.138	-0.293	0.072	-0.086	0.736
D26	0.051	-0.010	-0.109	-0.161	0.806
D27	0.119	0.274	0.003	0.139	-0.098
D28	0.197	0.016	0.135	0.604	-0.976
D29A	0.451	-0.111	0.323	0.159	-0.519
D29	0.428	0.292	0.268	0.157	-0.035
E50	-0.112	-0.181	0.125	-0.141	0.062

	D25	D26	D27	D28	D29A
D25	1.000				
D26	0.825	1.000			
D27	-0.023	0.018	1.000		
D28	-0.849	-0.879	-0.135	1.000	
D29A	-0.540	-0.733	-0.027	0.736	1.000
D29	-0.156	0.009	-0.095	0.398	0.027
E50	0.108	0.234	-0.404	-0.229	0.128

	D29	E50
D29	1.000	
E50	0.087	1.000

[a] *OF 351 GOODMAN AND KRUSKAL GAMMA (Γ) COEFFICIENTS, 51 (15%) ≥.50*

Table 19W

FREQUENCY TABLE, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *NATIVE* POSTTEST SAMPLE, 31 ALASKAN VILLAGES (*N* = 142), 1989-1990

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	135				
PPEMP	92	94			
RHHTYPE	115	83	118		
RHHSIZE	133	93	117	136	
TOTACT	135	94	118	136	138
B1	135	94	118	136	138
B3	131	91	114	132	134
B8	135	94	118	136	138
B9	134	93	117	135	137
C1	134	94	118	135	137
C6N	135	94	118	136	138
C12	133	93	116	134	136
C12M	135	94	118	136	138
D2	125	92	109	126	128
D3	131	92	113	131	133
D4	130	91	113	130	132
D6	131	90	114	132	134
D8	134	93	117	135	137
D19	135	94	118	136	138
D24	135	94	118	136	138
D25	135	94	118	136	138
D26	134	94	117	135	137
D27	132	92	115	133	135
D28	135	94	118	136	138
D29A	90	66	89	92	92
D29	134	94	117	135	137
E50	126	87	110	127	129

	B1	B3	B8	B9	C1
B1	138				
B3	134	134			
B8	138	134	138		
B9	137	133	137	137	
C1	137	133	137	136	137
C6N	138	134	138	137	137
C12	136	132	136	135	135
C12M	138	134	138	137	137
D2	128	124	128	127	127
D3	133	131	133	132	132
D4	132	129	132	131	131
D6	134	131	134	133	133
D8	137	133	137	136	136
D19	138	134	138	137	137
D24	138	134	138	137	137
D25	138	134	138	137	137
D26	137	133	137	136	136
D27	135	131	135	134	134
D28	138	134	138	137	137
D29A	92	88	92	91	92
D29	137	133	137	136	136
E50	129	126	129	128	129

	C6N	C12	C12M	D2	D3
C6N	138				
C12	136	136			
C12M	138	136	138		
D2	128	126	128	128	
D3	133	131	133	123	133
D4	132	130	132	124	128
D6	134	132	134	124	130
D8	137	135	137	127	132
D19	138	136	138	128	133

D24	138	136	138	128	133
D25	138	136	138	128	133
D26	137	135	137	127	132
D27	135	134	135	125	130
D28	138	136	138	128	133
D29A	92	90	92	86	87
D29	137	135	137	127	132
E50	129	127	129	119	124

	D4	D6	D8	D19	D24
D4	132				
D6	129	134			
D8	131	133	137		
D19	132	134	137	138	
D24	132	134	137	138	138
D25	132	134	137	138	138
D26	131	133	136	137	137
D27	129	131	134	135	135
D28	132	134	137	138	138
D29A	89	89	91	92	92
D29	131	133	136	137	137
E50	123	126	128	129	129

	D25	D26	D27	D28	D29A
D25	138				
D26	137	137			
D27	135	135	135		
D28	138	137	135	138	
D29A	92	92	90	92	92
D29	137	136	134	137	92
E50	129	128	126	129	87

	D29	E50
D29	137	
E50	128	129

Table 20W

GOODMAN-KRUSKAL GAMMA MATRIX, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *MIXED* POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 168), 1989-1990[a]

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	1.000				
PPEMP	-0.300	1.000			
RHHTYPE	0.026	0.013	1.000		
RHHSIZE	-0.023	0.161	0.310	1.000	
TOTACT	-0.076	-0.140	-0.080	0.121	1.000
B1	-0.144	-0.114	-0.183	-0.165	0.024
B3	-0.523	-0.309	-0.004	0.082	-0.084
B8	-0.330	0.006	-0.397	0.053	-0.052
B9	0.105	-0.002	-0.117	-0.079	-0.194
C1	-0.071	-0.251	-0.101	-0.157	0.085
C6N	-0.545	-0.036	-0.269	-0.290	0.020
C12	0.057	0.094	-0.116	-0.215	0.124
C12M	0.097	0.093	-0.113	-0.380	0.102
D2	0.145	-0.228	-0.243	0.055	-0.014
D3	0.117	-0.078	-0.308	-0.011	0.297
D4	0.034	0.092	-0.161	0.225	-0.062
D6	-0.031	0.181	-0.230	-0.108	-0.174
D8	0.181	0.016	-0.231	0.328	-0.015
D19	0.378	-0.427	-0.143	0.044	0.202
D24	-0.058	-0.168	-0.031	0.311	0.245
D25	0.395	-0.073	-0.028	0.029	0.134
D26	0.011	-0.103	-0.041	0.182	0.139
D27	0.126	-0.131	-0.263	-0.253	0.010
D28	-0.069	0.163	-0.125	-0.349	-0.270
D29A	-0.288	0.253	-0.056	-0.267	-0.214
D29	0.156	0.438	-0.484	0.561	0.038
E50	0.056	-0.295	0.083	-0.119	-0.223

	B1	B3	B8	B9	C1
B1	1.000				
B3	0.550	1.000			
B8	0.410	0.444	1.000		
B9	-0.414	-0.425	-0.396	1.000	
C1	0.564	0.431	0.500	-0.301	1.000
C6N	0.812	0.655	0.534	-0.387	0.790
C12	0.110	0.244	0.619	-0.213	0.531
C12M	0.175	0.055	0.631	-0.090	0.411
D2	0.338	0.185	0.409	-0.269	0.511
D3	0.336	-0.032	0.156	-0.167	0.191
D4	0.311	0.112	0.294	-0.154	0.386
D6	0.139	0.126	0.103	0.107	0.054
D8	0.094	0.025	0.494	-0.024	0.315
D19	0.053	-0.002	0.436	-0.074	0.262
D24	-0.466	-0.291	-0.161	0.075	-0.674
D25	-0.265	-0.467	-0.241	0.103	-0.272
D26	-0.269	-0.272	-0.048	0.033	-0.347
D27	0.271	0.198	0.154	0.062	0.330
D28	0.415	0.378	0.361	-0.221	0.780
D29A	0.343	0.244	0.467	-0.062	0.696
D29	0.177	0.050	0.332	0.002	0.019
E50	-0.137	-0.126	0.015	0.182	-0.199

	C6N	C12	C12M	D2	D3
C6N	1.000				
C12	1.000	1.000			
C12M	1.000	0.982	1.000		
D2	0.576	0.171	0.076	1.000	
D3	0.558	0.496	0.287	0.196	1.000
D4	0.636	0.346	0.257	0.572	0.379
D6	0.387	0.186	0.157	0.259	0.056
D8	0.306	0.235	0.021	0.546	0.106
D19	0.179	-0.010	-0.009	0.314	0.376
D24	-0.577	-0.308	-0.425	-0.390	0.073

D25	-0.436	-0.233	-0.293	-0.047	0.172
D26	-0.467	0.035	-0.043	-0.255	0.003
D27	0.171	0.107	-0.078	0.259	0.186
D28	0.739	0.387	0.445	0.537	-0.094
D29A	0.758	0.527	0.544	0.408	-0.367
D29	0.390	0.133	-0.030	0.405	0.150
E50	0.034	0.181	0.326	0.025	-0.163

	D4	D6	D8	D19	D24
D4	1.000				
D6	0.141	1.000			
D8	0.419	0.241	1.000		
D19	0.223	-0.137	0.329	1.000	
D24	-0.442	-0.199	-0.123	-0.012	1.000
D25	-0.093	-0.042	0.088	0.393	0.504
D26	-0.372	-0.270	-0.024	-0.105	0.915
D27	0.161	0.096	0.248	0.200	0.024
D28	0.550	0.387	0.207	0.119	-0.995
D29A	0.360	0.314	0.428	-0.142	-0.763
D29	0.518	0.263	0.516	0.198	-0.131
E50	0.042	0.003	-0.002	-0.128	-0.075

	D25	D26	D27	D28	D29A
D25	1.000				
D26	0.463	1.000			
D27	0.055	0.042	1.000		
D28	-0.497	-0.904	-0.133	1.000	
D29A	-0.340	-0.532	-0.150	0.836	1.000
D29	0.055	-0.189	0.099	0.175	0.684
E50	-0.086	-0.042	-0.049	0.043	0.031

	D29	E50
D29	1.000	
E50	-0.176	1.000

[a] *OF 351 GOODMAN AND KRUSKAL GAMMAS (Γ), 40 (11%) ≥ .50.*

Table 20W

FREQUENCY TABLE, 27 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, *MIXED* POSTTEST SAMPLE, 31 ALASKAN VILLAGES (N = 168), 1989-1990[a]

	RAGES	PPEMP	RHHTYPE	RHHSIZE	TOTACT
RAGES	165				
PPEMP	124	128			
RHHTYPE	144	109	149		
RHHSIZE	164	127	148	169	
TOTACT	165	128	149	169	170
B1	165	128	149	169	170
B3	162	125	146	166	167
B8	163	127	148	167	168
B9	164	128	148	168	169
C1	164	127	148	168	169
C6N	165	128	149	169	170
C12	156	124	141	160	161
C12M	165	128	149	169	170
D2	161	125	144	164	165
D3	154	121	138	158	159
D4	163	126	149	167	168
D6	161	125	146	165	166
D8	163	126	149	167	168
D19	163	128	148	167	168
D24	165	128	149	169	170
D25	165	128	149	169	170
D26	164	128	148	168	169
D27	163	127	147	167	168
D28	159	122	143	163	164
D29A	121	91	116	123	124
D29	162	126	146	166	167
E50	155	123	140	159	160

	B1	B3	B8	B9	C1
B1	170				
B3	167	167			
B8	168	165	168		
B9	169	166	167	169	
C1	169	166	167	168	169
C6N	170	167	168	169	169
C12	161	158	159	160	160
C12M	170	167	168	169	169
D2	165	162	163	164	164
D3	159	157	157	158	158
D4	168	165	167	167	167
D6	166	163	164	165	165
D8	168	165	166	167	167
D19	168	165	166	167	167
D24	170	167	168	169	169
D25	170	167	168	169	169
D26	169	166	167	168	168
D27	168	165	166	167	167
D28	164	162	162	163	163
D29A	124	122	122	123	123
D29	167	164	165	166	166
E50	160	157	158	159	159

	C6N	C12	C12M	D2	D3
C6N	170				
C12	161	161			
C12M	170	161	170		
D2	165	156	165	165	
D3	159	153	159	155	159
D4	168	159	168	163	157
D6	166	157	166	162	156
D8	168	159	168	163	157
D19	168	159	168	163	157

D24	170	161	170	165	159
D25	170	161	170	165	159
D26	169	160	169	164	158
D27	168	160	168	163	158
D28	164	155	164	159	156
D29A	124	117	124	121	118
D29	167	158	167	164	157
E50	160	151	160	155	150

	D4	D6	D8	D19	D24
D4	168				
D6	164	166			
D8	167	164	168		
D19	166	164	166	168	
D24	168	166	168	168	170
D25	168	166	168	168	170
D26	167	165	167	168	169
D27	166	164	166	166	168
D28	162	160	162	162	164
D29A	123	121	124	123	124
D29	165	163	165	165	167
E50	158	157	158	159	160

	D25	D26	D27	D28	D29A
D25	170				
D26	169	169			
D27	168	167	168		
D28	164	163	162	164	
D29A	124	123	123	122	124
D29	167	166	165	162	122
E50	160	160	158	154	116

	D29	E50
D29	167	
E50	157	160

Table 21W

GOODMAN-KRUSKAL GAMMA MATRIX, 29 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, TOTAL AOSIS PANEL, FIRST WAVE, 31 ALASKAN VILLAGES (N = 170), 1987-1988[a]

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	1.000				
RAGES	-0.301	1.000			
PPEMP	-0.294	0.026	1.000		
RHHTYPE	0.404	-0.140	-0.037	1.000	
RHHSIZE	0.037	-0.021	-0.113	0.410	1.000
COMFISH	-0.231	0.050	-0.300	0.246	0.339
RACEVIL	0.356	-0.200	0.114	-0.256	-0.382
B1	0.132	-0.245	-0.063	-0.011	0.036
B3	0.338	-0.346	0.150	0.105	0.014
B8	0.040	-0.535	0.336	-0.099	-0.212
B9	-0.045	0.473	0.448	0.175	-0.009
C1	0.042	-0.414	-0.173	-0.099	-0.117
C6N	-0.313	-0.571	-0.137	0.020	-0.055
C12	-0.359	-0.032	0.342	-0.341	-0.217
C12M	0.000	-0.005	0.190	-0.192	0.092
D2	0.078	-0.180	0.103	-0.060	0.106
D3	-0.767	-0.042	0.483	-0.209	-0.028
D4	0.129	-0.107	-0.057	0.064	0.187
D6	0.276	-0.299	-0.137	-0.068	-0.046
D8	0.172	-0.019	0.302	-0.118	0.047
D19	-0.100	0.234	-0.362	0.282	0.149
D24	-0.102	0.002	-0.026	0.159	0.210
D25	-0.079	0.330	-0.112	0.379	0.218
D26	-0.100	0.070	-0.029	0.084	0.187
D27	-0.164	-0.081	-0.021	0.008	0.200
D28	-0.082	-0.106	-0.101	-0.448	-0.472
D29	-0.349	-0.145	0.136	-0.241	0.605
D29A	0.482	-0.286	-0.244	-0.171	-0.592
E50	0.259	-0.068	-0.004	-0.127	-0.061

	COMFISH	RACEVIL	B1	B3	B8
COMFISH	1.000				
RACEVIL	-0.583	1.000			
B1	0.055	0.370	1.000		
B3	0.123	0.326	0.524	1.000	
B8	-0.153	0.623	0.411	0.206	1.000
B9	0.200	-0.307	-0.503	-0.270	-0.195
C1	-0.180	0.532	0.502	0.350	0.770
C6N	-0.097	0.436	0.183	0.085	0.510
C12	-0.326	0.543	0.137	0.208	0.171
C12M	-0.875	0.106	0.048	-0.030	-0.150
D2	-0.056	0.579	0.295	0.247	0.316
D3	-0.377	-0.073	-0.016	-0.271	0.375
D4	-0.243	0.558	0.248	0.251	0.102
D6	0.101	0.411	0.240	0.215	0.256
D8	-0.298	0.489	0.154	0.093	0.265
D19	0.311	-0.229	-0.098	-0.069	-0.195
D24	0.600	-0.569	-0.123	-0.051	-0.234
D25	0.453	-0.553	-0.317	-0.296	-0.407
D26	0.509	-0.554	-0.196	-0.042	-0.165
D27	0.188	0.065	0.165	0.137	0.283
D28	-0.492	0.882	0.470	0.045	0.616
D29	-0.173	-0.061	0.072	0.024	0.086
D29A	-0.286	0.873	0.510	0.434	0.546
E50	-0.220	0.241	0.022	0.049	-0.014

	B9	C1	C6N	C12	C12M
B9	1.000				
C1	-0.384	1.000			
C6N	-0.280	0.512	1.000		
C12	-0.186	0.448	0.538	1.000	
C12M	0.029	0.015	0.590	0.622	1.000
D2	-0.372	0.503	0.482	0.151	-0.025
D3	0.294	0.134	0.373	0.211	0.340

D4	-0.351	0.485	0.395	0.125	0.010
D6	0.003	0.350	0.175	0.086	-0.241
D8	-0.150	0.260	0.173	-0.132	-0.198
D19	-0.093	0.080	0.131	-0.236	-0.160
D24	0.101	-0.273	0.090	-0.240	-0.227
D25	0.551	-0.537	-0.517	-0.121	-0.021
D26	0.046	-0.297	-0.034	-0.126	-0.195
D27	-0.285	0.050	0.543	0.236	-0.075
D28	-0.787	0.717	0.210	-0.215	-0.080
D29	-0.081	0.182	0.359	-0.011	0.459
D29A	0.023	0.616	0.511	0.000	0.022
E50	-0.074	-0.092	-0.254	0.035	-0.057

	D2	D3	D4	D6	D8
D2	1.000				
D3	-0.027	1.000			
D4	0.596	-0.023	1.000		
D6	0.227	-0.064	0.221	1.000	
D8	0.533	0.068	0.444	0.264	1.000
D19	0.175	-0.045	0.171	-0.233	0.120
D24	-0.234	-0.135	-0.230	-0.191	-0.177
D25	-0.364	-0.065	-0.321	-0.347	-0.137
D26	-0.246	-0.099	-0.271	-0.148	-0.118
D27	0.135	0.104	0.033	0.036	0.003
D28	0.606	-0.047	0.491	0.315	0.434
D29	0.351	0.175	0.273	0.068	0.375
D29A	0.436	-0.451	0.365	0.695	0.446
E50	-0.007	-0.205	0.184	0.252	-0.009

	D19	D24	D25	D26	D27
D19	1.000				
D24	0.235	1.000			
D25	0.366	0.716	1.000		
D26	0.230	0.869	0.755	1.000	
D27	0.221	0.103	0.012	0.068	1.000
D28	-0.167	-0.997	-0.821	-0.981	-0.188
D29	-0.029	-0.222	-0.312	-0.178	0.155
D29A	-0.426	-0.651	-0.526	-0.594	-0.321
E50	-0.453	-0.192	-0.250	-0.222	0.081

	D28	D29	D29A	E50
D28	1.000			
D29	0.191	1.000		
D29A	0.897	0.360	1.000	
E50	0.194	0.016	-0.103	1.000

[a] BARTLETT CHI-SQUARE STATISTIC: 815.987 DF = 406 PROB = .000.
OF 406 GOODMAN AND KRUSKAL GAMMAS (Γ), 54 (13%) ≥.50.

Table 21W

FREQUENCY TABLE, 29 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, TOTAL AOSIS PANEL, 31 ALASKAN VILLAGES (*N* = 170), 1987-1988

	RSEX	RAGES	PPEMP	RHHTYPE	RHHSIZE
RSEX	169				
RAGES	156	156			
PPEMP	130	121	130		
RHHTYPE	160	149	125	160	
RHHSIZE	159	147	124	151	159
COMFISH	169	156	130	160	159
RACEVIL	169	156	130	160	159
B1	168	155	129	159	159
B3	164	151	125	156	154
B8	169	156	130	160	159
B9	165	152	128	157	155
C1	167	154	129	158	157
C6N	167	154	129	158	158
C12	161	150	126	154	151
C12M	168	155	129	159	158
D2	159	148	122	150	151
D3	162	150	125	154	153
D4	156	143	122	147	149
D6	165	152	126	156	155
D8	169	156	130	160	159
D19	168	155	129	159	158
D24	169	156	130	160	159
D25	169	156	130	160	159
D26	160	149	124	151	150
D27	167	154	129	158	158
D28	162	149	123	153	152
D29	168	155	129	159	158
D29A	115	107	88	109	106
E50	132	122	105	124	128

	COMFISH	RACEVIL	B1	B3	B8
COMFISH	170				
RACEVIL	170	170			
B1	169	169	169		
B3	165	165	164	165	
B8	170	170	169	165	170
B9	166	166	165	162	166
C1	168	168	167	163	168
C6N	168	168	167	163	168
C12	162	162	161	158	162
C12M	169	169	168	164	169
D2	160	160	160	155	160
D3	163	163	162	160	163
D4	156	156	156	152	156
D6	166	166	165	161	166
D8	170	170	169	165	170
D19	169	169	168	164	169
D24	170	170	169	165	170
D25	170	170	169	165	170
D26	161	161	160	157	161
D27	168	168	168	163	168
D28	163	163	162	158	163
D29	169	169	168	164	169
D29A	115	115	114	114	115
E50	132	132	132	127	132

	B9	C1	C6N	C12	C12M
B9	166				
C1	164	168			
C6N	164	166	168		
C12	159	160	160	162	
C12M	165	167	167	161	169
D2	157	158	158	153	159

D3	160	161	161	156	162
D4	152	154	154	148	155
D6	162	164	164	158	165
D8	166	168	168	162	169
D19	165	167	167	161	168
D24	166	168	168	162	169
D25	166	168	168	162	169
D26	157	160	159	154	160
D27	164	166	166	160	167
D28	159	161	161	155	162
D29	165	167	167	161	168
D29A	113	113	113	108	114
E50	128	130	130	125	131

	D2	D3	D4	D6	D8
D2	160				
D3	154	163			
D4	149	149	156		
D6	156	159	152	166	
D8	160	163	156	166	170
D19	159	162	155	165	169
D24	160	163	156	166	170
D25	160	163	156	166	170
D26	151	157	147	157	161
D27	159	161	156	164	168
D28	154	156	149	159	163
D29	159	162	155	165	169
D29A	108	113	108	113	115
E50	126	126	127	129	132

	D19	D24	D25	D26	D27
D19	169				
D24	169	170			
D25	169	170	170		
D26	160	161	161	161	
D27	167	168	168	159	168
D28	163	163	163	154	161
D29	168	169	169	160	167
D29A	115	115	115	110	114
E50	131	132	132	124	132

	D28	D29	D29A	E50
D28	163			
D29	162	169		
D29A	113	114	115	
E50	125	131	94	132

Table 22W

GOODMAN-KRUSKAL GAMMA MATRIX, 29 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, TOTAL AOSIS PANEL, SECOND WAVE, 31 ALASKAN VILLAGES (N = 170), 1988-1989[a]

	BRSEX	BRAGE	BPPEMP	BRHHTYPE	BRHHSIZE
BRSEX	1.000				
BRAGE	-0.234	1.000			
BPPEMP	-0.373	-0.236	1.000		
BRHHTYPE	0.348	0.006	-0.073	1.000	
BRHHSIZE	0.133	-0.122	0.040	0.512	1.000
COMFISH	-0.201	-0.032	-0.280	0.477	0.329
RACEVIL	0.323	-0.171	0.208	-0.455	-0.449
BB1	0.122	-0.267	0.180	-0.177	-0.014
BB3	0.030	-0.327	0.073	-0.002	0.049
BB8	0.101	-0.238	0.365	-0.074	-0.011
BB9	-0.107	0.151	-0.317	0.046	-0.239
BC1	0.137	-0.385	0.075	-0.262	-0.142
BC6M	0.034	-0.275	0.441	-0.018	0.063
BC12	-0.226	-0.112	0.060	0.039	-0.046
BC12M	-0.556	-0.209	0.319	-0.281	-0.184
BD2	0.013	-0.158	0.175	-0.180	0.066
BD3	-0.622	-0.087	0.570	-0.304	-0.057
BD4	0.095	-0.154	0.134	-0.050	0.127
BD6	0.122	-0.106	0.082	-0.161	-0.062
BD8	0.282	0.007	-0.059	-0.161	0.022
BD19	0.055	0.076	-0.240	0.075	0.055
BD24	-0.044	-0.041	-0.058	0.238	0.127
BD25	-0.052	0.043	-0.038	0.178	0.116
BD26	-0.092	-0.122	-0.096	0.305	0.191
BD27	-0.048	0.029	0.200	0.083	0.017
BD28	0.008	-0.033	0.031	-0.569	-0.456
BD29	-0.397	-0.159	0.316	-0.108	0.543
BD29A	0.347	-0.307	0.124	-0.508	-0.439
BE50	0.377	0.002	-0.209	-0.105	-0.232

	COMFISH	RACEVIL	BB1	BB3	BB8
COMFISH	1.000				
RACEVIL	-0.583	1.000			
BB1	0.107	0.358	1.000		
BB3	0.173	0.355	0.668	1.000	
BB8	-0.160	0.547	0.548	0.384	1.000
BB9	-0.343	-0.101	-0.639	-0.410	-0.237
BC1	-0.224	0.627	0.437	0.478	0.464
BC6M	0.163	0.372	0.408	0.409	0.441
BC12	0.124	0.535	0.061	0.381	0.207
BC12M	-0.375	0.727	-0.161	0.127	0.429
BD2	-0.271	0.537	0.238	0.271	0.301
BD3	-0.395	0.159	-0.225	-0.096	0.111
BD4	-0.230	0.564	0.165	0.244	0.189
BD6	-0.132	0.371	0.182	0.189	0.158
BD8	-0.571	0.380	-0.069	-0.136	0.267
BD19	0.297	-0.215	0.018	-0.060	0.066
BD24	0.426	-0.554	-0.287	-0.097	-0.373
BD25	0.312	-0.256	-0.142	0.078	-0.245
BD26	0.595	-0.417	-0.206	0.000	-0.161
BD27	0.093	0.060	-0.006	-0.082	0.266
BD28	-0.796	0.905	0.378	0.423	0.651
BD29	0.034	0.005	0.083	0.168	-0.020
BD29A	-0.609	0.920	0.344	0.697	0.411
BE50	-0.065	0.093	0.038	-0.038	0.104

	BD9	BC1	BC6N	BC12	BC12M
BB9	1.000				
BC1	-0.264	1.000			
BC6M	-0.590	0.512	1.000		
BC12	0.170	0.371	0.495	1.000	

BC12M	-0.322	0.398	0.525	0.976	1.000
BD2	-0.031	0.557	0.517	0.274	0.205
BD3	0.284	0.068	0.525	0.178	0.719
BD4	-0.028	0.426	0.517	0.291	0.185
BD6	-0.045	0.122	0.240	-0.182	0.635
BD8	0.271	0.217	-0.049	0.010	-0.120
BD19	-0.126	0.111	-0.033	-0.187	-0.579
BD24	0.011	-0.372	-0.174	-0.026	0.129
BD25	-0.186	-0.092	-0.463	-0.242	0.071
BD26	-0.260	-0.276	-0.097	-0.012	-0.052
BD27	-0.034	0.172	0.124	0.370	0.352
BD28	0.163	0.865	0.166	0.251	0.518
BD29	-0.065	0.149	0.326	0.193	0.082
BD29A	0.282	0.750	0.262	-0.041	0.474
BE50	0.076	0.045	-0.096	0.216	-0.118

	BD2	BD3	BD4	BD6	BD8
BD2	1.000				
BD3	0.280	1.000			
BD4	0.643	0.210	1.000		
BD6	0.255	0.208	0.195	1.000	
BD8	0.427	0.287	0.425	0.090	1.000
BD19	0.111	-0.351	0.049	-0.061	-0.052
BD24	-0.350	-0.026	-0.305	-0.275	-0.118
BD25	-0.185	-0.028	-0.013	-0.238	-0.003
BD26	-0.365	-0.026	-0.185	-0.280	-0.157
BD27	0.171	0.259	0.184	0.082	0.047
BD28	0.607	0.179	0.283	0.236	0.438
BD29	0.544	0.476	0.474	0.182	0.298
BD29A	0.697	-0.122	0.442	0.697	0.444
BE50	-0.126	-0.351	-0.143	-0.001	0.135

	BD19	BD24	BD25	BD26	BD27
BD19	1.000				
BD24	0.070	1.000			
BD25	0.402	0.476	1.000		
BD26	0.190	0.779	0.467	1.000	
BD27	0.275	-0.051	-0.069	0.028	1.000
BD28	-0.260	-0.837	-0.740	-0.788	0.020
BD29	-0.180	-0.088	-0.082	-0.193	0.098
BD29A	-0.131	-0.730	-0.639	-0.652	0.138
BE50	-0.237	0.040	0.246	0.020	-0.243

	BD28	BD29	BD29A	BE50
BD28	1.000			
BD29	0.053	1.000		
BD29A	0.942	-0.607	1.000	
BE50	0.038	-0.136	-0.264	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 581.475 DF = 406 PROB = .000.*
OF 406 GOODMAN AND KRUSKAL GAMMAS (Γ), 54 (13%) ≥.50.

Table 22W

FREQUENCY TABLE, 29 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, TOTAL AOSIS PANEL, SECOND WAVE, 31 ALASKAN VILLAGES (N = 170), 1988-1989

	BRSEX	BRAGE	BPPEMP	BRHHTYPE	BRHHSIZE
BRSEX	170				
BRAGE	169	169			
BPPEMP	155	154	155		
BRHHTYPE	164	163	155	164	
BRHHSIZE	170	169	155	164	170
COMFISH	170	169	155	164	170
RACEVIL	170	169	155	164	170
BB1	170	169	155	164	170
BB3	167	166	152	161	167
BB8	170	169	155	164	170
BB9	170	169	155	164	170
BC1	167	166	152	161	167
BC6M	86	85	79	86	86
BC12	164	163	151	158	164
BC12M	86	85	79	86	86
BD2	161	160	147	155	161
BD3	167	166	152	161	167
BD4	165	164	150	159	165
BD6	168	167	153	162	168
BD8	167	166	152	161	167
BD19	165	164	150	159	165
BD24	170	169	155	164	170
BD25	146	146	134	140	146
BD26	143	142	133	142	143
BD27	167	166	152	161	167
BD28	165	164	150	159	165
BD29	170	169	155	164	170
BD29A	113	113	103	110	113
BE50	147	147	135	142	147

	COMFISH	RACEVIL	BB1	BB3	BB8
COMFISH	170				
RACEVIL	170	170			
BB1	170	170	170		
BB3	167	167	167	167	
BB8	170	170	170	167	170
BB9	170	170	170	167	170
BC1	167	167	167	164	167
BC6M	86	86	86	86	86
BC12	164	164	164	161	164
BC12M	86	86	86	86	86
BD2	161	161	161	159	161
BD3	167	167	167	164	167
BD4	165	165	165	163	165
BD6	168	168	168	165	168
BD8	167	167	167	164	167
BD19	165	165	165	162	165
BD24	170	170	170	167	170
BD25	146	146	146	143	146
BD26	143	143	143	140	143
BD27	167	167	167	165	167
BD28	165	165	165	162	165
BD29	170	170	170	167	170
BD29A	113	113	113	111	113
BE50	147	147	147	146	147

	BB9	BC1	BC6M	BC12	BC12M
BB9	170				
BC1	167	167			
BC6M	86	84	86		
BC12	164	161	84	164	
BC12M	86	84	86	84	86
BD2	161	158	79	156	79

BD3	167	164	84	161	84
BD4	165	162	84	159	84
BD6	168	165	85	162	85
BD8	167	164	83	161	83
BD19	165	162	86	160	86
BD24	170	167	86	164	86
BD25	146	143	63	142	63
BD26	143	140	76	137	76
BD27	167	164	86	161	86
BD28	165	162	83	159	83
BD29	170	167	86	164	86
BD29A	113	110	57	109	57
BE50	147	144	76	143	76

	BD2	BD3	BD4	BD6	BD8
BD2	161				
BD3	159	167			
BD4	156	162	165		
BD6	160	165	163	168	
BD8	158	164	162	165	167
BD19	156	162	161	163	162
BD24	161	167	165	168	167
BD25	137	144	142	144	144
BD26	137	141	139	142	140
BD27	159	164	163	165	164
BD28	156	162	160	163	162
BD29	161	167	165	168	167
BD29A	105	110	111	111	110
BE50	141	145	144	145	144

	BD19	BD24	BD25	BD26	BD27
BD19	165				
BD24	165	170			
BD25	141	146	146		
BD26	140	143	121	143	
BD27	163	167	143	142	167
BD28	160	165	142	139	163
BD29	165	170	146	143	167
BD29A	109	113	104	95	111
BE50	142	147	126	126	146

	BD28	BD29	BD29A	BE50
BD28	165			
BD29	165	170		
BD29A	113	113	113	
BE50	143	147	99	147

Table 23W

GOODMAN-KRUSKAL GAMMA MATRIX, 29 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, TOTAL AOSIS PANEL, THIRD WAVE, 31 ALASKAN VILLAGES (N = 170), 1989-1990[a]

	RSEXC	RAGESC	PPEMPC	RHHTYPEC	RHHSIZEC
RSEXC	1.000				
RAGESC	-0.266	1.000			
PPEMPC	-0.332	-0.268	1.000		
RHHTYPEC	0.211	0.088	0.023	1.000	
RHHSIZEC	0.058	-0.099	0.228	0.510	1.000
COMFISH	-0.264	0.037	-0.222	0.425	0.383
RACEVIL	0.224	-0.324	-0.049	-0.318	-0.399
B1C	0.160	-0.284	0.159	-0.094	0.103
B3C	0.060	-0.371	0.159	0.012	0.195
B8C	0.008	-0.328	0.392	0.048	0.114
B9C	0.062	-0.035	-0.289	-0.001	-0.194
C1C	0.182	-0.527	0.040	-0.118	-0.017
C6NC	-0.256	-0.734	0.808	0.105	0.280
C12C	-0.258	-0.405	0.116	0.062	-0.008
C12MC	-0.470	-0.350	0.244	0.167	0.118
D2C	0.037	-0.271	0.089	-0.197	0.043
D3C	-0.589	-0.296	0.500	-0.277	-0.009
D4C	0.061	-0.104	0.051	-0.162	0.054
D6C	0.012	-0.363	-0.063	-0.005	0.133
D8C	0.275	-0.215	0.031	-0.115	-0.079
D19C	0.084	0.150	-0.076	0.018	-0.008
D24C	-0.052	0.189	-0.040	0.294	0.262
D25C	0.121	0.291	-0.049	0.088	0.053
D26C	-0.107	0.117	-0.224	0.237	0.076
D27C	-0.053	-0.116	0.009	-0.023	-0.027
D28C	-0.038	-0.162	0.119	-0.500	-0.381
D29C	-0.295	-0.231	0.323	-0.215	0.550
D29AC	0.580	-0.461	0.269	-0.461	-0.585
E50C	0.151	-0.085	-0.079	0.154	-0.068

	COMFISH	RACEVIL	B1C	B3C	B8C
COMFISH	1.000				
RACEVIL	-0.583	1.000			
B1C	-0.070	0.355	1.000		
B3C	0.282	0.337	0.718	1.000	
B8C	-0.256	0.445	0.634	0.492	1.000
B9C	-0.226	-0.186	-0.454	-0.593	-0.345
C1C	-0.081	0.547	0.442	0.462	0.725
C6NC	0.158	0.184	0.542	0.567	0.473
C12C	-0.034	0.165	0.170	0.163	0.321
C12MC	-0.184	0.006	0.038	-0.060	0.504
D2C	-0.141	0.625	0.303	0.268	0.437
D3C	-0.454	-0.028	0.083	0.044	0.207
D4C	-0.128	0.539	0.127	-0.016	0.224
D6C	0.007	0.598	0.338	0.297	0.388
D8C	-0.046	0.148	0.069	0.019	0.189
D19C	0.146	0.075	0.045	0.009	0.116
D24C	0.370	-0.649	-0.142	0.050	-0.330
D25C	-0.177	-0.348	-0.045	-0.036	-0.241
D26C	0.541	-0.603	-0.092	0.008	-0.287
D27C	0.229	0.017	0.054	0.083	0.030
D28C	-0.690	0.894	0.416	0.198	0.627
D29C	-0.180	-0.018	-0.017	0.065	-0.037
D29AC	-0.417	0.843	0.488	0.274	0.609
E50C	-0.047	0.310	0.120	-0.080	0.092

	B9C	C1C	C6NC	C12C	C12MC
B9C	1.000				
C1C	-0.330	1.000			
C6NC	-0.434	0.563	1.000		
C12C	0.042	0.448	0.785	1.000	

C12MC	0.132	0.244	0.766	0.966	1.000
D2C	-0.184	0.542	0.534	0.139	0.063
D3C	-0.203	0.071	0.638	0.085	0.489
D4C	-0.118	0.249	0.180	0.084	0.093
D6C	-0.163	0.388	0.191	-0.015	-0.159
D8C	0.103	0.240	0.348	-0.055	0.025
D19C	0.014	0.091	0.047	-0.182	-0.142
D24C	-0.170	-0.404	-0.106	-0.194	-0.031
D25C	0.026	-0.172	-0.192	-0.289	-0.240
D26C	-0.224	-0.330	-0.179	-0.105	0.002
D27C	0.022	0.159	0.214	0.487	0.298
D28C	-0.051	0.735	0.207	0.025	-0.180
D29C	-0.163	0.180	0.342	-0.233	-0.035
D29AC	0.023	0.592	0.580	0.137	-0.193
E50C	0.332	-0.038	-0.159	0.003	-0.133

	D2C	D3C	D4C	D6C	D8C
D2C	1.000				
D3C	0.169	1.000			
D4C	0.549	-0.011	1.000		
D6C	0.453	-0.131	0.282	1.000	
D8C	0.261	-0.113	0.101	0.192	1.000
D19C	0.232	-0.085	0.106	0.130	0.045
D24C	-0.352	-0.145	-0.313	-0.184	-0.124
D25C	0.016	0.073	-0.063	-0.109	-0.017
D26C	-0.398	-0.179	-0.287	-0.236	-0.172
D27C	0.134	0.108	0.060	0.206	-0.033
D28C	0.714	0.119	0.587	0.541	0.302
D29C	0.438	0.503	0.431	0.194	0.010
D29AC	0.616	-0.146	0.574	0.517	0.247
E50C	0.060	-0.375	-0.021	0.375	-0.138

	D19C	D24C	D25C	D26C	D27C
D19C	1.000				
D24C	-0.060	1.000			
D25C	0.258	0.430	1.000		
D26C	-0.221	0.744	0.281	1.000	
D27C	0.150	0.075	0.026	0.134	1.000
D28C	-0.067	-0.917	-0.339	-0.814	-0.161
D29C	-0.091	-0.200	0.029	-0.336	0.050
D29AC	0.034	-0.695	-0.509	-0.600	-0.179
E50C	-0.314	0.136	-0.072	-0.041	0.042

	D28C	D29C	D29AC	E50C
D28C	1.000			
D29C	0.540	1.000		
D29AC	0.853	0.171	1.000	
E50C	0.078	-0.218	0.290	1.000

[a] *BARTLETT CHI-SQUARE STATISTIC: 879.832 DF = 406 PROB = .000.*
OF 406 GOODMAN AND KRUSKAL GAMMAS (Γ), 56 (14%) ≥.50.

Table 23W

FREQUENCY TABLE, 29 AOSIS DEMOGRAPHIC, HEALTH, EDUCATION, ECONOMIC, SOCIAL, AND POLITICAL VARIABLES, TOTAL AOSIS PANEL, THIRD WAVE, 31 ALASKAN VILLAGES (N = 170), 1989-1990

	RSEXC	RAGESC	PPEMPC	RHHTYPEC	RHHSIZEC
RSEXC	169				
RAGESC	165	165			
PPEMPC	160	156	160		
RHHTYPEC	168	164	160	168	
RHHSIZEC	169	165	160	168	169
COMFISH	169	165	160	168	169
RACEVIL	169	165	160	168	169
B1C	169	165	160	168	169
B3C	167	163	159	167	167
B8C	168	164	159	167	168
B9C	168	164	159	167	168
C1C	169	165	160	168	169
C6NC	169	165	160	168	169
C12C	160	157	151	159	160
C12MC	169	165	160	168	169
D2C	161	158	152	160	161
D3C	167	163	158	166	167
D4C	168	164	159	167	168
D6C	166	162	157	165	166
D8C	169	165	160	168	169
D19C	167	163	158	166	167
D24C	167	163	158	166	167
D25C	169	165	160	168	169
D26C	140	136	134	139	140
D27C	169	165	160	168	169
D28C	164	161	155	163	164
D29C	169	165	160	168	169
D29AC	121	120	114	120	121
E50C	154	150	147	154	154

	COMFISH	RACEVIL	B1C	B3C	B8C
COMFISH	170				
RACEVIL	170	170			
B1C	169	169	169		
B3C	167	167	167	167	
B8C	168	168	168	166	168
B9C	168	168	168	166	167
C1C	169	169	169	167	168
C6NC	169	169	169	167	168
C12C	160	160	160	158	159
C12MC	169	169	169	167	168
D2C	161	161	161	159	160
D3C	167	167	167	165	166
D4C	168	168	168	166	167
D6C	166	166	166	164	165
D8C	169	169	169	167	168
D19C	167	167	167	165	166
D24C	167	167	167	165	166
D25C	169	169	169	167	168
D26C	140	140	140	138	139
D27C	169	169	169	167	168
D28C	164	164	164	162	163
D29C	169	169	169	167	168
D29AC	121	121	121	119	121
E50C	154	154	154	153	153

	B9C	C1C	C6NC	C12C	C12MC
B9C	168				
C1C	168	169			
C6NC	168	169	169		
C12C	159	160	160	160	
C12MC	168	169	169	160	169
D2C	160	161	161	153	161
D3C	166	167	167	158	167
D4C	167	168	168	159	168
D6C	165	166	166	157	166
D8C	168	169	169	160	169
D19C	166	167	167	158	167
D24C	166	167	167	158	167
D25C	168	169	169	160	169
D26C	139	140	140	132	140
D27C	168	169	169	160	169
D28C	163	164	164	155	164
D29C	168	169	169	160	169
D29AC	120	121	121	114	121
E50C	154	154	154	145	154

	D2C	D3C	D4C	D6C	D8C
D2C	161				
D3C	159	167			
D4C	160	166	168		
D6C	160	164	165	166	
D8C	161	167	168	166	169
D19C	159	165	166	164	167
D24C	159	165	166	164	167
D25C	161	167	168	166	169
D26C	134	140	139	137	140
D27C	161	167	168	166	169
D28C	156	162	163	161	164
D29C	161	167	168	166	169
D29AC	115	120	120	120	121
E50C	146	152	153	151	154

	D19C	D24C	D25C	D26C	D27C
D19C	167				
D24C	166	167			
D25C	167	167	169		
D26C	138	138	140	140	
D27C	167	167	169	140	169
D28C	162	163	164	135	164
D29C	167	167	169	140	169
D29AC	119	119	121	104	121
E50C	152	152	154	130	154

	D28C	D29C	D29AC	E50C
D28C	164			
D29C	164	169		
D29AC	120	121	121	
E50C	149	154	109	154

Table 24K

MATRIX OF GAMMA COEFFICIENTS, 48 KIP VARIABLES, INITIAL INTERVIEWS, TOTAL KIP SAMPLE, N = 169, 1987-1988

	K1	K2	K3	K4	K5
K1	1.000				
K2	0.731	1.000			
K3	0.717	0.602	1.000		
K4	-0.429	-0.166	-0.303	1.000	
K5	-0.255	-0.076	-0.210	0.826	1.000
K6	0.182	-0.026	0.137	-0.839	-0.984
K7	0.107	0.063	0.019	0.067	0.154
K8	-0.072	0.012	-0.085	0.254	0.486
K9	-0.397	-0.206	-0.196	0.531	0.699
K10	0.107	-0.072	0.199	-0.382	-0.614
K11A	0.180	0.218	0.305	0.148	0.233
K11B	0.325	0.286	0.255	-0.201	-0.209
K12A	0.023	0.122	0.182	0.219	0.191
K12B	0.126	0.052	0.126	0.170	-0.025
K13A	0.556	0.590	0.438	-0.039	0.243
K13B	0.399	0.414	0.419	-0.111	0.085
K14A	0.462	0.357	0.421	-0.145	0.034
K14B	0.429	0.158	0.421	-0.308	-0.277
K15A	0.428	0.625	0.459	-0.146	0.086
K15B	0.474	0.558	0.489	-0.335	-0.123
K16A	0.380	0.486	0.442	-0.067	0.001
K16B	0.489	0.370	0.412	-0.360	-0.318
K17	0.387	0.382	0.270	0.078	-0.026
K18	0.216	0.209	0.272	-0.271	-0.571
K19	-0.184	-0.164	-0.022	0.081	0.027
K20	0.013	0.056	0.016	0.063	0.142
K21	-0.301	-0.280	-0.265	0.110	0.040
K22	-0.059	0.015	0.205	0.139	-0.132
K23	0.115	0.399	0.058	0.316	0.275
K24	0.224	0.472	0.346	0.157	0.133
K25	0.109	0.336	0.147	0.263	0.379
K26	0.069	0.091	0.154	-0.212	-0.349
K27	-0.006	0.064	0.079	-0.040	-0.155
K28	0.075	0.075	-0.019	-0.153	0.013
K29	0.193	0.119	0.311	-0.304	-0.029
K30	0.361	0.416	0.371	-0.352	-0.352
K31	0.451	0.339	0.583	-0.551	-0.574
K32	0.247	0.308	0.234	-0.075	0.021
K33	0.022	0.036	0.005	0.108	0.168
K34	0.168	0.280	0.076	-0.268	-0.419
K35	0.087	-0.133	0.038	-0.330	-0.390
K36	0.045	-0.024	-0.184	0.038	0.018
K37	0.339	0.343	0.381	-0.340	-0.196
K37B	0.252	0.168	0.301	-0.364	-0.280
K38	-0.531	-0.450	-0.399	0.580	0.472
K39	0.104	-0.071	0.106	-0.430	-0.325
K40	-0.260	-0.113	-0.045	0.060	-0.114
K41	0.007	-0.128	0.025	0.322	0.376

	K6	K7	K8	K9	K10
K6	1.000				
K7	-0.109	1.000			
K8	-0.491	-0.832	1.000		
K9	-0.774	0.091	0.194	1.000	
K10	0.647	0.038	-0.315	-0.409	1.000
K11A	-0.273	-0.001	0.170	0.146	0.015
K11B	0.178	0.148	-0.086	-0.125	0.490
K12A	-0.188	-0.056	0.279	0.060	0.067
K12B	-0.006	-0.092	0.180	-0.075	0.414
K13A	-0.241	0.031	0.216	-0.028	-0.140
K13B	-0.094	-0.166	0.226	-0.090	0.328
K14A	-0.060	0.188	-0.007	0.030	0.256
K14B	0.247	0.150	-0.128	-0.038	0.596
K15A	-0.177	-0.038	0.057	0.063	-0.093
K15B	0.087	0.046	-0.066	-0.140	0.100
K16A	-0.060	-0.028	0.163	-0.042	0.095
K16B	0.296	-0.013	-0.054	-0.352	0.371

K17	-0.035	0.032	0.002	0.098	0.017
K18	0.542	-0.146	-0.139	-0.325	0.551
K19	-0.046	-0.065	0.014	-0.013	0.029
K20	-0.168	-0.083	-0.004	0.126	-0.108
K21	-0.189	-0.283	0.108	0.259	-0.275
K22	0.062	-0.027	-0.092	0.050	-0.066
K23	-0.269	0.071	0.129	0.232	-0.365
K24	-0.214	0.162	-0.078	0.357	-0.108
K25	-0.420	0.113	0.070	0.177	-0.291
K26	0.323	-0.057	-0.156	-0.112	0.334
K27	0.093	-0.087	0.014	-0.061	0.218
K28	0.027	0.187	-0.128	-0.016	0.078
K29	0.007	0.038	-0.079	-0.080	-0.027
K30	0.292	-0.035	-0.099	-0.119	0.290
K31	0.556	-0.007	-0.325	-0.266	0.419
K32	-0.035	-0.126	0.072	-0.164	0.206
K33	-0.210	-0.061	0.213	-0.020	-0.077
K34	0.328	-0.152	-0.070	-0.349	0.272
K35	0.403	-0.112	-0.084	-0.300	0.394
K36	-0.040	0.109	-0.040	0.040	0.013
K37	0.171	0.041	-0.170	-0.100	0.067
K37B	0.283	0.126	-0.300	-0.047	0.081
K38	-0.415	-0.084	0.241	0.302	-0.209
K39	0.363	0.166	-0.217	-0.209	0.167
K40	0.049	-0.215	0.165	0.005	0.263
K41	-0.392	0.038	0.034	0.215	0.075

	K11A	K11B	K12A	K12B	K13A
K11A	1.000				
K11B	0.834	1.000			
K12A	0.553	0.432	1.000		
K12B	0.472	0.662	0.923	1.000	
K13A	0.389	0.300	0.228	0.317	1.000
K13B	0.329	0.493	0.333	0.504	0.741
K14A	0.324	0.320	0.552	0.646	0.610
K14B	0.357	0.306	0.570	0.636	0.467
K15A	0.486	0.296	0.100	0.062	0.561
K15B	0.330	0.232	-0.068	-0.242	0.314
K16A	0.366	0.352	0.494	0.666	0.478
K16B	0.208	0.254	0.480	0.559	0.180
K17	0.366	0.405	-0.037	-0.029	0.347
K18	-0.008	0.105	0.147	0.141	-0.191
K19	-0.106	-0.039	0.130	0.200	-0.355
K20	0.055	-0.090	0.047	-0.124	-0.203
K21	-0.030	-0.063	-0.075	0.084	-0.302
K22	0.226	0.340	0.185	0.140	-0.035
K23	0.118	-0.214	-0.023	-0.189	0.221
K24	0.342	0.174	0.124	-0.247	0.364
K25	0.520	0.118	0.312	-0.096	0.341
K26	0.262	0.337	0.118	0.044	-0.196
K27	0.261	0.142	0.207	0.090	-0.167
K28	0.441	0.336	0.248	0.172	0.177
K29	0.415	0.374	0.059	-0.012	0.215
K30	0.321	0.440	0.058	0.082	0.371
K31	0.320	0.356	0.001	0.067	0.199
K32	0.399	0.336	0.149	0.183	0.203
K33	0.202	-0.163	-0.001	-0.330	0.014
K34	0.071	-0.078	-0.018	0.198	0.171
K35	-0.397	0.098	-0.023	0.340	-0.145
K36	0.071	0.156	-0.086	0.139	-0.092
K37	0.097	0.231	-0.252	-0.275	0.287
K37B	-0.159	-0.081	-0.331	-0.429	0.093
K38	0.162	-0.132	0.368	0.296	-0.278
K39	0.141	0.242	-0.077	-0.002	0.001
K40	0.394	0.539	0.691	1.000	-0.200
K41	-0.050	-0.007	0.246	0.492	-0.112

	K13B	K14A	K14B	K15A	K15B
K13B	1.000				
K14A	0.538	1.000			
K14B	0.664	0.933	1.000		
K15A	0.402	0.405	0.196	1.000	
K15B	0.417	0.150	0.198	0.868	1.000
K16A	0.518	0.780	0.631	0.692	0.505
K16B	0.464	0.555	0.609	0.486	0.516

K17	0.053	0.236	0.039	0.339	0.203
K18	0.142	0.027	0.140	-0.027	0.014
K19	-0.249	-0.221	-0.296	-0.302	-0.422
K20	-0.267	-0.238	-0.480	-0.162	0.017
K21	-0.163	-0.333	-0.284	-0.046	-0.149
K22	0.211	-0.024	0.128	-0.026	-0.128
K23	0.044	-0.126	-0.148	0.166	0.218
K24	0.161	0.267	0.007	0.311	0.278
K25	0.234	0.144	0.068	0.438	0.442
K26	-0.247	-0.040	0.101	0.126	0.046
K27	-0.071	-0.283	-0.188	-0.102	-0.116
K28	0.088	0.095	0.143	0.374	0.304
K29	0.332	0.139	0.211	0.594	0.722
K30	0.347	0.185	0.072	0.442	0.479
K31	0.226	0.384	0.499	0.506	0.575
K32	0.258	0.232	0.309	0.319	0.235
K33	-0.238	0.091	0.091	0.138	0.108
K34	0.242	0.404	0.636	0.286	0.458
K35	-0.156	0.179	0.220	-0.198	-0.187
K36	0.033	-0.086	0.114	0.102	0.147
K37	0.187	0.204	0.282	0.443	0.538
K37B	-0.047	0.316	0.174	0.361	0.410
K38	-0.215	-0.038	-0.196	-0.196	-0.410
K39	-0.116	-0.099	-0.198	0.030	0.135
K40	0.392	-0.018	-0.231	0.024	-0.013
K41	0.048	0.083	0.300	-0.059	-0.421

	K16A	K16B	K17	K18	K19
K16A	1.000				
K16B	0.918	1.000			
K17	0.243	0.181	1.000		
K18	0.055	0.266	0.042	1.000	
K19	-0.072	-0.247	-0.264	0.093	1.000
K20	-0.141	-0.291	-0.174	0.150	0.625
K21	-0.110	-0.354	-0.110	-0.259	0.210
K22	-0.017	-0.279	-0.052	-0.244	0.301
K23	0.154	-0.023	0.330	-0.029	0.029
K24	0.275	-0.024	0.456	0.113	-0.005
K25	0.323	0.165	0.235	-0.123	0.097
K26	0.047	0.079	0.172	0.372	0.129
K27	-0.136	-0.257	0.219	0.293	0.224
K28	0.174	0.396	0.126	0.057	-0.158
K29	0.243	0.288	0.001	-0.246	-0.225
K30	0.306	0.258	0.272	0.194	-0.251
K31	0.330	0.597	0.300	0.280	-0.333
K32	0.272	0.178	0.207	0.063	0.151
K33	-0.021	-0.198	0.170	-0.037	-0.018
K34	0.446	0.609	0.200	0.164	-0.170
K35	-0.129	0.130	-0.143	0.273	-0.229
K36	0.011	0.128	-0.023	-0.078	0.010
K37	0.118	0.215	0.277	0.088	-0.404
K37B	0.360	0.482	0.080	0.110	-0.270
K38	0.025	-0.217	-0.139	-0.183	0.004
K39	-0.013	0.224	0.019	0.071	-0.362
K40	-0.058	-0.147	-0.233	0.177	0.160
K41	0.203	0.107	0.169	0.056	0.176

	K20	K21	K22	K23	K24
K20	1.000				
K21	0.317	1.000			
K22	0.406	0.162	1.000		
K23	0.045	-0.321	-0.132	1.000	
K24	0.113	-0.140	0.195	0.662	1.000
K25	0.281	0.155	0.196	0.452	0.765
K26	0.221	0.030	0.267	-0.072	-0.037
K27	0.318	0.133	0.291	0.079	0.152
K28	-0.088	-0.055	0.144	0.084	0.202
K29	-0.012	0.030	0.340	-0.049	0.082
K30	-0.110	-0.262	-0.018	0.197	0.321
K31	-0.270	-0.221	0.211	-0.068	0.197
K32	0.256	0.070	0.168	0.063	0.273
K33	0.065	0.058	-0.102	-0.028	-0.005
K34	-0.124	0.130	-0.048	0.029	-0.096
K35	-0.409	-0.304	-0.297	-0.472	-0.582
K36	-0.042	0.301	0.098	0.042	-0.143

K37	-0.221	-0.121	-0.227	0.180	0.290
K37B	-0.143	-0.314	-0.069	0.084	0.123
K38	-0.050	0.114	-0.041	-0.086	-0.291
K39	-0.409	-0.095	-0.268	-0.268	-0.120
K40	0.045	0.302	0.147	-0.242	-0.177
K41	0.160	0.048	-0.156	-0.136	-0.111

	K25	K26	K27	K28	K29
K25	1.000				
K26	-0.046	1.000			
K27	-0.028	0.793	1.000		
K28	0.185	0.274	0.190	1.000	
K29	0.321	0.132	-0.027	0.447	1.000
K30	0.160	0.275	0.221	0.335	0.472
K31	-0.036	0.490	0.088	0.377	0.621
K32	0.347	0.053	-0.012	0.036	0.262
K33	0.160	-0.087	0.065	-0.058	-0.191
K34	0.012	-0.040	-0.221	0.092	0.262
K35	-0.726	0.057	-0.259	-0.156	-0.205
K36	0.101	-0.292	-0.108	0.211	-0.222
K37	0.072	0.096	-0.031	0.113	0.258
K37B	-0.072	0.123	-0.138	0.071	0.242
K38	0.027	-0.113	-0.080	-0.170	-0.153
K39	-0.222	0.147	0.028	0.434	0.422
K40	0.061	0.093	0.272	0.031	0.260
K41	0.003	0.111	-0.045	-0.195	-0.144

	K30	K31	K32	K33	K34
K30	1.000				
K31	0.507	1.000			
K32	0.048	0.232	1.000		
K33	-0.299	-0.135	0.231	1.000	
K34	0.198	0.452	0.251	0.077	1.000
K35	0.161	0.265	-0.374	-0.067	0.239
K36	-0.171	-0.031	-0.081	0.244	0.326
K37	0.348	0.447	0.113	-0.019	0.071
K37B	0.202	0.563	-0.115	0.027	0.229
K38	-0.237	-0.472	-0.130	-0.049	-0.301
K39	0.164	0.408	-0.099	-0.087	0.067
K40	-0.148	-0.049	0.132	0.156	0.220
K41	-0.108	-0.291	0.031	-0.102	-0.111

	K35	K36	K37	K37B	K38
K35	1.000				
K36	-0.111	1.000			
K37	0.008	-0.159	1.000		
K37B	0.336	-0.093	0.492	1.000	
K38	0.001	-0.086	-0.460	-0.304	1.000
K39	0.123	0.028	0.164	0.240	-0.178
K40	-0.247	0.123	-0.414	-0.437	0.036
K41	0.019	-0.176	-0.114	-0.494	0.398

	K39	K40	K41
K39	1.000		
K40	0.148	1.000	
K41	-0.276	-0.158	1.000

Table 24K

FREQUENCY TABLE, 48 KIP VARIABLES, INITIAL INTERVIEWS, TOTAL KIP SAMPLE, N = 169, 1987-1988

	K1	K2	K3	K4	K5
K1	168				
K2	168	169			
K3	168	169	169		
K4	166	167	167	167	
K5	168	169	169	167	169
K6	168	169	169	167	169
K7	167	168	168	166	168
K8	168	169	169	167	169
K9	164	165	165	163	165
K10	166	167	167	165	167
K11A	167	168	168	166	168
K11B	87	87	87	86	87
K12A	168	169	169	167	169
K12B	91	91	91	90	91
K13A	168	169	169	167	169
K13B	91	91	91	90	91
K14A	168	169	169	167	169
K14B	95	95	95	94	95
K15A	167	168	168	166	168
K15B	92	92	92	91	92
K16A	167	168	168	166	168
K16B	93	93	93	93	93
K17	168	169	169	167	169
K18	165	166	166	164	166
K19	168	169	169	167	169
K20	140	141	141	140	141
K21	154	155	155	154	155
K22	167	168	168	166	168
K23	168	169	169	167	169
K24	168	169	169	167	169
K25	167	168	168	166	168
K26	168	169	169	167	169
K27	167	168	168	166	168
K28	163	164	164	162	164
K29	160	161	161	159	161
K30	164	165	165	163	165
K31	163	164	164	162	164
K32	163	164	164	162	164
K33	154	155	155	153	155
K34	165	166	166	164	166
K35	158	159	159	157	159
K36	150	151	151	149	151
K37	168	169	169	167	169
K37B	108	109	109	108	109
K38	168	169	169	167	169
K39	167	168	168	167	168
K40	167	168	168	166	168
K41	168	169	169	167	169

	K6	K7	K8	K9	K10
K6	169				
K7	168	168			
K8	169	168	169		
K9	165	165	165	165	
K10	167	166	167	164	167
K11A	168	168	168	165	166
K11B	87	87	87	85	86
K12A	169	168	169	165	167
K12B	91	90	91	87	89
K13A	169	168	169	165	167
K13B	91	90	91	88	90
K14A	169	168	169	165	167
K14B	95	94	95	92	94
K15A	168	168	168	165	166
K15B	92	92	92	89	90
K16A	168	167	168	164	166
K16B	93	92	93	89	91

K17	169	168	169	165	167
K18	166	165	166	162	164
K19	169	168	169	165	167
K20	141	141	141	138	140
K21	155	155	155	152	153
K22	168	167	168	164	166
K23	169	168	169	165	167
K24	169	168	169	165	167
K25	168	167	168	164	166
K26	169	168	169	165	167
K27	168	167	168	164	166
K28	164	163	164	160	162
K29	161	160	161	157	159
K30	165	164	165	161	163
K31	164	163	164	160	162
K32	164	163	164	160	162
K33	155	155	155	153	154
K34	166	165	166	162	164
K35	159	158	159	156	158
K36	151	151	151	148	150
K37	169	168	169	165	167
K37B	109	109	109	106	107
K38	169	168	169	165	167
K39	168	167	168	164	166
K40	168	167	168	164	166
K41	169	168	169	165	167

	K11A	K11B	K12A	K12B	K13A
K11A	168				
K11B	87	87			
K12A	168	87	169		
K12B	90	84	91	91	
K13A	168	87	169	91	169
K13B	90	86	91	88	91
K14A	168	87	169	91	169
K14B	94	86	95	90	95
K15A	168	87	168	90	168
K15B	92	85	92	88	92
K16A	167	86	168	90	168
K16B	92	83	93	88	93
K17	168	87	169	91	169
K18	165	87	166	91	166
K19	168	87	169	91	169
K20	141	64	141	67	141
K21	155	76	155	78	155
K22	167	87	168	91	168
K23	168	87	169	91	169
K24	168	87	169	91	169
K25	167	87	168	90	168
K26	168	87	169	91	169
K27	167	86	168	91	168
K28	163	85	164	89	164
K29	160	84	161	88	161
K30	164	85	165	89	165
K31	163	84	164	88	164
K32	163	84	164	88	164
K33	155	77	155	79	155
K34	165	84	166	88	166
K35	158	83	159	85	159
K36	151	75	151	78	151
K37	168	87	169	91	169
K37B	109	59	109	59	109
K38	168	87	169	91	169
K39	167	86	168	90	168
K40	167	86	168	90	168
K41	168	87	169	91	169

	K13B	K14A	K14B	K15A	K15B
K13B	91				
K14A	91	169			
K14B	91	95	95		
K15A	90	168	94	168	
K15B	89	92	91	92	92
K16A	90	168	94	167	91
K16B	88	93	92	92	89
K17	91	169	95	168	92

K18	91	166	95	165	92
K19	91	169	95	168	92
K20	66	141	69	141	67
K21	77	155	81	155	79
K22	91	168	95	167	92
K23	91	169	95	168	92
K24	91	169	95	168	92
K25	90	168	94	167	91
K26	91	169	95	168	92
K27	90	168	94	167	91
K28	89	164	93	163	90
K29	88	161	90	160	88
K30	89	165	93	164	90
K31	88	164	91	163	88
K32	88	164	92	163	89
K33	79	155	83	155	81
K34	88	166	92	165	89
K35	86	159	89	158	85
K36	76	151	79	151	77
K37	91	169	95	168	92
K37B	59	109	59	109	59
K38	91	169	95	168	92
K39	90	168	94	167	91
K40	90	168	94	167	91
K41	91	169	95	168	92

	K16A	K16B	K17	K18	K19
K16A	168				
K16B	93	93			
K17	168	93	169		
K18	165	93	166	166	
K19	168	93	169	166	169
K20	141	69	141	138	141
K21	154	80	155	152	155
K22	167	93	168	165	168
K23	168	93	169	166	169
K24	168	93	169	166	169
K25	167	92	168	165	168
K26	168	93	169	166	169
K27	167	92	168	165	168
K28	163	91	164	161	164
K29	160	88	161	158	161
K30	164	91	165	162	165
K31	163	89	164	161	164
K32	163	90	164	161	164
K33	155	82	155	153	155
K34	165	90	166	163	166
K35	158	86	159	156	159
K36	150	77	151	149	151
K37	168	93	169	166	169
K37B	108	59	109	108	109
K38	168	93	169	166	169
K39	167	93	168	165	168
K40	167	93	168	165	168
K41	168	93	169	166	169

	K20	K21	K22	K23	K24
K20	141				
K21	137	155			
K22	140	154	168		
K23	141	155	168	169	
K24	141	155	168	169	169
K25	140	155	167	168	168
K26	141	155	168	169	169
K27	140	154	167	168	168
K28	136	150	164	164	164
K29	135	148	160	161	161
K30	137	151	164	165	165
K31	139	152	163	164	164
K32	138	151	163	164	164
K33	131	143	154	155	155
K34	138	152	165	166	166
K35	133	147	158	159	159
K36	133	143	150	151	151
K37	141	155	168	169	169

K37B	94	107	108	109	109
K38	141	155	168	169	169
K39	141	155	167	168	168
K40	140	154	167	168	168
K41	141	155	168	169	169

	K25	K26	K27	K28	K29
K25	168				
K26	168	169			
K27	167	168	168		
K28	163	164	163	164	
K29	160	161	160	159	161
K30	164	165	164	163	160
K31	163	164	163	160	159
K32	163	164	163	159	156
K33	154	155	154	150	148
K34	165	166	165	162	159
K35	159	159	158	155	153
K36	151	151	151	147	145
K37	168	169	168	164	161
K37B	109	109	108	107	109
K38	168	169	168	164	161
K39	167	168	167	163	160
K40	167	168	167	163	160
K41	168	169	168	164	161

	K30	K31	K32	K33	K34
K30	165				
K31	161	164			
K32	160	159	164		
K33	151	150	150	155	
K34	163	161	161	152	166
K35	157	156	155	146	156
K36	149	148	149	141	148
K37	165	164	164	155	166
K37B	109	108	105	101	109
K38	165	164	164	155	166
K39	164	163	163	154	165
K40	164	163	163	155	165
K41	165	164	164	155	166

	K35	K36	K37	K37B	K38
K35	159				
K36	148	151			
K37	159	151	169		
K37B	106	101	109	109	
K38	159	151	169	109	169
K39	158	150	168	109	168
K40	158	150	168	109	168
K41	159	151	169	109	169

	K39	K40	K41
K39	168		
K40	167	168	
K41	168	168	169

Table 25K

MATRIX OF GAMMA COEFFICIENTS, 33 KIP VARIABLES, REINTERVIEWS, TOTAL KIP SAMPLE, N = 108, 1989

	D28	BK1	BK2	BK3	BK4
D28	1.000				
BK1	-0.821	1.000			
BK2	-0.676	0.728	1.000		
BK3	-0.669	0.616	0.501	1.000	
BK4	0.694	-0.167	-0.120	-0.153	1.000
BK5	0.386	0.004	0.081	0.046	0.707
BK6	-0.319	0.017	-0.164	0.022	-0.610
BK9	0.676	-0.231	-0.247	-0.267	0.607
BK10	0.503	-0.034	-0.174	0.129	0.085
BK11A	-0.589	0.489	0.579	0.484	0.012
BK11B	-0.678	0.464	0.515	0.477	-0.152
BK13A	-0.332	0.229	0.452	0.308	0.082
BK14A	-0.559	0.396	0.317	0.345	0.041
BK14B	-0.572	0.389	0.272	0.306	-0.014
BK15A	-0.086	0.136	0.107	0.270	0.217
BK16A	-0.439	0.219	0.231	0.192	0.057
BK16B	-0.530	0.064	0.105	0.298	-0.057
BK17	-0.730	0.485	0.474	0.308	0.083
BK18	-0.115	0.094	0.024	0.239	-0.152
BK22	-0.104	0.001	0.147	0.205	0.088
BK26	-0.552	0.195	0.242	0.308	-0.157
BK27	-0.141	0.037	0.211	0.119	-0.003
BK28	-0.716	0.390	0.474	0.395	-0.290
BK29	-0.742	0.638	0.555	0.598	-0.304
BK30	-0.569	0.504	0.458	0.451	-0.240
BK31	-0.979	0.626	0.592	0.576	-0.445
BK33C	0.227	-0.030	0.044	-0.228	0.306
BK33G	0.079	-0.012	0.086	-0.354	0.311
BK35	-0.040	-0.158	0.032	0.095	-0.186
BK37	-1.000	0.468	0.486	0.251	-0.363
BK37B	-0.481	-0.114	-0.076	-0.014	-0.414
BK38	0.879	-0.255	-0.290	-0.480	0.643
BK41	0.853	-0.529	-0.315	-0.487	0.351

	BK5	BK6	BK9	BK10	BK11A
BK5	1.000				
BK6	-0.966	1.000			
BK9	0.607	-0.569	1.000		
BK10	-0.192	0.273	-0.063	1.000	
BK11A	0.240	-0.319	-0.061	-0.220	1.000
BK11B	0.066	-0.195	-0.066	-0.298	0.911
BK13A	0.186	-0.165	0.216	-0.006	0.423
BK14A	0.345	-0.363	0.053	0.040	0.555
BK14B	0.306	-0.259	0.045	0.087	0.568
BK15A	0.195	-0.050	-0.020	0.307	0.172
BK16A	0.104	-0.081	0.110	0.184	0.448
BK16B	0.120	-0.094	0.029	0.012	0.274
BK17	0.392	-0.411	-0.037	-0.444	0.423
BK18	-0.552	0.512	-0.206	0.163	0.104
BK22	-0.128	0.005	-0.036	0.314	0.517
BK26	-0.120	0.133	-0.134	0.025	0.510
BK27	-0.114	0.127	0.084	0.019	0.420
BK28	-0.229	0.166	-0.309	-0.100	0.524
BK29	-0.268	0.113	-0.329	-0.199	0.610
BK30	-0.145	0.246	-0.233	0.148	0.426
BK31	-0.439	0.353	-0.484	-0.225	0.677
BK33C	0.230	-0.264	0.474	0.434	-0.146
BK33G	0.073	0.003	0.505	0.203	-0.209
BK35	-0.363	0.156	0.239	-0.585	-0.077
BK37	-0.136	0.074	-0.165	-0.491	0.264
BK37B	-0.274	0.214	-0.185	-0.097	-0.264
BK38	0.512	-0.473	0.635	-0.013	-0.147
BK41	0.397	-0.362	0.371	0.146	-0.294

	BK11B	BK13A	BK14A	BK14B	BK15A
BK11B	1.000				
BK13A	0.358	1.000			
BK14A	0.235	0.320	1.000		
BK14B	0.296	0.240	0.997	1.000	
BK15A	-0.018	0.648	0.261	0.216	1.000
BK16A	0.124	0.492	0.703	0.698	0.598
BK16B	0.114	0.377	0.810	0.837	0.287
BK17	0.392	0.482	0.220	0.174	0.110
BK18	0.262	-0.234	-0.101	-0.123	0.151
BK22	0.306	0.344	0.170	0.222	0.391
BK26	0.313	0.281	0.294	0.270	0.222
BK27	0.428	0.299	-0.046	-0.072	0.163
BK28	0.583	0.295	0.197	0.227	0.307
BK29	0.574	0.273	0.431	0.424	-0.076
BK30	0.443	0.417	0.397	0.455	0.350
BK31	0.725	0.421	0.430	0.453	0.251
BK33C	-0.477	0.090	0.049	0.072	-0.183
BK33G	-0.345	0.211	-0.113	-0.051	-0.185
BK35	0.085	-0.123	-0.080	-0.139	-0.665
BK37	0.281	0.141	0.211	0.236	0.027
BK37B	-0.069	-0.273	0.023	0.080	-0.202
BK38	-0.192	-0.198	0.106	0.028	-0.104
BK41	-0.246	-0.044	-0.403	-0.417	0.059

	BK16A	BK16B	BK17	BK18	BK22
BK16A	1.000				
BK16B	0.813	1.000			
BK17	0.134	0.130	1.000		
BK18	-0.152	-0.293	-0.066	1.000	
BK22	0.447	0.091	0.187	-0.049	1.000
BK26	0.496	0.340	0.229	0.067	0.559
BK27	0.355	0.069	0.184	0.200	0.492
BK28	0.203	0.141	0.304	0.131	0.211
BK29	0.197	0.111	0.258	0.087	0.245
BK30	0.395	0.273	0.158	0.085	0.354
BK31	0.337	0.231	0.367	0.266	0.399
BK33C	0.227	0.265	-0.081	-0.412	0.354
BK33G	0.189	0.264	-0.215	-0.374	-0.060
BK35	-0.194	0.041	0.041	-0.033	0.087
BK37	0.158	0.172	0.333	0.068	-0.195
BK37B	-0.067	0.021	-0.278	0.196	-0.626
BK38	0.034	-0.051	0.017	-0.106	-0.125
BK41	-0.032	-0.078	-0.286	-0.020	-0.026

	BK26	BK27	BK28	BK29	BK30
BK26	1.000				
BK27	0.909	1.000			
BK28	0.370	0.252	1.000		
BK29	0.370	0.080	0.653	1.000	
BK30	0.441	0.207	0.561	0.681	1.000
BK31	0.415	0.122	0.864	0.924	0.747
BK33C	0.222	0.216	-0.342	-0.340	-0.194
BK33G	-0.088	0.092	-0.464	-0.353	-0.224
BK35	-0.036	-0.084	-0.078	0.455	-0.213
BK37	0.065	-0.112	0.365	0.424	0.251
BK37B	-0.214	-0.228	0.040	0.127	-0.040
BK38	-0.239	-0.083	-0.387	-0.319	-0.288
BK41	0.109	0.287	-0.244	-0.769	-0.462

	BK31	BK33C	BK33G	BK35	BK37
BK31	1.000				
BK33C	-0.468	1.000			
BK33G	-0.488	0.992	1.000		
BK35	0.136	-0.209	-0.005	1.000	
BK37	0.580	-0.309	-0.257	0.062	1.000
BK37B	0.226	-0.503	-0.450	-0.068	0.318
BK38	-0.553	0.408	0.388	-0.110	-0.347
BK41	-0.660	0.540	0.478	-0.054	-0.528

	BK37B	BK38	BK41
BK37B	1.000		
BK38	-0.257	1.000	
BK41	-0.169	0.413	1.000

Table 25K

FREQUENCY TABLE, 33 KIP VARIABLES, REINTERVIEWS, TOTAL KIP SAMPLE, N = 108, 1989

	D28	BK1	BK2	BK3	BK4
D28	102				
BK1	102	108			
BK2	102	108	108		
BK3	102	108	108	108	
BK4	102	108	108	108	108
BK5	101	107	107	107	107
BK6	99	105	105	105	105
BK9	92	98	98	98	98
BK10	90	95	95	95	95
BK11A	102	108	108	108	108
BK11B	90	96	96	96	96
BK13A	102	108	108	108	108
BK14A	100	106	106	106	106
BK14B	97	103	103	103	103
BK15A	102	108	108	108	108
BK16A	101	107	107	107	107
BK16B	100	106	106	106	106
BK17	102	108	108	108	108
BK18	101	107	107	107	107
BK22	101	107	107	107	107
BK26	100	106	106	106	106
BK27	102	108	108	108	108
BK28	102	108	108	108	108
BK29	101	107	107	107	107
BK30	102	108	108	108	108
BK31	100	106	106	106	106
BK33C	78	84	84	84	84
BK33G	71	75	75	75	75
BK35	96	102	102	102	102
BK37	102	108	108	108	108
BK37B	86	91	91	91	91
BK38	102	108	108	108	108
BK41	102	108	108	108	108

	BK5	BK6	BK9	BK10	BK11A
BK5	107				
BK6	105	105			
BK9	98	98	98		
BK10	95	94	87	95	
BK11A	107	105	98	95	108
BK11B	96	94	89	86	96
BK13A	107	105	98	95	108
BK14A	106	104	98	94	106
BK14B	103	101	95	92	103
BK15A	107	105	98	95	108
BK16A	107	105	98	95	107
BK16B	106	104	97	94	106
BK17	107	105	98	95	108
BK18	106	104	97	94	107
BK22	106	104	97	95	107
BK26	105	103	97	94	106
BK27	107	105	98	95	108
BK28	107	105	98	95	108
BK29	106	104	97	94	107
BK30	107	105	98	95	108
BK31	105	103	96	94	106
BK33C	83	81	75	74	84
BK33G	74	73	66	66	75
BK35	102	100	93	91	102
BK37	107	105	98	95	108
BK37B	91	90	84	79	91
BK38	107	105	98	95	108
BK41	107	105	98	95	108

	BK11B	BK13A	BK14A	BK14B	BK15A
BK11B	96				
BK13A	96	108			
BK14A	96	106	106		
BK14B	94	103	103	103	
BK15A	96	108	106	103	108
BK16A	96	107	106	103	107
BK16B	96	106	105	103	106
BK17	96	108	106	103	108
BK18	95	107	105	102	107
BK22	95	107	105	102	107
BK26	96	106	105	102	106
BK27	96	108	106	103	108
BK28	96	108	106	103	108
BK29	95	107	105	102	107
BK30	96	108	106	103	108
BK31	94	106	104	102	106
BK33C	75	84	82	80	84
BK33G	64	75	73	71	75
BK35	92	102	101	99	102
BK37	96	108	106	103	108
BK37B	81	91	90	88	91
BK38	96	108	106	103	108
BK41	96	108	106	103	108

	BK16A	BK16B	BK17	BK18	BK22
BK16A	107				
BK16B	106	106			
BK17	107	106	108		
BK18	106	105	107	107	
BK22	106	105	107	106	107
BK26	105	104	106	105	105
BK27	107	106	108	107	107
BK28	107	106	108	107	107
BK29	106	105	107	106	106
BK30	107	106	108	107	107
BK31	105	104	106	105	106
BK33C	83	83	84	83	84
BK33G	74	74	75	74	75
BK35	102	102	102	101	102
BK37	107	106	108	107	107
BK37B	91	91	91	90	90
BK38	107	106	108	107	107
BK41	107	106	108	107	107

	BK26	BK27	BK28	BK29	BK30
BK26	106				
BK27	106	108			
BK28	106	108	108		
BK29	105	107	107	107	
BK30	106	108	108	107	108
BK31	104	106	106	105	106
BK33C	82	84	84	84	84
BK33G	73	75	75	75	75
BK35	100	102	102	101	102
BK37	106	108	108	107	108
BK37B	89	91	91	91	91
BK38	106	108	108	107	108
BK41	106	108	108	107	108

	BK31	BK33C	BK33G	BK35	BK37
BK31	106				
BK33C	83	84			
BK33G	74	59	75		
BK35	101	80	71	102	
BK37	106	84	75	102	108
BK37B	89	70	65	87	91
BK38	106	84	75	102	108
BK41	106	84	75	102	108

	BK37B	BK38	BK41
BK37B	91		
BK38	91	108	
BK41	91	108	108

Table 26K

MATRIX OF GAMMA COEFFICIENTS, 48 KIP VARIABLES, INITIAL INTERVIEWS, *MIXED* SUBSAMPLE OF TOTAL KIP SAMPLE, N = 79, 1987-1988

	K1	K2	K3	K4	K5
K1	1.000				
K2	0.682	1.000			
K3	0.816	0.654	1.000		
K4	-0.246	0.077	-0.193	1.000	
K5	-0.469	-0.068	-0.329	0.920	1.000
K6	0.424	0.048	0.269	-0.934	-0.993
K7	0.123	0.256	0.228	0.009	0.401
K8	-0.142	-0.021	-0.290	0.285	0.341
K9	-0.456	-0.083	-0.203	0.201	0.810
K10	0.466	0.202	0.452	-0.511	-0.750
K11A	0.331	0.442	0.265	0.094	0.470
K11B	0.323	0.330	0.211	-0.117	0.245
K12A	0.368	0.455	0.342	0.080	0.170
K12B	0.650	0.462	0.361	0.018	0.053
K13A	0.426	0.679	0.339	0.021	0.232
K13B	0.330	0.560	0.424	-0.130	-0.100
K14A	0.530	0.565	0.514	-0.201	-0.054
K14B	0.626	0.512	0.570	-0.339	-0.387
K15A	0.434	0.670	0.560	-0.285	-0.072
K15B	0.319	0.676	0.524	-0.206	-0.425
K16A	0.498	0.545	0.446	-0.113	0.019
K16B	0.653	0.553	0.470	-0.385	-0.459
K17	0.336	0.213	0.277	0.028	0.043
K18	0.448	0.350	0.295	-0.184	-0.765
K19	-0.385	-0.286	-0.144	0.255	0.271
K20	-0.220	-0.128	-0.183	0.294	0.294
K21	-0.161	-0.485	-0.169	0.037	0.542
K22	-0.052	-0.122	0.114	0.119	0.141
K23	-0.069	0.443	-0.186	0.495	0.331
K24	-0.122	0.396	0.297	0.495	1.000
K25	-0.071	0.376	0.059	0.454	0.595
K26	0.222	0.198	0.161	-0.254	-0.323
K27	0.116	0.024	0.146	-0.071	-0.124
K28	0.197	0.171	0.039	-0.359	-0.032
K29	0.178	0.110	0.153	-0.318	-0.145
K30	0.321	0.486	0.268	-0.234	-0.421
K31	0.493	0.298	0.536	-0.587	-0.596
K32	0.046	0.123	0.209	-0.037	0.360
K33	-0.079	-0.013	0.053	0.197	0.119
K34	0.243	0.141	0.004	-0.368	-0.520
K35	0.383	-0.066	0.211	-0.544	-0.752
K36	0.115	-0.113	-0.125	0.051	0.506
K37	0.440	0.401	0.575	-0.383	-0.337
K37B	0.148	0.051	0.339	-0.493	-0.624
K38	-0.660	-0.726	-0.673	0.325	0.451
K39	0.205	-0.004	0.072	-0.493	-0.307
K40	1.000	0.889	0.392	-0.068	0.420
K41	0.263	-0.406	0.179	-0.093	-0.189

	K6	K7	K8	K9	K10
K6	1.000				
K7	-0.340	1.000			
K8	-0.318	-0.892	1.000		
K9	-0.820	0.282	-0.095	1.000	
K10	0.774	0.022	-0.292	-0.597	1.000
K11A	-0.478	0.071	0.181	0.308	0.082
K11B	-0.270	0.000	0.169	0.217	0.320
K12A	-0.209	-0.050	0.236	-0.159	0.286
K12B	-0.146	0.029	0.144	-0.323	0.397
K13A	-0.194	-0.104	0.351	-0.048	0.025
K13B	0.113	-0.141	0.148	-0.153	0.429
K14A	0.011	0.125	-0.008	0.018	0.376
K14B	0.291	0.167	-0.187	-0.323	0.698
K15A	-0.008	0.166	-0.065	0.353	-0.065
K15B	0.296	0.043	-0.023	0.121	0.279

K16A	-0.074	0.102	0.090	0.045	0.059
K16B	0.354	0.168	-0.220	-0.332	0.339
K17	0.026	-0.090	0.098	0.237	-0.032
K18	0.681	0.008	-0.270	-0.371	0.599
K19	-0.216	0.029	0.109	-0.008	-0.079
K20	-0.276	-0.065	0.092	0.338	-0.111
K21	-0.608	-0.117	0.179	0.419	-0.466
K22	-0.105	-0.013	-0.022	0.036	0.234
K23	-0.381	-0.002	0.264	0.302	-0.663
K24	-1.000	-0.005	0.191	0.765	-0.287
K25	-0.621	0.198	0.093	0.393	-0.330
K26	0.365	-0.088	-0.122	-0.017	0.443
K27	0.229	-0.098	0.036	-0.169	0.304
K28	0.087	0.043	0.012	0.076	0.175
K29	0.059	0.114	-0.092	0.060	-0.018
K30	0.345	-0.030	0.002	0.069	0.199
K31	0.525	0.008	-0.364	-0.017	0.538
K32	-0.263	0.038	0.054	-0.019	0.251
K33	-0.204	-0.061	0.205	0.150	-0.258
K34	0.454	-0.260	0.136	-0.410	0.157
K35	0.697	-0.085	-0.233	-0.505	0.693
K36	-0.567	0.208	-0.036	0.216	-0.016
K37	0.289	0.190	-0.393	0.144	0.174
K37B	0.553	0.114	-0.438	0.314	0.064
K38	-0.412	-0.329	0.545	0.236	-0.421
K39	0.347	0.180	-0.240	-0.063	0.282
K40	-0.418	0.254	0.148	-0.417	0.058
K41	0.251	0.072	-0.221	-0.418	0.327

	K11A	K11B	K12A	K12B	K13A
K11A	1.000				
K11B	0.921	1.000			
K12A	0.544	0.538	1.000		
K12B	0.618	0.703	0.890	1.000	
K13A	0.646	0.413	0.476	0.622	1.000
K13B	0.400	0.609	0.525	0.644	0.801
K14A	0.408	0.368	0.742	0.757	0.651
K14B	0.418	0.396	0.821	0.810	0.613
K15A	0.452	0.375	0.178	0.276	0.656
K15B	0.284	0.292	0.251	0.070	0.249
K16A	0.374	0.388	0.574	0.710	0.557
K16B	0.234	0.387	0.416	0.559	0.146
K17	0.452	0.414	0.085	0.059	0.272
K18	-0.136	-0.193	0.132	0.099	-0.045
K19	-0.256	-0.456	0.010	-0.144	-0.296
K20	0.054	-0.185	0.115	-0.165	-0.313
K21	0.007	0.218	-0.132	0.017	-0.024
K22	0.130	0.363	0.160	0.309	-0.057
K23	0.182	-0.142	0.029	-0.076	0.102
K24	0.683	0.198	0.415	-0.075	0.371
K25	0.504	0.224	0.267	0.047	0.352
K26	0.205	0.243	0.144	0.018	-0.110
K27	0.393	0.260	0.355	0.394	-0.020
K28	0.516	0.495	0.214	0.221	0.297
K29	0.363	0.592	0.048	0.303	0.376
K30	0.399	0.435	0.121	0.058	0.518
K31	0.308	0.349	0.129	0.349	0.189
K32	0.389	0.440	0.239	0.306	0.159
K33	0.106	-0.236	0.175	-0.244	-0.065
K34	-0.187	-0.358	0.259	0.418	0.240
K35	-0.282	0.042	-0.023	0.049	-0.238
K36	0.140	0.150	-0.129	0.067	-0.041
K37	0.393	0.367	0.093	0.218	0.438
K37B	-0.014	0.022	-0.148	-0.338	-0.132
K38	0.097	0.264	0.254	-0.007	-0.471
K39	0.232	0.305	-0.204	-0.022	0.101
K40	0.807	0.737	1.000	1.000	0.966
K41	-0.428	-0.265	0.101	0.505	-0.194

	K13B	K14A	K14B	K15A	K15B
K13B	1.000				
K14A	0.672	1.000			
K14B	0.692	1.000	1.000		
K15A	0.530	0.537	0.530	1.000	
K15B	0.410	0.418	0.401	0.902	1.000

K16A	0.498	0.844	0.768	0.789	0.531
K16B	0.306	0.691	0.687	0.678	0.597
K17	-0.055	0.251	0.110	0.131	0.113
K18	0.075	0.236	0.195	-0.119	0.020
K19	-0.134	-0.244	-0.280	-0.497	-0.271
K20	-0.076	-0.158	-0.364	-0.334	0.057
K21	0.045	-0.216	-0.126	-0.013	-0.328
K22	0.514	0.072	0.252	-0.136	0.074
K23	-0.054	-0.145	-0.320	0.044	0.160
K24	0.153	0.362	-0.085	0.286	0.309
K25	0.211	0.144	0.097	0.387	0.492
K26	-0.188	0.308	0.449	0.033	-0.070
K27	-0.186	0.188	0.154	-0.267	-0.549
K28	0.243	0.286	0.487	0.334	0.358
K29	0.607	0.191	0.367	0.610	0.635
K30	0.501	0.273	0.041	0.495	0.449
K31	0.282	0.602	0.666	0.569	0.483
K32	0.153	0.236	0.282	0.058	0.174
K33	-0.495	0.110	-0.098	-0.004	-0.076
K34	0.342	0.506	0.598	0.229	0.474
K35	-0.086	0.272	0.371	-0.032	0.079
K36	0.007	0.065	0.046	0.094	0.137
K37	0.299	0.581	0.707	0.700	0.416
K37B	-0.221	0.281	0.367	0.459	0.440
K38	-0.547	-0.445	-0.610	-0.435	-0.214
K39	0.007	-0.026	-0.138	0.168	0.126
K40	0.986	1.000	1.000	0.716	0.310
K41	-0.145	0.148	0.633	-0.314	-0.650

	K16A	K16B	K17	K18	K19
K16A	1.000				
K16B	0.936	1.000			
K17	0.094	0.245	1.000		
K18	0.006	0.171	-0.019	1.000	
K19	-0.251	-0.546	-0.521	-0.147	1.000
K20	-0.219	-0.426	-0.425	-0.101	0.591
K21	0.015	-0.417	-0.061	-0.609	0.203
K22	-0.131	-0.213	-0.191	-0.291	0.357
K23	0.021	-0.084	0.112	0.082	0.158
K24	0.254	-0.165	0.527	0.177	0.025
K25	0.269	0.004	0.148	-0.158	0.126
K26	0.051	0.091	0.112	0.173	-0.098
K27	-0.087	-0.457	0.290	-0.076	0.169
K28	0.213	0.443	-0.001	0.113	-0.203
K29	0.324	0.417	-0.019	-0.321	-0.414
K30	0.253	0.103	0.237	0.152	-0.570
K31	0.445	0.768	0.314	0.290	-0.488
K32	0.194	0.102	0.083	-0.186	0.128
K33	0.043	-0.213	0.210	-0.056	0.144
K34	0.397	0.643	0.012	0.238	-0.491
K35	-0.095	0.218	-0.197	0.558	-0.289
K36	0.119	0.167	0.184	-0.028	-0.014
K37	0.473	0.735	0.411	0.230	-0.611
K37B	0.348	0.615	0.240	0.103	-0.579
K38	-0.164	-0.478	-0.172	-0.304	0.190
K39	0.104	0.304	0.237	0.056	-0.497
K40	0.641	0.051	-0.341	0.227	-0.455
K41	0.089	0.191	0.008	0.064	0.174

	K20	K21	K22	K23	K24
K20	1.000				
K21	0.137	1.000			
K22	0.764	0.107	1.000		
K23	0.289	-0.239	-0.216	1.000	
K24	0.076	-0.140	0.074	0.720	1.000
K25	0.210	0.169	0.299	0.488	0.951
K26	0.296	-0.066	0.138	-0.061	-0.102
K27	0.369	-0.050	0.268	0.087	0.297
K28	0.181	0.158	0.245	-0.041	0.292
K29	-0.253	0.221	0.415	-0.200	0.092
K30	-0.322	-0.132	-0.031	0.169	0.488
K31	-0.341	0.038	0.000	-0.372	0.217
K32	0.035	0.085	0.236	-0.117	0.272
K33	0.167	0.068	-0.099	0.000	0.185
K34	-0.276	-0.009	-0.004	-0.246	-0.403

K35	-0.300	-0.464	-0.140	-0.585	-0.757
K36	0.087	0.392	0.017	0.030	0.120
K37	-0.443	0.042	-0.264	-0.132	0.367
K37B	-0.151	-0.136	-0.231	-0.193	0.135
K38	-0.273	-0.212	-1.000	-0.108	-0.337
K39	-0.461	-0.048	-0.179	-0.271	-0.122
K40	-0.330	0.083	-0.361	0.209	1.000
K41	-0.322	-0.049	-0.359	-0.554	-0.608

	K25	K26	K27	K28	K29
K25	1.000				
K26	-0.025	1.000			
K27	-0.090	0.737	1.000		
K28	0.221	0.138	0.063	1.000	
K29	0.336	-0.162	-0.184	0.452	1.000
K30	0.230	0.259	0.337	0.311	0.536
K31	-0.024	0.398	0.075	0.410	0.486
K32	0.212	0.104	0.119	0.099	0.221
K33	0.190	-0.099	0.017	-0.100	-0.363
K34	-0.144	-0.258	-0.681	0.381	0.489
K35	-0.643	0.265	-0.186	-0.084	-0.063
K36	0.294	-0.359	-0.179	0.353	-0.027
K37	-0.014	0.409	0.066	0.212	0.248
K37B	-0.113	0.386	-0.137	0.043	0.397
K38	0.073	0.159	0.449	-1.000	-0.009
K39	-0.154	-0.075	-0.142	0.355	0.352
K40	0.511	-0.212	0.452	0.659	0.795
K41	-0.412	0.327	0.100	-0.364	-0.204

	K30	K31	K32	K33	K34
K30	1.000				
K31	0.526	1.000			
K32	0.048	0.255	1.000		
K33	-0.252	-0.190	0.045	1.000	
K34	0.321	0.639	-0.125	-0.080	1.000
K35	0.236	0.484	-0.059	-0.080	0.538
K36	-0.240	0.136	-0.158	0.218	0.178
K37	0.405	0.657	0.210	-0.176	0.096
K37B	0.284	0.650	-0.143	-0.058	0.318
K38	0.029	-0.654	0.048	0.295	-0.552
K39	0.176	0.427	0.205	-0.036	0.204
K40	0.799	-0.130	0.148	-0.238	0.214
K41	-0.446	0.001	-0.167	-0.221	-0.223

	K35	K36	K37	K37B	K38
K35	1.000				
K36	-0.277	1.000			
K37	-0.005	-0.126	1.000		
K37B	0.494	-0.326	0.516	1.000	
K38	0.379	-0.634	-0.518	1.000	1.000
K39	-0.147	0.251	0.353	0.357	0.059
K40	-0.604	0.346	0.607	-0.465	-1.000
K41	0.363	-0.285	-0.089	-0.379	0.427

	K39	K40	K41
K39	1.000		
K40	0.406	1.000	
K41	-0.312	-1.000	1.000

Table 27K

MATRIX OF GAMMA COEFFICIENTS, 48 KIP VARIABLES, INITIAL INTERVIEWS, *NATIVE* SUBSAMPLE OF TOTAL KIP SAMPLE, N = 90, 1987-1988

	K1	K2	K3	K4	K5
K1	1.000				
K2	0.724	1.000			
K3	0.618	0.522	1.000		
K4	-0.372	-0.093	-0.260	1.000	
K5	-0.008	0.080	-0.037	0.709	1.000
K6	-0.061	-0.205	-0.046	-0.729	-0.979
K7	0.073	-0.069	-0.203	0.130	0.089
K8	0.052	0.102	0.177	0.177	0.513
K9	-0.326	-0.177	-0.104	0.679	0.626
K10	-0.179	-0.267	-0.031	-0.198	-0.534
K11A	0.231	0.135	0.443	0.002	0.039
K11B	0.264	0.235	0.210	-0.435	-0.486
K12A	0.098	0.116	0.240	-0.192	-0.133
K12B	-0.143	-0.157	0.101	-0.743	-0.619
K13A	0.524	0.479	0.464	0.067	0.375
K13B	0.429	0.266	0.410	-0.082	0.262
K14A	0.424	0.224	0.333	-0.152	0.089
K14B	0.207	-0.187	0.179	-0.329	-0.195
K15A	0.373	0.560	0.340	0.072	0.248
K15B	0.267	0.266	0.104	0.212	0.431
K16A	0.330	0.450	0.464	-0.074	0.014
K16B	0.351	0.193	0.316	-0.472	-0.193
K17	0.350	0.443	0.222	0.318	0.072
K18	0.128	0.133	0.279	-0.365	-0.514
K19	-0.031	-0.026	0.115	-0.162	-0.124
K20	0.122	0.144	0.133	-0.036	0.170
K21	-0.315	-0.170	-0.299	0.049	-0.156
K22	-0.107	0.097	0.261	0.230	-0.191
K23	0.180	0.356	0.233	0.341	0.317
K24	0.168	0.421	0.306	0.172	0.149
K25	0.242	0.353	0.245	0.091	0.306
K26	-0.067	-0.008	0.107	-0.154	-0.345
K27	-0.096	0.060	-0.011	0.076	-0.135
K28	-0.041	-0.008	-0.127	0.059	0.077
K29	0.129	0.040	0.443	-0.241	0.168
K30	0.262	0.291	0.395	-0.275	-0.169
K31	0.244	0.189	0.567	-0.397	-0.457
K32	0.359	0.445	0.255	-0.096	-0.063
K33	0.113	0.080	-0.019	0.096	0.201
K34	0.101	0.360	0.081	-0.098	-0.339
K35	-0.109	-0.160	-0.115	-0.190	-0.223
K36	0.065	0.041	-0.239	-0.014	-0.161
K37	-0.049	0.067	0.048	0.136	0.186
K37B	0.123	-0.008	0.192	0.000	0.028
K38	-0.336	-0.320	-0.292	0.411	0.270
K39	0.005	-0.165	0.118	-0.483	-0.390
K40	-0.161	-0.096	0.027	-0.236	-0.423
K41	0.092	0.161	0.069	0.481	0.451

	K6	K7	K8	K9	K10
K6	1.000				
K7	-0.027	1.000			
K8	-0.549	-0.793	1.000		
K9	-0.726	0.000	0.340	1.000	
K10	0.563	0.030	-0.293	-0.282	1.000
K11A	-0.106	-0.075	0.128	-0.012	0.025
K11B	0.450	0.263	-0.317	-0.337	0.661
K12A	0.099	-0.032	0.214	0.034	0.062
K12B	0.568	-0.140	-0.028	-0.161	0.667
K13A	-0.361	0.107	0.182	0.045	-0.271
K13B	-0.302	-0.232	0.354	0.013	0.238
K14A	-0.116	0.230	0.027	0.045	0.179
K14B	0.195	0.122	-0.050	0.225	0.478
K15A	-0.340	-0.215	0.225	-0.018	-0.142
K15B	-0.410	-0.098	0.093	-0.169	-0.112

K16A	-0.082	-0.138	0.232	-0.084	0.128
K16B	0.213	-0.224	0.142	-0.364	0.390
K17	-0.173	0.095	0.004	0.108	-0.015
K18	0.492	-0.261	-0.045	-0.299	0.536
K19	0.073	-0.136	-0.088	-0.073	0.118
K20	-0.201	-0.093	-0.050	0.074	-0.147
K21	-0.001	-0.382	0.059	0.156	-0.183
K22	0.088	-0.057	-0.098	0.103	-0.278
K23	-0.274	0.124	0.040	0.233	-0.223
K24	-0.214	0.217	-0.124	0.318	-0.123
K25	-0.335	0.045	0.040	0.040	-0.257
K26	0.292	-0.050	-0.143	-0.129	0.242
K27	0.012	-0.087	0.040	0.038	0.146
K28	-0.039	0.303	-0.241	-0.061	-0.001
K29	-0.144	-0.056	0.011	-0.121	-0.076
K30	0.115	-0.050	-0.101	-0.145	0.241
K31	0.493	-0.104	-0.166	-0.316	0.296
K32	0.030	-0.280	0.128	-0.248	0.181
K33	-0.222	-0.061	0.222	-0.110	0.036
K34	0.230	-0.098	-0.167	-0.282	0.302
K35	0.259	-0.134	0.032	-0.181	0.157
K36	0.161	0.028	-0.063	-0.085	0.052
K37	-0.165	-0.142	0.213	-0.037	-0.207
K37B	0.024	-0.027	-0.027	-0.147	0.031
K38	-0.242	-0.055	0.128	0.161	0.037
K39	0.418	0.142	-0.213	-0.318	0.061
K40	0.328	-0.286	0.084	-0.097	0.420
K41	-0.518	0.076	0.086	0.411	0.064

	K11A	K11B	K12A	K12B	K13A
K11A	1.000				
K11B	0.681	1.000			
K12A	0.539	0.426	1.000		
K12B	0.286	0.849	0.924	1.000	
K13A	0.226	0.045	0.170	0.016	1.000
K13B	0.202	0.194	0.098	0.350	0.649
K14A	0.236	0.178	0.407	0.761	0.590
K14B	0.277	0.092	0.256	0.518	0.296
K15A	0.584	0.125	0.159	-0.066	0.473
K15B	0.440	-0.008	-0.283	-0.441	0.195
K16A	0.343	0.204	0.431	0.820	0.439
K16B	0.156	-0.017	0.645	0.766	0.178
K17	0.385	0.398	0.006	0.000	0.348
K18	0.123	0.443	0.229	0.230	-0.316
K19	0.022	0.506	0.285	0.655	-0.392
K20	0.089	-0.036	0.070	-0.189	-0.169
K21	-0.112	-0.241	-0.207	-0.168	-0.404
K22	0.362	0.327	0.391	-0.164	-0.049
K23	0.048	-0.299	-0.007	-0.463	0.285
K24	0.183	0.082	0.121	-0.268	0.305
K25	0.534	-0.040	0.372	-0.402	0.365
K26	0.354	0.439	0.198	0.219	-0.330
K27	0.204	-0.048	0.189	-0.265	-0.267
K28	0.369	0.113	0.488	0.183	0.053
K29	0.530	-0.080	0.368	-0.288	0.025
K30	0.414	0.488	0.364	0.608	0.226
K31	0.483	0.236	0.361	0.314	0.110
K32	0.435	0.186	0.136	-0.062	0.212
K33	0.291	-0.148	-0.281	-0.384	0.063
K34	0.334	0.212	-0.250	-0.056	0.113
K35	-0.515	0.198	0.031	0.748	-0.093
K36	-0.023	0.182	-0.086	0.326	-0.110
K37	0.054	-0.026	-0.249	-0.433	0.073
K37B	-0.219	-0.315	-0.193	-0.047	0.107
K38	0.131	-0.291	-0.045	-0.228	-0.181
K39	0.016	0.107	0.196	0.302	-0.103
K40	0.231	0.542	0.438	1.000	-0.381
K41	0.184	0.377	0.175	0.151	0.016

	K13B	K14A	K14B	K15A	K15B
K13B	1.000				
K14A	0.390	1.000			
K14B	0.630	0.838	1.000		
K15A	0.227	0.302	-0.208	1.000	
K15B	0.395	-0.363	-0.175	0.833	1.000
K16A	0.536	0.719	0.431	0.596	0.416

K16B	0.615	0.394	0.503	0.187	0.402
K17	0.159	0.223	-0.045	0.472	0.203
K18	0.217	-0.144	0.095	0.032	0.009
K19	-0.347	-0.182	-0.295	-0.119	-0.472
K20	-0.419	-0.290	-0.564	-0.059	0.008
K21	-0.315	-0.392	-0.330	-0.030	0.280
K22	-0.140	-0.113	0.017	0.078	-0.455
K23	0.178	-0.125	0.052	0.230	0.349
K24	0.162	0.206	0.038	0.285	0.000
K25	0.256	0.145	0.033	0.504	0.466
K26	-0.325	-0.369	-0.283	0.186	0.156
K27	0.003	-0.602	-0.451	-0.014	0.085
K28	-0.126	-0.079	-0.239	0.382	0.329
K29	-0.041	0.071	-0.047	0.574	0.750
K30	0.230	0.110	0.032	0.379	0.343
K31	0.192	0.188	0.277	0.437	0.453
K32	0.358	0.226	0.317	0.530	0.369
K33	-0.016	0.086	0.187	0.281	0.196
K34	0.123	0.321	0.658	0.291	0.458
K35	-0.226	0.101	0.046	-0.336	-0.530
K36	0.076	-0.234	0.217	0.109	0.200
K37	-0.011	-0.170	-0.264	0.202	0.248
K37B	-0.067	0.317	-0.091	0.313	0.086
K38	-0.165	0.168	0.124	-0.035	0.186
K39	-0.315	-0.192	-0.312	-0.119	-0.063
K40	-0.051	-0.141	-0.591	-0.045	0.075
K41	0.243	0.059	0.166	0.154	0.134

	K16A	K16B	K17	K18	K19
K16A	1.000				
K16B	0.896	1.000			
K17	0.372	0.102	1.000		
K18	0.099	0.384	0.082	1.000	
K19	0.094	0.112	-0.048	0.295	1.000
K20	-0.068	-0.158	-0.031	0.308	0.627
K21	-0.187	-0.271	-0.131	-0.040	0.202
K22	0.088	-0.347	0.047	-0.201	0.255
K23	0.275	0.043	0.485	-0.124	-0.078
K24	0.288	0.027	0.380	0.058	0.007
K25	0.369	0.362	0.327	-0.084	0.065
K26	0.045	0.059	0.189	0.564	0.358
K27	-0.175	-0.124	0.127	0.518	0.267
K28	0.115	0.343	0.207	0.010	-0.119
K29	0.122	0.030	-0.061	-0.155	0.014
K30	0.393	0.423	0.238	0.212	0.086
K31	0.293	0.457	0.174	0.319	-0.155
K32	0.347	0.266	0.285	0.288	0.171
K33	-0.081	-0.226	0.166	-0.027	-0.154
K34	0.479	0.547	0.255	0.107	0.100
K35	-0.160	-0.010	-0.118	0.020	-0.172
K36	-0.101	0.088	-0.186	-0.127	0.012
K37	-0.239	-0.411	0.123	-0.079	-0.254
K37B	0.438	0.280	-0.126	0.099	-0.092
K38	0.145	-0.180	0.026	-0.248	-0.192
K39	-0.153	0.087	-0.210	0.089	-0.206
K40	-0.234	-0.219	-0.118	0.197	0.247
K41	0.291	0.120	0.339	0.062	0.153

	K20	K21	K22	K23	K24
K20	1.000				
K21	0.430	1.000			
K22	0.067	0.214	1.000		
K23	-0.128	-0.403	-0.063	1.000	
K24	0.110	-0.100	0.255	0.651	1.000
K25	0.329	0.137	0.110	0.430	0.723
K26	0.157	0.130	0.345	-0.106	-0.054
K27	0.285	0.227	0.295	0.077	0.047
K28	-0.282	-0.183	0.020	0.177	0.134
K29	0.178	-0.073	0.216	0.084	0.000
K30	-0.010	-0.328	-0.036	0.221	0.150
K31	-0.280	-0.362	0.344	0.130	0.044
K32	0.393	0.057	0.093	0.219	0.273
K33	-0.003	0.047	-0.090	-0.053	-0.080
K34	-0.047	0.238	-0.100	0.204	-0.037
K35	-0.470	-0.172	-0.434	-0.379	-0.543

K36	-0.134	0.221	0.191	0.064	-0.314
K37	-0.178	-0.143	-0.384	0.456	0.062
K37B	-0.232	-0.291	-0.107	0.139	-0.064
K38	0.048	0.072	0.172	-0.106	-0.212
K39	-0.379	-0.125	-0.374	-0.281	-0.153
K40	0.165	0.285	0.308	-0.357	-0.150
K41	0.415	0.052	-0.006	0.182	0.273

	K25	K26	K27	K28	K29
K25	1.000				
K26	-0.067	1.000			
K27	0.030	0.838	1.000		
K28	0.159	0.402	0.284	1.000	
K29	0.335	0.478	0.132	0.438	1.000
K30	0.171	0.232	0.118	0.391	0.376
K31	-0.026	0.586	0.039	0.356	0.779
K32	0.471	-0.014	-0.112	-0.048	0.322
K33	0.125	-0.059	0.109	0.003	0.038
K34	0.125	0.105	-0.009	-0.150	-0.006
K35	-0.790	-0.143	-0.321	-0.223	-0.402
K36	-0.071	-0.211	-0.044	0.073	-0.434
K37	0.284	-0.318	-0.201	0.000	0.203
K37B	-0.043	-0.049	-0.090	-0.020	0.007
K38	-0.062	-0.099	-0.054	-0.065	0.030
K39	-0.294	0.433	0.175	0.528	0.519
K40	-0.071	0.279	0.326	-0.066	0.402
K41	0.222	0.026	-0.070	-0.044	0.014

	K30	K31	K32	K33	K34
K30	1.000				
K31	0.354	1.000			
K32	0.028	0.232	1.000		
K33	-0.334	-0.055	0.407	1.000	
K34	0.052	0.236	0.457	0.188	1.000
K35	-0.012	0.067	-0.632	-0.058	0.000
K36	-0.020	-0.163	0.001	0.266	0.453
K37	0.062	-0.006	0.034	0.230	-0.069
K37B	-0.048	0.368	-0.177	0.166	0.151
K38	0.015	-0.232	-0.102	-0.108	-0.225
K39	0.208	0.415	-0.458	-0.141	-0.090
K40	-0.189	0.239	0.219	0.263	0.327
K41	0.224	-0.368	0.193	-0.048	-0.023

	K35	K36	K37	K37B	K38
K35	1.000				
K36	0.027	1.000			
K37	-0.014	-0.116	1.000		
K37B	0.208	0.132	0.301	1.000	
K38	-0.059	-0.189	0.069	-0.102	1.000
K39	0.407	-0.281	-0.007	0.124	-0.371
K40	-0.191	0.054	-0.394	-0.302	-0.411
K41	-0.142	-0.144	0.130	-0.421	0.251

	K39	K40	K41
K39	1.000		
K40	0.131	1.000	
K41	-0.245	-0.249	1.000

Table 30K

MATRIX OF GAMMA COEFFICIENTS, 47 KIP VARIABLES, REINTERVIEWS, *MIXED* SUBSAMPLE OF TOTAL KIP SAMPLE, *N* = 47, 1989

	D28	OCC	RAGE	RSEX	PPEMP
D28	1.000				
OCC	-0.025	1.000			
RAGE	0.076	-0.273	1.000		
RSEX	-0.101	0.305	-0.215	1.000	
PPEMP	0.167	0.232	0.100	-0.415	1.000
BK1	-0.850	-0.110	0.050	0.166	-0.354
BK2	-0.756	0.137	-0.142	0.122	-0.245
BK3	-0.519	-0.011	0.007	-0.024	-0.289
BK4	0.221	-0.094	-0.102	-0.078	-0.016
BK5	-0.096	0.295	-0.664	0.441	-0.570
BK6	0.078	0.086	0.555	-0.156	0.073
BK9	0.156	0.057	-0.388	0.492	-0.244
BK10	0.697	0.130	0.409	0.182	0.354
BK11A	-0.857	-0.153	-0.150	0.020	-0.465
BK11B	-0.851	-0.246	-0.099	0.110	-0.313
BK13A	-0.108	0.067	-0.191	0.092	0.083
BK13B	-0.425	-0.030	-0.037	-0.165	0.000
BK14A	-0.596	-0.193	-0.131	0.024	-0.360
BK14B	-0.608	-0.270	-0.114	0.133	-0.500
BK15A	0.123	0.113	0.235	-0.021	0.581
BK15B	-0.093	0.120	0.341	0.023	0.485
BK16A	-0.545	-0.056	-0.109	0.258	-0.142
BK16B	-0.570	-0.107	-0.177	0.112	-0.159
BK17	-0.834	0.040	-0.359	0.282	-0.100
BK18	-0.157	0.064	0.889	-0.260	0.519
BK19	0.705	-0.375	0.054	-0.058	-0.020
BK22	0.158	-0.452	-0.018	-0.280	-0.200
BK24	-0.557	-0.131	0.114	0.374	-0.236
BK25	-0.505	-0.331	0.174	-0.800	-0.248
BK26	-0.504	0.166	0.029	0.237	-0.333
BK27	-0.225	0.213	0.042	0.095	-0.400
BK28	-0.635	-0.078	-0.053	-0.096	-0.435
BK29	-0.831	-0.328	-0.205	-0.206	-0.634
BK30	-0.352	-0.025	-0.117	-0.263	-0.330
BK31	-0.980	-0.185	0.034	-0.165	-0.410
BK33A	-0.267	0.179	-0.249	-0.111	0.143
BK33C	-0.143	0.130	-0.264	-0.071	-0.220
BK33G	-0.529	0.200	-0.297	0.054	0.176
BK34	-0.122	-0.043	-0.055	-0.170	0.023
BK35	-0.081	-0.413	-0.711	-0.458	-0.478
BK36	0.263	0.227	-0.302	0.209	0.194
BK37	-1.000	0.035	0.005	0.137	-0.111
BK37B	-0.432	0.178	0.099	-0.212	0.034
BK38	-1.000	0.500	-0.556	-1.000	1.000
BK39	-0.286	0.219	-0.154	0.289	-0.180
BK40	0.912	0.233	0.435	0.076	0.266
BK41	0.647	0.275	0.161	0.323	0.373

	BK1	BK2	BK3	BK4	BK5
BK1	1.000				
BK2	0.885	1.000			
BK3	0.733	0.717	1.000		
BK4	-0.109	0.127	0.148	1.000	
BK5	-0.205	0.103	0.238	0.727	1.000
BK6	0.198	0.020	-0.148	-0.659	-0.934
BK9	0.277	-0.206	0.524	0.411	0.697
BK10	-0.289	-0.357	0.104	-0.042	-0.261
BK11A	0.305	0.419	0.348	-0.029	0.400
BK11B	0.249	0.245	0.291	-0.248	0.273
BK13A	0.029	0.291	0.460	0.040	-0.016
BK13B	0.191	0.372	0.401	-0.421	-0.759
BK14A	0.683	0.597	0.574	0.093	0.210
BK14B	0.681	0.558	0.509	-0.040	0.015
BK15A	-0.140	0.113	0.253	0.194	-0.022
BK15B	0.039	0.220	0.267	0.101	-0.356

BK16A	0.281	0.388	0.363	-0.130	-0.088
BK16B	0.410	0.465	0.466	-0.055	0.034
BK17	0.661	0.653	0.522	0.083	0.856
BK18	0.160	0.056	0.177	-0.236	-0.884
BK19	-0.368	-0.440	-0.357	0.343	0.260
BK22	-0.228	-0.119	0.148	0.406	0.203
BK24	0.110	0.456	0.034	0.485	0.615
BK25	0.037	0.235	-0.046	0.314	0.043
BK26	0.305	0.295	0.341	-0.077	-0.020
BK27	-0.107	-0.010	0.182	-0.046	-0.048
BK28	0.623	0.635	0.472	-0.127	-0.291
BK29	0.622	0.551	0.589	-0.081	0.006
BK30	0.493	0.331	0.551	-0.407	-0.436
BK31	0.744	0.684	0.585	-0.197	-0.414
BK33A	0.551	0.429	0.326	0.108	-0.216
BK33C	0.600	0.381	0.406	0.205	0.189
BK33G	0.600	0.485	0.339	0.026	-0.171
BK34	-0.255	-0.146	-0.602	-0.195	-0.435
BK35	-0.123	0.103	0.475	0.323	1.000
BK36	-0.566	-0.185	-0.461	0.358	0.691
BK37	0.635	0.682	0.268	-0.036	-0.010
BK37B	-0.090	-0.044	-0.175	-0.478	-0.379
BK38	1.000	0.375	-0.029	-0.214	-1.000
BK39	0.279	0.157	-0.210	-0.177	-0.134
BK40	-0.352	-0.537	-0.466	-0.351	-1.000
BK41	-0.791	-0.795	-0.716	-0.119	-0.139

	BK6	BK9	BK10	BK11A	BK11B
BK6	1.000				
BK9	-0.422	1.000			
BK10	0.255	0.161	1.000		
BK11A	-0.091	0.364	-0.750	1.000	
BK11B	-0.233	0.762	-0.595	0.978	1.000
BK13A	0.220	0.266	0.137	0.253	0.027
BK13B	0.714	-0.333	0.020	0.289	0.325
BK14A	-0.205	0.658	-0.333	0.856	0.536
BK14B	0.156	1.000	-0.246	0.862	0.629
BK15A	0.141	0.037	0.391	0.197	0.000
BK15B	0.217	-0.417	0.388	0.240	0.142
BK16A	0.103	0.101	-0.048	0.735	0.400
BK16B	0.015	0.590	-0.136	0.616	0.593
BK17	-0.644	0.000	-0.578	0.654	0.593
BK18	0.705	-0.480	0.247	-0.083	0.085
BK19	-0.354	0.486	0.570	-0.465	-0.515
BK22	-0.211	0.137	0.330	0.427	0.494
BK24	-0.615	-0.123	-0.512	0.624	0.464
BK25	-0.037	-0.287	-0.329	0.308	-0.158
BK26	0.170	-0.115	-0.130	0.764	0.443
BK27	0.210	-0.103	-0.103	0.803	0.582
BK28	0.437	-0.284	-0.387	0.590	0.442
BK29	-0.148	-0.061	-0.667	0.583	0.362
BK30	0.670	0.431	0.292	0.434	0.333
BK31	0.430	-0.263	-0.596	0.762	0.628
BK33A	0.309	0.811	0.520	0.114	0.089
BK33C	-0.073	0.692	0.515	0.150	0.000
BK33G	0.333	0.831	0.408	0.111	0.261
BK34	0.543	-0.744	-0.694	0.255	-0.098
BK35	-1.000	1.000	-0.695	0.195	0.145
BK36	-0.691	-0.395	-0.053	-0.432	-0.083
BK37	-0.084	-0.100	-0.728	0.518	0.662
BK37B	0.244	-0.385	-0.205	-0.153	-0.064
BK38	1.000	-1.000	-1.000	0.571	0.143
BK39	0.385	0.646	-0.396	0.264	0.223
BK40	1.000	-1.000	0.653	-0.629	-0.541
BK41	0.128	0.016	-0.346	-0.224	0.100

	BK13A	BK13B	BK14A	BK14B	BK15A
BK13A	1.000				
BK13B	0.905	1.000			
BK14A	0.227	-0.145	1.000		
BK14B	0.200	0.000	0.995	1.000	
BK15A	0.687	0.205	0.177	0.095	1.000
BK15B	0.522	0.198	0.407	0.390	0.987
BK16A	0.621	0.568	0.871	0.867	0.616
BK16B	0.465	0.350	0.952	1.000	0.449
BK17	0.455	0.127	0.451	0.505	0.078
BK18	0.009	0.307	-0.100	-0.156	0.349

BK19	-0.023	-0.234	-0.096	-0.011	0.196
BK22	0.533	0.143	0.158	0.245	0.502
BK24	0.015	-0.053	0.251	0.278	0.373
BK25	-0.411	-0.220	0.183	0.137	-0.056
BK26	0.551	0.146	0.662	0.590	0.487
BK27	0.610	0.393	0.414	0.427	0.457
BK28	0.331	0.376	0.427	0.486	0.373
BK29	0.236	0.574	0.592	0.647	-0.144
BK30	0.522	0.516	0.664	0.792	0.284
BK31	0.447	0.559	0.580	0.647	0.261
BK33A	0.254	0.262	0.556	0.739	-0.615
BK33C	0.060	0.000	0.625	0.795	-0.651
BK33G	0.138	0.282	0.518	0.750	-0.644
BK34	0.372	0.203	-0.261	-0.368	0.131
BK35	0.000	0.000	0.272	0.200	-0.304
BK36	-0.476	-0.326	-0.542	-0.698	-0.406
BK37	-0.149	0.182	0.354	0.491	-0.299
BK37B	-0.326	0.118	-0.098	0.035	-0.331
BK38	-0.059	0.000	1.000	1.000	-1.000
BK39	0.075	-0.046	0.312	0.211	-0.050
BK40	0.039	-0.246	-0.367	-0.461	0.143
BK41	0.222	0.000	-0.704	-0.739	0.375

	BK15B	BK16A	BK16B	BK17	BK18
BK15B	1.000				
BK16A	0.745	1.000			
BK16B	0.620	0.913	1.000		
BK17	-0.010	0.257	0.303	1.000	
BK18	0.442	0.016	-0.160	-0.134	1.000
BK19	0.019	0.112	0.069	-0.384	-0.304
BK22	0.411	0.276	0.305	0.180	-0.304
BK24	0.451	0.467	0.289	0.502	0.274
BK25	0.110	0.200	0.045	-0.107	0.143
BK26	0.630	0.660	0.527	0.492	0.010
BK27	0.604	0.493	0.363	0.405	0.131
BK28	0.467	0.508	0.459	0.448	0.056
BK29	0.053	0.632	0.574	0.489	-0.146
BK30	0.258	0.650	0.702	0.289	-0.074
BK31	0.357	0.748	0.657	0.752	0.219
BK33A	-0.397	0.055	0.352	-0.198	-0.355
BK33C	-0.256	-0.007	0.287	-0.188	-0.573
BK33G	-0.378	0.049	0.429	-0.196	-0.333
BK34	-0.039	0.123	-0.316	0.149	0.259
BK35	-0.544	-0.051	-0.011	0.325	-0.481
BK36	-0.509	-0.404	-0.388	-0.556	-0.473
BK37	-0.067	0.183	0.277	0.732	0.237
BK37B	-0.190	0.085	0.136	-0.060	0.281
BK38	-1.000	-0.182	-0.200	1.000	-0.353
BK39	-0.062	0.277	0.181	0.144	0.029
BK40	0.214	-0.238	-0.383	-0.828	0.313
BK41	0.079	-0.381	-0.392	-0.399	0.400

	BK19	BK22	BK24	BK25	BK26
BK19	1.000				
BK22	0.408	1.000			
BK24	0.027	-0.044	1.000		
BK25	0.190	-0.088	0.684	1.000	
BK26	-0.448	0.457	0.110	-0.275	1.000
BK27	-0.253	0.715	0.150	-0.299	0.986
BK28	-0.552	-0.007	0.464	0.401	0.401
BK29	-0.209	0.344	0.141	0.527	0.400
BK30	-0.112	0.495	-0.387	-0.041	0.512
BK31	-0.553	0.274	0.245	0.519	0.629
BK33A	0.200	0.224	-0.360	0.162	-0.062
BK33C	0.228	0.413	-0.504	0.051	0.188
BK33G	0.020	0.150	-0.151	0.268	-0.149
BK34	-0.098	0.171	0.244	0.337	0.059
BK35	-0.139	0.167	-0.274	-0.064	-0.085
BK36	0.176	-0.192	-0.265	-0.235	-0.581
BK37	-0.458	-0.427	0.612	0.364	0.089
BK37B	-0.398	-0.799	0.003	0.114	-0.206
BK38	-1.000	1.000	-1.000	-1.000	0.143
BK39	-0.096	-0.325	0.125	-0.102	0.117
BK40	0.109	0.077	-0.812	-0.559	0.068
BK41	-0.301	0.027	0.234	-1.000	-0.041

	BK27	BK28	BK29	BK30	BK31
BK27	1.000				
BK28	0.293	1.000			
BK29	0.277	0.523	1.000		
BK30	0.348	0.591	0.600	1.000	
BK31	0.431	0.787	0.954	0.761	1.000
BK33A	-0.149	-0.238	-0.044	0.665	-0.044
BK33C	0.029	-0.292	0.154	0.537	-0.168
BK33G	-0.333	-0.207	-0.033	0.667	-0.033
BK34	0.261	0.120	-0.015	-0.030	0.233
BK35	-0.031	0.215	1.000	0.179	0.333
BK36	-0.680	-0.622	-0.529	-0.650	-0.676
BK37	-0.015	0.386	0.532	-0.013	0.682
BK37B	-0.307	0.050	0.031	-0.081	0.278
BK38	1.000	-1.000	1.000	0.727	1.000
BK39	0.169	0.388	0.021	0.289	0.157
BK40	0.225	-0.467	-0.527	0.000	-0.508
BK41	0.292	-0.381	-0.926	-0.746	-0.652

	BK33A	BK33C	BK33G	BK34	BK35
BK33A	1.000				
BK33C	1.000	1.000			
BK33G	1.000	1.000	1.000		
BK34	-0.795	-0.878	-0.703	1.000	
BK35	-0.554	-0.556	-0.524	0.059	1.000
BK36	0.424	0.522	0.459	-0.197	-0.092
BK37	0.124	0.015	0.315	0.034	0.073
BK37B	-0.333	-0.404	-0.284	-0.008	-0.065
BK38	1.000	1.000	1.000	1.000	1.000
BK39	0.131	-0.179	0.084	0.262	0.350
BK40	-0.433	-0.396	-0.619	1.000	-0.435
BK41	-1.000	-1.000	-1.000	0.263	-0.550

	BK36	BK37	BK37B	BK38	BK39
BK36	1.000				
BK37	-0.364	1.000			
BK37B	-0.065	0.335	1.000		
BK38	1.000	1.000	.	1.000	
BK39	0.069	0.169	0.109	0.412	1.000
BK40	0.367	-0.884	-0.116	.	0.196
BK41	1.000	-0.561	0.719	-1.000	0.023

	BK40	BK41
BK40	1.000	
BK41	0.583	1.000

Table 30K

FREQUENCY TABLE, 47 KIP VARIABLES, REINTERVIEWS, *MIXED* SUBSAMPLE OF TOTAL KIP SAMPLE, *N* = 47, 1989

	D28	OCC	RAGE	RSEX	PPEMP
D28	39				
OCC	35	40			
RAGE	38	39	43		
RSEX	39	40	43	44	
PPEMP	32	37	36	37	37
BK1	39	40	43	44	37
BK2	39	40	43	44	37
BK3	39	40	43	44	37
BK4	39	40	43	44	37
BK5	39	40	43	44	37
BK6	39	40	43	44	37
BK9	38	40	42	43	37
BK10	33	34	36	37	31
BK11A	39	40	43	44	37
BK11B	33	34	37	38	31
BK13A	39	40	43	44	37
BK13B	36	37	40	41	34
BK14A	39	40	43	44	37
BK14B	38	39	42	43	36
BK15A	39	40	43	44	37
BK15B	37	38	41	42	35
BK16A	39	40	43	44	37
BK16B	38	39	42	43	36
BK17	39	40	43	44	37
BK18	39	40	43	44	37
BK19	39	40	43	44	37
BK22	39	40	43	44	37
BK24	38	39	42	43	36
BK25	39	40	43	44	37
BK26	38	39	42	43	36
BK27	39	40	43	44	37
BK28	39	40	43	44	37
BK29	39	40	43	44	37
BK30	39	40	43	44	37
BK31	39	40	43	44	37
BK33A	38	39	42	43	36
BK33C	29	30	33	34	27
BK33G	25	26	27	28	25
BK34	38	39	42	43	36
BK35	37	38	41	42	35
BK36	34	36	38	39	33
BK37	39	40	43	44	37
BK37B	36	37	40	41	34
BK38	39	40	43	44	37
BK39	39	40	43	44	37
BK40	32	33	36	37	30
BK41	39	40	43	44	37

	BK1	BK2	BK3	BK4	BK5
BK1	44				
BK2	44	44			
BK3	44	44	44		
BK4	44	44	44	44	
BK5	44	44	44	44	44
BK6	44	44	44	44	44
BK9	43	43	43	43	43
BK10	37	37	37	37	37
BK11A	44	44	44	44	44
BK11B	38	38	38	38	38
BK13A	44	44	44	44	44
BK13B	41	41	41	41	41
BK14A	44	44	44	44	44
BK14B	43	43	43	43	43
BK15A	44	44	44	44	44

BK15B	42	42	42	42	42
BK16A	44	44	44	44	44
BK16B	43	43	43	43	43
BK17	44	44	44	44	44
BK18	44	44	44	44	44
BK19	44	44	44	44	44
BK22	44	44	44	44	44
BK24	43	43	43	43	43
BK25	44	44	44	44	44
BK26	43	43	43	43	43
BK27	44	44	44	44	44
BK28	44	44	44	44	44
BK29	44	44	44	44	44
BK30	44	44	44	44	44
BK31	44	44	44	44	44
BK33A	43	43	43	43	43
BK33C	34	34	34	34	34
BK33G	28	28	28	28	28
BK34	43	43	43	43	43
BK35	42	42	42	42	42
BK36	39	39	39	39	39
BK37	44	44	44	44	44
BK37B	41	41	41	41	41
BK38	44	44	44	44	44
BK39	44	44	44	44	44
BK40	37	37	37	37	37
BK41	44	44	44	44	44

	BK6	BK9	BK10	BK11A	BK11B
BK6	44				
BK9	43	43			
BK10	37	36	37		
BK11A	44	43	37	44	
BK11B	38	37	33	38	38
BK13A	44	43	37	44	38
BK13B	41	40	34	41	37
BK14A	44	43	37	44	38
BK14B	43	42	36	43	38
BK15A	44	43	37	44	38
BK15B	42	41	35	42	37
BK16A	44	43	37	44	38
BK16B	43	42	36	43	38
BK17	44	43	37	44	38
BK18	44	43	37	44	38
BK19	44	43	37	44	38
BK22	44	43	37	44	38
BK24	43	42	37	43	37
BK25	44	43	37	44	38
BK26	43	42	37	43	38
BK27	44	43	37	44	38
BK28	44	43	37	44	38
BK29	44	43	37	44	38
BK30	44	43	37	44	38
BK31	44	43	37	44	38
BK33A	43	42	36	43	38
BK33C	34	33	29	34	30
BK33G	28	27	24	28	23
BK34	43	42	36	43	38
BK35	42	41	35	42	37
BK36	39	38	33	39	34
BK37	44	43	37	44	38
BK37B	41	40	34	41	36
BK38	44	43	37	44	38
BK39	44	43	37	44	38
BK40	37	36	32	37	35
BK41	44	43	37	44	38

	BK13A	BK13B	BK14A	BK14B	BK15A
BK13A	44				
BK13B	41	41			
BK14A	44	41	44		
BK14B	43	41	43	43	
BK15A	44	41	44	43	44
BK15B	42	40	42	42	42
BK16A	44	41	44	43	44
BK16B	43	41	43	43	43

BK17	44	41	44	43	44
BK18	44	41	44	43	44
BK19	44	41	44	43	44
BK22	44	41	44	43	44
BK24	43	40	43	42	43
BK25	44	41	44	43	44
BK26	43	40	43	42	43
BK27	44	41	44	43	44
BK28	44	41	44	43	44
BK29	44	41	44	43	44
BK30	44	41	44	43	44
BK31	44	41	44	43	44
BK33A	43	41	43	43	43
BK33C	34	32	34	34	34
BK33G	28	27	28	28	28
BK34	43	41	43	43	43
BK35	42	40	42	42	42
BK36	39	38	39	39	39
BK37	44	41	44	43	44
BK37B	41	39	41	41	41
BK38	44	41	44	43	44
BK39	44	41	44	43	44
BK40	37	35	37	36	37
BK41	44	41	44	43	44

	BK15B	BK16A	BK16B	BK17	BK18
BK15B	42				
BK16A	42	44			
BK16B	42	43	43		
BK17	42	44	43	44	
BK18	42	44	43	44	44
BK19	42	44	43	44	44
BK22	42	44	43	44	44
BK24	41	43	42	43	43
BK25	42	44	43	44	44
BK26	41	43	42	43	43
BK27	42	44	43	44	44
BK28	42	44	43	44	44
BK29	42	44	43	44	44
BK30	42	44	43	44	44
BK31	42	44	43	44	44
BK33A	42	43	43	43	43
BK33C	33	34	34	34	34
BK33G	27	28	28	28	28
BK34	42	43	43	43	43
BK35	41	42	42	42	42
BK36	38	39	39	39	39
BK37	42	44	43	44	44
BK37B	40	41	41	41	41
BK38	42	44	43	44	44
BK39	42	44	43	44	44
BK40	35	37	36	37	37
BK41	42	44	43	44	44

	BK19	BK22	BK24	BK25	BK26
BK19	44				
BK22	44	44			
BK24	43	43	43		
BK25	44	44	43	44	
BK26	43	43	42	43	43
BK27	44	44	43	44	43
BK28	44	44	43	44	43
BK29	44	44	43	44	43
BK30	44	44	43	44	43
BK31	44	44	43	44	43
BK33A	43	43	42	43	42
BK33C	34	34	33	34	33
BK33G	28	28	28	28	27
BK34	43	43	42	43	42
BK35	42	42	41	42	41
BK36	39	39	38	39	38
BK37	44	44	43	44	43
BK37B	41	41	40	41	40
BK38	44	44	43	44	43

BK39	44	44	43	44	43
BK40	37	37	36	37	36
BK41	44	44	43	44	43

	BK27	BK28	BK29	BK30	BK31
BK27	44				
BK28	44	44			
BK29	44	44	44		
BK30	44	44	44	44	
BK31	44	44	44	44	44
BK33A	43	43	43	43	43
BK33C	34	34	34	34	34
BK33G	28	28	28	28	28
BK34	43	43	43	43	43
BK35	42	42	42	42	42
BK36	39	39	39	39	39
BK37	44	44	44	44	44
BK37B	41	41	41	41	41
BK38	44	44	44	44	44
BK39	44	44	44	44	44
BK40	37	37	37	37	37
BK41	44	44	44	44	44

	BK33A	BK33C	BK33G	BK34	BK35
BK33A	43				
BK33C	34	34			
BK33G	28	20	28		
BK34	43	34	28	43	
BK35	42	33	27	42	42
BK36	39	30	27	39	39
BK37	43	34	28	43	42
BK37B	41	32	26	41	40
BK38	43	34	28	43	42
BK39	43	34	28	43	42
BK40	36	29	21	36	35
BK41	43	34	28	43	42

	BK36	BK37	BK37B	BK38	BK39
BK36	39				
BK37	39	44			
BK37B	37	41	41		
BK38	39	44	41	44	
BK39	39	44	41	44	44
BK40	32	37	35	37	37
BK41	39	44	41	44	44

	BK40	BK41
BK40	37	
BK41	37	44

Table 31K

MATRIX OF GAMMA COEFFICIENTS, 47 KIP VARIABLES, REINTERVIEWS, *NATIVE* SUBSAMPLE OF TOTAL KIP SAMPLE, N = 61, 1989

	D28	OCC	RAGE	RSEX	PPEMP
D28	1.000				
OCC	-1.000	1.000			
RAGE	0.348	-0.432	1.000		
RSEX	1.000	0.335	-0.661	1.000	
PPEMP	-1.000	0.148	-0.007	-0.235	1.000
BK1	-0.059	-0.160	0.126	-0.527	0.117
BK2	1.000	-0.116	-0.064	-0.366	0.261
BK3	0.000	-0.084	0.099	-0.404	0.138
BK4	1.000	0.031	-0.009	-0.083	0.154
BK5	1.000	0.339	-0.341	-0.166	0.204
BK6	-1.000	-0.406	0.433	0.016	-0.534
BK9	1.000	-0.266	-0.124	-0.064	-0.243
BK10	-0.022	-0.206	0.241	-0.405	0.193
BK11A	0.659	0.026	-0.027	-0.093	0.385
BK11B	0.641	0.121	0.108	0.144	0.523
BK13A	-0.394	0.183	-0.380	0.215	0.115
BK13B	-0.304	-0.058	-0.033	0.190	-0.348
BK14A	-1.000	0.168	-0.016	-0.190	0.373
BK14B	-1.000	0.257	0.009	-0.105	0.436
BK15A	-0.700	0.229	0.049	-0.200	-0.243
BK15B	-0.838	0.265	0.217	-0.088	-0.382
BK16A	-1.000	0.376	-0.187	-0.268	0.259
BK16B	-1.000	0.447	-0.405	0.196	-0.046
BK17	-1.000	0.258	-0.202	-0.180	0.000
BK18	0.244	-0.302	0.743	-0.435	-0.153
BK19	-1.000	-0.378	0.121	-0.080	0.156
BK22	-1.000	-0.122	0.140	-0.217	0.493
BK24	-1.000	-0.309	0.038	-0.023	0.258
BK25	1.000	-0.198	0.008	-0.398	0.366
BK26	-0.793	-0.527	0.104	-0.267	0.792
BK27	0.385	-0.211	0.161	-0.289	0.672
BK28	-0.692	-0.196	0.330	0.069	0.282
BK29	1.000	-0.448	0.212	0.156	0.293
BK30	-0.909	0.000	0.138	-0.115	0.192
BK31	-0.714	-0.135	0.479	0.092	0.158
BK33A	1.000	-0.206	-0.382	0.059	-0.063
BK33C	-1.000	-0.256	-0.393	0.003	0.294
BK33G	1.000	-0.124	-0.375	0.375	-0.149
BK34	-1.000	0.409	-0.435	0.352	-0.258
BK35	-1.000	-0.174	0.059	0.237	0.000
BK36	-1.000	0.195	-0.200	0.080	0.455
BK37	-1.000	-0.198	-0.149	-0.355	-0.365
BK37B	.	-0.122	0.292	-0.062	0.033
BK38	0.742	0.040	0.018	-0.020	-0.021
BK39	-1.000	0.152	-0.162	0.165	0.367
BK40	1.000	-0.035	0.200	0.000	0.605
BK41	1.000	-0.068	-0.193	0.167	0.086

	BK1	BK2	BK3	BK4	BK5
BK1	1.000				
BK2	0.579	1.000			
BK3	0.453	0.283	1.000		
BK4	0.113	0.110	0.044	1.000	
BK5	0.233	0.262	0.206	0.643	1.000
BK6	-0.179	-0.398	-0.091	-0.562	-0.983
BK9	-0.056	0.054	-0.204	0.505	0.535
BK10	0.101	-0.078	0.246	0.062	-0.208
BK11A	0.483	0.609	0.514	0.201	0.286
BK11B	0.439	0.517	0.511	0.143	0.181
BK13A	0.239	0.465	0.067	0.317	0.395
BK13B	-0.210	-0.029	0.184	0.096	0.201
BK14A	0.236	0.228	0.083	0.101	0.419
BK14B	0.198	0.144	0.039	0.139	0.447
BK15A	0.245	0.033	0.220	0.383	0.327
BK15B	0.051	-0.310	0.023	0.310	0.035

BK16A	0.214	0.223	0.003	0.157	0.174
BK16B	-0.141	-0.091	0.099	-0.045	0.202
BK17	0.438	0.415	0.095	0.254	0.327
BK18	0.025	0.009	0.323	-0.096	-0.404
BK19	0.031	-0.025	-0.160	-0.283	-0.445
BK22	0.096	0.258	0.221	0.031	-0.244
BK24	-0.058	0.153	-0.042	-0.080	-0.213
BK25	0.450	0.466	0.181	0.423	0.484
BK26	0.065	0.154	0.167	-0.145	-0.095
BK27	0.122	0.325	0.035	0.012	-0.125
BK28	0.163	0.303	0.074	-0.108	-0.059
BK29	0.519	0.457	0.435	-0.055	-0.172
BK30	0.415	0.400	0.208	0.048	0.107
BK31	0.426	0.373	0.247	-0.173	-0.257
BK33A	0.039	0.187	-0.382	0.134	0.079
BK33C	0.126	0.276	-0.319	0.122	0.103
BK33G	0.059	0.145	-0.531	0.189	-0.003
BK34	0.027	0.298	-0.148	-0.279	0.025
BK35	-0.163	-0.022	-0.247	-0.624	-0.641
BK36	-0.009	-0.084	-0.404	0.231	0.624
BK37	0.238	0.251	-0.015	-0.255	0.018
BK37B	-0.380	-0.365	-0.110	-0.322	-0.182
BK38	0.225	0.230	-0.208	0.487	0.535
BK39	0.075	0.168	0.176	-0.281	-0.258
BK40	0.364	0.113	-0.150	-0.004	-0.178
BK41	-0.266	0.002	-0.178	0.115	0.337

	BK6	BK9	BK10	BK11A	BK11B
BK6	1.000				
BK9	-0.586	1.000			
BK10	0.320	-0.105	1.000		
BK11A	-0.429	0.037	-0.005	1.000	
BK11B	-0.288	0.131	-0.168	0.862	1.000
BK13A	-0.385	0.442	-0.049	0.472	0.454
BK13B	-0.082	-0.013	-0.119	0.239	0.372
BK14A	-0.459	-0.005	0.229	0.442	0.061
BK14B	-0.473	0.006	0.239	0.438	0.072
BK15A	-0.165	0.035	0.281	0.146	-0.024
BK15B	0.177	-0.209	0.167	-0.141	-0.035
BK16A	-0.167	0.112	0.312	0.356	-0.013
BK16B	-0.200	-0.051	0.109	0.104	-0.201
BK17	-0.380	0.091	-0.384	0.316	0.286
BK18	0.421	-0.169	0.123	0.139	0.306
BK19	0.311	-0.048	-0.058	-0.144	-0.164
BK22	0.092	-0.032	0.313	0.554	0.227
BK24	0.161	-0.017	-0.163	0.144	0.187
BK25	-0.492	0.304	-0.028	0.100	0.112
BK26	0.043	-0.011	0.141	0.388	0.208
BK27	0.095	0.155	0.084	0.235	0.396
BK28	-0.113	-0.050	0.059	0.479	0.588
BK29	0.026	-0.095	0.054	0.596	0.545
BK30	-0.088	-0.089	0.152	0.404	0.442
BK31	0.135	-0.131	-0.031	0.700	0.792
BK33A	-0.108	0.190	0.231	-0.063	-0.399
BK33C	-0.268	0.279	0.401	-0.084	-0.404
BK33G	0.035	0.292	0.111	-0.164	-0.268
BK34	-0.308	-0.108	-0.408	0.281	0.419
BK35	0.463	0.098	-0.569	-0.204	0.032
BK36	-0.661	0.047	-0.105	-0.211	-0.452
BK37	-0.013	0.105	-0.337	0.054	-0.083
BK37B	0.164	-0.014	-0.023	-0.480	-0.284
BK38	-0.579	0.376	-0.177	0.176	0.267
BK39	0.357	-0.457	0.128	0.150	0.067
BK40	0.220	-0.060	0.741	0.364	0.212
BK41	-0.349	0.181	0.249	-0.197	-0.096

	BK13A	BK13B	BK14A	BK14B	BK15A
BK13A	1.000				
BK13B	0.492	1.000			
BK14A	0.343	0.179	1.000		
BK14B	0.232	0.238	0.998	1.000	
BK15A	0.614	0.406	0.293	0.268	1.000
BK15B	0.161	0.488	-0.005	-0.006	0.901
BK16A	0.440	0.063	0.573	0.563	0.585
BK16B	0.328	0.259	0.665	0.653	0.151
BK17	0.485	0.100	0.089	-0.019	0.104

BK18	-0.379	0.204	-0.100	-0.109	0.020
BK19	-0.076	-0.244	-0.008	-0.103	-0.026
BK22	0.240	0.102	0.175	0.216	0.292
BK24	0.342	0.152	-0.345	-0.436	0.095
BK25	0.350	-0.033	0.194	0.110	0.294
BK26	0.043	-0.024	-0.104	-0.076	-0.105
BK27	0.126	-0.131	-0.347	-0.395	-0.045
BK28	0.195	0.367	0.046	0.032	0.233
BK29	0.202	0.064	0.290	0.213	-0.122
BK30	0.285	0.111	0.259	0.249	0.355
BK31	0.334	0.112	0.324	0.294	0.225
BK33A	0.236	-0.383	-0.238	-0.293	-0.041
BK33C	0.219	-0.348	-0.213	-0.210	0.087
BK33G	0.394	-0.399	-0.265	-0.262	0.013
BK34	0.256	0.335	0.098	0.000	-0.129
BK35	-0.132	-0.342	-0.296	-0.310	-0.823
BK36	0.072	-0.154	0.356	0.356	0.065
BK37	0.206	0.387	0.096	-0.015	0.258
BK37B	-0.478	0.168	0.069	0.037	-0.088
BK38	0.002	-0.146	0.353	0.238	-0.017
BK39	0.214	0.166	0.018	-0.040	0.066
BK40	0.094	-0.069	0.609	0.602	0.325
BK41	0.024	0.046	-0.314	-0.310	0.023

	BK15B	BK16A	BK16B	BK17	BK18
BK15B	1.000				
BK16A	0.446	1.000			
BK16B	0.050	0.717	1.000		
BK17	-0.096	0.067	0.001	1.000	
BK18	0.183	-0.264	-0.396	-0.032	1.000
BK19	-0.089	-0.106	-0.270	0.135	0.184
BK22	0.149	0.557	-0.101	0.178	0.151
BK24	0.031	-0.086	-0.197	0.441	0.107
BK25	-0.065	0.050	-0.253	0.454	-0.051
BK26	-0.285	0.348	0.089	0.006	0.110
BK27	-0.301	0.252	-0.197	0.066	0.246
BK28	0.141	0.085	-0.084	0.202	0.160
BK29	-0.319	-0.065	-0.302	0.069	0.141
BK30	0.228	0.343	0.013	0.081	0.164
BK31	0.351	0.147	-0.152	0.089	0.348
BK33A	-0.068	0.279	0.241	0.046	-0.243
BK33C	0.022	0.429	0.307	0.083	-0.296
BK33G	-0.111	0.218	0.188	-0.252	-0.415
BK34	-0.148	0.148	0.142	0.164	-0.241
BK35	-0.665	-0.321	0.101	-0.110	0.238
BK36	-0.126	0.160	0.439	0.230	-0.616
BK37	0.315	0.268	0.104	0.044	-0.107
BK37B	0.028	-0.231	-0.147	-0.579	0.159
BK38	-0.045	-0.035	-0.160	0.343	-0.084
BK39	-0.132	0.093	0.262	0.329	-0.142
BK40	0.285	0.473	0.024	-0.199	0.015
BK41	-0.005	0.020	-0.010	-0.191	-0.054

	BK19	BK22	BK24	BK25	BK26
BK19	1.000				
BK22	0.387	1.000			
BK24	0.123	0.355	1.000		
BK25	0.017	-0.111	0.624	1.000	
BK26	0.255	0.681	0.518	-0.044	1.000
BK27	0.172	0.329	0.407	0.285	0.834
BK28	0.068	0.413	0.182	0.016	0.313
BK29	0.315	0.227	-0.028	0.163	0.270
BK30	0.065	0.342	-0.130	0.067	0.377
BK31	0.281	0.609	0.192	-0.068	0.111
BK33A	0.188	-0.003	0.239	-0.019	0.321
BK33C	0.426	0.310	0.396	0.065	0.441
BK33G	-0.129	-0.176	-0.153	-0.185	0.107
BK34	-0.253	-0.041	-0.165	-0.130	-0.114
BK35	0.464	0.018	-0.665	-0.662	0.014
BK36	-0.014	-0.016	-0.537	0.057	0.018
BK37	-0.087	-0.008	-0.048	0.062	-0.030
BK37B	0.198	-0.368	-0.203	-0.150	-0.309
BK38	-0.275	-0.359	-0.365	0.340	-0.216
BK39	0.182	0.317	0.246	-0.231	0.464
BK40	0.250	0.416	-0.333	0.135	0.131
BK41	-0.241	-0.025	0.124	0.024	0.383

	BK27	BK28	BK29	BK30	BK31
BK27	1.000				
BK28	0.273	1.000			
BK29	-0.026	0.674	1.000		
BK30	0.186	0.484	0.652	1.000	
BK31	-0.028	0.917	0.816	0.696	1.000
BK33A	0.305	-0.195	-0.295	-0.391	-0.415
BK33C	0.324	0.098	-0.287	-0.284	-0.325
BK33G	0.304	-0.357	-0.226	-0.311	-0.468
BK34	-0.171	0.390	0.162	-0.065	0.359
BK35	-0.130	-0.152	0.143	-0.373	0.102
BK36	-0.132	0.088	-0.258	-0.211	-0.325
BK37	-0.158	0.233	0.155	0.252	0.301
BK37B	-0.196	-0.239	-0.018	-0.247	-0.078
BK38	-0.275	0.148	0.357	0.152	0.203
BK39	0.103	0.327	0.245	0.386	0.157
BK40	0.171	0.409	0.558	0.412	0.700
BK41	0.318	0.096	-0.539	-0.194	-0.356

	BK33A	BK33C	BK33G	BK34	BK35
BK33A	1.000				
BK33C	1.000	1.000			
BK33G	1.000	0.985	1.000		
BK34	0.067	-0.106	0.008	1.000	
BK35	0.059	0.007	0.304	0.435	1.000
BK36	0.427	0.476	0.457	0.058	-0.391
BK37	-0.341	-0.236	-0.461	0.414	0.169
BK37B	-0.615	-0.681	-0.586	-0.168	-0.035
BK38	-0.136	-0.068	-0.029	0.383	-0.324
BK39	0.291	0.354	0.220	0.101	-0.231
BK40	-0.137	-0.056	-0.247	0.038	-0.208
BK41	0.571	0.661	0.500	0.239	0.055

	BK36	BK37	BK37B	BK38	BK39
BK36	1.000				
BK37	-0.164	1.000			
BK37B	0.243	0.167	1.000		
BK38	0.430	0.085	-0.043	1.000	
BK39	0.053	-0.077	-0.470	-0.135	1.000
BK40	0.060	-0.123	-0.017	0.089	-0.063
BK41	0.167	-0.354	-0.303	-0.092	-0.126

	BK40	BK41
BK40	1.000	
BK41	0.170	1.000

Table 31K

FREQUENCY TABLE, 47 KIP VARIABLES, REINTERVIEWS, *NATIVE* SUBSAMPLE OF TOTAL KIP SAMPLE, $N = 61$, 1989

	D28	OCC	RAGE	RSEX	PPEMP
D28	63				
OCC	47	47			
RAGE	59	45	59		
RSEX	61	47	59	61	
PPEMP	42	42	41	42	42
BK1	63	47	59	61	42
BK2	63	47	59	61	42
BK3	63	47	59	61	42
BK4	63	47	59	61	42
BK5	62	46	58	60	41
BK6	60	45	56	58	40
BK9	54	42	50	52	38
BK10	57	44	54	56	39
BK11A	63	47	59	61	42
BK11B	57	42	53	55	37
BK13A	63	47	59	61	42
BK13B	61	46	57	59	42
BK14A	61	45	57	59	40
BK14B	59	44	55	57	40
BK15A	63	47	59	61	42
BK15B	62	46	58	60	42
BK16A	62	46	58	60	41
BK16B	62	46	58	60	41
BK17	63	47	59	61	42
BK18	62	46	58	60	41
BK19	60	45	56	58	41
BK22	62	47	59	61	42
BK24	63	47	59	61	42
BK25	60	45	57	59	40
BK26	62	46	58	60	41
BK27	63	47	59	61	42
BK28	63	47	59	61	42
BK29	62	47	58	60	42
BK30	63	47	59	61	42
BK31	61	46	58	60	42
BK33A	61	47	58	60	42
BK33C	49	38	47	49	33
BK33G	46	34	44	45	29
BK34	59	44	55	57	39
BK35	59	44	56	58	40
BK36	59	45	55	57	41
BK37	63	47	59	61	42
BK37B	50	37	46	48	33
BK38	63	47	59	61	42
BK39	63	47	59	61	42
BK40	52	39	49	51	35
BK41	63	47	59	61	42

	BK1	BK2	BK3	BK4	BK5
BK1	64				
BK2	64	64			
BK3	64	64	64		
BK4	64	64	64	64	
BK5	63	63	63	63	63
BK6	61	61	61	61	61
BK9	55	55	55	55	55
BK10	58	58	58	58	58
BK11A	64	64	64	64	63
BK11B	58	58	58	58	58
BK13A	64	64	64	64	63
BK13B	62	62	62	62	61
BK14A	62	62	62	62	62
BK14B	60	60	60	60	60
BK15A	64	64	64	64	63
BK15B	63	63	63	63	62

BK16A	63	63	63	63	63
BK16B	63	63	63	63	63
BK17	64	64	64	64	63
BK18	63	63	63	63	62
BK19	61	61	61	61	60
BK22	63	63	63	63	62
BK24	64	64	64	64	63
BK25	61	61	61	61	60
BK26	63	63	63	63	62
BK27	64	64	64	64	63
BK28	64	64	64	64	63
BK29	63	63	63	63	62
BK30	64	64	64	64	63
BK31	62	62	62	62	61
BK33A	62	62	62	62	61
BK33C	50	50	50	50	49
BK33G	47	47	47	47	46
BK34	60	60	60	60	60
BK35	60	60	60	60	60
BK36	60	60	60	60	59
BK37	64	64	64	64	63
BK37B	50	50	50	50	50
BK38	64	64	64	64	63
BK39	64	64	64	64	63
BK40	53	53	53	53	53
BK41	64	64	64	64	63

	BK6	BK9	BK10	BK11A	BK11B
BK6	61				
BK9	55	55			
BK10	57	51	58		
BK11A	61	55	58	64	
BK11B	56	52	53	58	58
BK13A	61	55	58	64	58
BK13B	59	53	57	62	56
BK14A	60	55	57	62	58
BK14B	58	53	56	60	56
BK15A	61	55	58	64	58
BK15B	60	54	57	63	57
BK16A	61	55	58	63	58
BK16B	61	55	58	63	58
BK17	61	55	58	64	58
BK18	60	54	57	63	57
BK19	58	52	55	61	55
BK22	60	54	58	63	57
BK24	61	55	58	64	58
BK25	58	52	56	61	56
BK26	60	55	57	63	58
BK27	61	55	58	64	58
BK28	61	55	58	64	58
BK29	60	54	57	63	57
BK30	61	55	58	64	58
BK31	59	53	57	62	56
BK33A	59	53	57	62	56
BK33C	47	42	45	50	45
BK33G	45	39	42	47	41
BK34	58	52	55	60	55
BK35	58	52	56	60	55
BK36	58	52	55	60	54
BK37	61	55	58	64	58
BK37B	49	44	45	50	45
BK38	61	55	58	64	58
BK39	61	55	58	64	58
BK40	51	47	51	53	52
BK41	61	55	58	64	58

	BK13A	BK13B	BK14A	BK14B	BK15A
BK13A	64				
BK13B	62	62			
BK14A	62	60	62		
BK14B	60	59	60	60	
BK15A	64	62	62	60	64
BK15B	63	61	61	60	63
BK16A	63	61	62	60	63
BK16B	63	61	62	60	63
BK17	64	62	62	60	64

BK18	63	61	61	59	63
BK19	61	59	59	57	61
BK22	63	61	61	59	63
BK24	64	62	62	60	64
BK25	61	59	59	57	61
BK26	63	61	62	60	63
BK27	64	62	62	60	64
BK28	64	62	62	60	64
BK29	63	61	61	59	63
BK30	64	62	62	60	64
BK31	62	60	60	59	62
BK33A	62	60	60	58	62
BK33C	50	48	48	46	50
BK33G	47	45	45	43	47
BK34	60	58	59	57	60
BK35	60	58	59	57	60
BK36	60	58	58	56	60
BK37	64	62	62	60	64
BK37B	50	48	49	47	50
BK38	64	62	62	60	64
BK39	64	62	62	60	64
BK40	53	52	53	53	53
BK41	64	62	62	60	64

	BK15B	BK16A	BK16B	BK17	BK18
BK15B	63				
BK16A	62	63			
BK16B	62	63	63		
BK17	63	63	63	64	
BK18	62	62	62	63	63
BK19	60	60	60	61	60
BK22	62	62	62	63	62
BK24	63	63	63	64	63
BK25	60	60	60	61	60
BK26	62	62	62	63	62
BK27	63	63	63	64	63
BK28	63	63	63	64	63
BK29	62	62	62	63	62
BK30	63	63	63	64	63
BK31	62	61	61	62	61
BK33A	61	61	61	62	61
BK33C	49	49	49	50	49
BK33G	46	46	46	47	46
BK34	59	60	60	60	59
BK35	59	60	60	60	59
BK36	59	59	59	60	59
BK37	63	63	63	64	63
BK37B	49	50	50	50	49
BK38	63	63	63	64	63
BK39	63	63	63	64	63
BK40	53	53	53	53	52
BK41	63	63	63	64	63

	BK19	BK22	BK24	BK25	BK26
BK19	61				
BK22	60	63			
BK24	61	63	64		
BK25	58	61	61	61	
BK26	60	62	63	60	63
BK27	61	63	64	61	63
BK28	61	63	64	61	63
BK29	60	62	63	60	62
BK30	61	63	64	61	63
BK31	59	62	62	60	61
BK33A	59	62	62	60	61
BK33C	47	50	50	48	49
BK33G	44	47	47	45	46
BK34	57	59	60	57	59
BK35	58	60	60	58	59
BK36	59	59	60	57	59
BK37	61	63	64	61	63
BK37B	47	49	50	47	49
BK38	61	63	64	61	63
BK39	61	63	64	61	63
BK40	50	53	53	51	53
BK41	61	63	64	61	63

	BK27	BK28	BK29	BK30	BK31
BK27	64				
BK28	64	64			
BK29	63	63	63		
BK30	64	64	63	64	
BK31	62	62	61	62	62
BK33A	62	62	62	62	61
BK33C	50	50	50	50	49
BK33G	47	47	47	47	46
BK34	60	60	60	60	58
BK35	60	60	59	60	59
BK36	60	60	59	60	58
BK37	64	64	63	64	62
BK37B	50	50	50	50	48
BK38	64	64	63	64	62
BK39	64	64	63	64	62
BK40	53	53	52	53	53
BK41	64	64	63	64	62

	BK33A	BK33C	BK33G	BK34	BK35
BK33A	62				
BK33C	50	50			
BK33G	47	39	47		
BK34	59	47	46	60	
BK35	59	47	44	57	60
BK36	58	46	43	56	57
BK37	62	50	47	60	60
BK37B	49	38	39	49	47
BK38	62	50	47	60	60
BK39	62	50	47	60	60
BK40	52	41	38	50	51
BK41	62	50	47	60	60

	BK36	BK37	BK37B	BK38	BK39
BK36	60				
BK37	60	64			
BK37B	47	50	50		
BK38	60	64	50	64	
BK39	60	64	50	64	64
BK40	49	53	40	53	53
BK41	60	64	50	64	64

	BK40	BK41
BK40	53	
BK41	53	64

Table 32K

SEA MAMMALS: MATRIX OF GAMMA COEFFICIENTS, 16 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

	WALRUS	BOWHEAD	BELUKHA	BEARDED	SPOTTED
WALRUS	1.000				
BOWHEAD	0.203	1.000			
BELUKHA	0.264	0.403	1.000		
BEARDED	0.424	0.676	0.275	1.000	
SPOTTED	0.486	0.200	0.234	0.617	1.000
Q2A1	-0.224	-0.244	-0.164	-0.102	0.092
Q2A2	-0.062	-0.519	-0.408	-0.076	0.265
Q2B1	-0.147	-0.118	0.009	-0.091	0.090
Q2B2	-0.107	-0.551	-0.412	-0.117	0.252
Q2C1	-0.306	-0.222	0.041	0.015	0.064
Q2C2	0.010	-0.362	-0.437	-0.277	0.385
Q3A	0.076	-0.070	0.033	-0.282	0.077
Q3B	-0.015	0.150	0.319	-0.374	-0.060
Q3C	0.021	-0.068	-0.035	-0.244	-0.006
Q51G	-0.069	-0.457	0.008	-0.139	0.026
Q52G	-0.585	0.000	1.000	-0.524	0.077

	Q2A1	Q2A2	Q2B1	Q2B2	Q2C1
Q2A1	1.000				
Q2A2	0.756	1.000			
Q2B1	0.998	0.713	1.000		
Q2B2	0.835	0.979	0.754	1.000	
Q2C1	0.978	0.795	0.975	0.859	1.000
Q2C2	0.807	0.977	0.773	0.956	0.796
Q3A	0.638	0.863	0.657	0.854	0.653
Q3B	0.696	0.795	0.737	0.816	0.711
Q3C	0.648	0.871	0.677	0.857	0.686
Q51G	0.633	0.662	0.681	0.664	0.674
Q52G	0.792	0.761	0.885	0.774	0.901

	Q2C2	Q3A	Q3B	Q3C	Q51G
Q2C2	1.000				
Q3A	0.819	1.000			
Q3B	0.781	0.985	1.000		
Q3C	0.846	1.000	0.968	1.000	
Q51G	0.571	0.766	0.788	0.738	1.000
Q52G	0.723	0.911	0.930	0.947	0.957

	Q52G
Q52G	1.000

Table 33K

LAND MAMMALS: MATRIX OF GAMMA COEFFICIENTS, 23 VARIABLES, *N* = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

	POLAR	BROWN	CARIBOU	MOOSE	SNOWSH
POLAR	1.000				
BROWN	0.745	1.000			
CARIBOU	-0.137	-0.076	1.000		
MOOSE	0.109	0.353	0.425	1.000	
SNOWSH	-0.688	-0.210	0.254	0.005	1.000
ARCTICF	0.507	0.173	0.309	0.194	0.323
VARIANT	-0.117	0.279	0.146	0.166	0.136
WOLF	0.054	0.262	0.305	0.700	0.379
OTTER	-0.391	0.180	0.600	0.510	0.432
BEAVER	-0.538	-0.091	0.693	0.245	0.467
Q2M1	-0.375	0.058	-0.321	-0.220	0.214
Q2M2	0.098	0.319	-0.164	0.146	0.133
Q2N1	-0.496	-0.011	-0.303	-0.212	0.306
Q2N2	0.098	0.231	-0.182	0.049	0.098
Q3D	0.127	0.243	-0.194	0.110	-0.171
Q3E	-0.068	0.273	-0.204	0.219	0.091
Q3F	0.231	0.220	-0.190	0.214	0.076
Q3G	0.141	0.429	-0.166	0.208	-0.234
Q4K	0.261	0.387	0.227	0.025	0.307
Q4L	0.118	0.405	0.245	0.131	-0.041
Q4M	0.244	0.563	0.213	0.181	0.094
Q51E	-0.231	0.131	-0.124	0.266	-0.546
Q52E	.	0.404	0.478	0.643	-0.097

	ARCTICF	VARIANT	WOLF	OTTER	BEAVER
ARCTICF	1.000				
VARIANT	0.853	1.000			
WOLF	-0.271	-0.456	1.000		
OTTER	0.292	0.500	0.487	1.000	
BEAVER	0.194	0.557	0.074	0.653	1.000
Q2M1	-0.305	-0.275	0.119	0.365	0.072
Q2M2	-0.137	0.030	0.231	0.394	0.372
Q2N1	-0.317	-0.201	0.000	0.362	0.178
Q2N2	-0.112	0.089	0.137	0.356	0.372
Q3D	-0.169	0.060	-0.132	0.713	0.115
Q3E	-0.184	0.049	-0.091	0.693	0.199
Q3F	-0.135	0.182	-0.062	0.681	0.273
Q3G	-0.246	0.038	0.242	0.678	0.229
Q4K	0.233	0.333	0.346	0.586	0.310
Q4L	0.145	0.381	0.085	0.423	0.295
Q4M	0.166	0.350	0.149	0.498	0.243
Q51E	-0.226	0.034	0.200	0.310	0.080
Q52E	1.000	.	-0.398	0.951	0.269

	Q2M1	Q2M2	Q2N1	Q2N2	Q3D
Q2M1	1.000				
Q2M2	0.805	1.000			
Q2N1	1.000	0.789	1.000		
Q2N2	0.801	1.000	0.785	1.000	
Q3D	0.689	0.856	0.667	0.845	1.000
Q3E	0.738	0.868	0.714	0.855	0.979
Q3F	0.647	0.845	0.629	0.849	0.977
Q3G	0.651	0.870	0.627	0.873	0.973
Q4K	0.652	0.517	0.612	0.472	0.472
Q4L	0.619	0.490	0.570	0.442	0.546
Q4M	0.618	0.451	0.574	0.418	0.537
Q51E	0.716	0.637	0.703	0.648	0.767
Q52E	0.745	0.732	0.751	0.708	0.915

	Q3E	Q3F	Q3G	Q4K	Q4L
Q3E	1.000				
Q3F	0.998	1.000			
Q3G	0.993	0.999	1.000		
Q4K	0.500	0.505	0.486	1.000	
Q4L	0.515	0.508	0.515	1.000	1.000
Q4M	0.512	0.511	0.509	0.940	0.945
Q51E	0.767	0.746	0.796	0.265	0.455
Q52E	0.912	0.870	0.891	0.568	0.516

	Q4M	Q51E	Q52E
Q4M	1.000		
Q51E	0.355	1.000	
Q52E	0.506	0.930	1.000

Table 34K

FISH: MATRIX OF GAMMA COEFFICIENTS, 29 VARIABLES, *N* = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

	CHUM	PINK	RED	SILVER	KING
CHUM	1.000				
PINK	0.778	1.000			
RED	0.842	0.827	1.000		
SILVER	0.724	0.837	0.924	1.000	
KING	0.689	0.593	0.801	0.860	1.000
DOLLY	0.563	0.768	0.511	0.681	0.516
WHITE1	0.477	0.477	0.535	0.623	0.368
GRAYLIN	0.032	0.204	-0.025	0.204	0.202
HERRING	0.366	0.306	0.606	0.368	0.260
SMELT	0.423	-0.032	0.305	0.132	0.203
COD	0.369	0.193	-0.049	0.212	0.133
HALIBUT	0.304	0.586	0.377	0.628	0.382
Q2D1	0.124	-0.063	0.391	0.443	0.336
Q2D2	0.200	0.281	0.546	0.438	0.444
Q2E1	0.090	0.058	0.353	0.531	0.376
Q2E2	0.142	0.278	0.483	0.410	0.370
Q2F1	0.039	0.073	0.349	0.465	0.365
Q2F2	0.208	0.313	0.489	0.437	0.375
Q2G1	0.138	0.112	0.338	0.537	0.441
Q2G2	0.218	0.336	0.534	0.384	0.347
Q3H	0.360	0.397	0.710	0.556	0.512
Q3I	0.416	0.468	0.613	0.574	0.509
Q3J	0.411	0.511	0.668	0.515	0.398
Q4A	0.375	0.253	0.505	0.475	0.310
Q4B	0.459	0.332	0.567	0.650	0.605
Q4C	0.250	0.199	0.677	0.468	0.379
Q51F	0.313	0.073	0.321	0.352	0.414
Q52E	0.301	0.470	0.554	0.623	0.472
Q52F	0.389	0.543	0.630	0.603	0.544

	DOLLY	WHITE1	GRAYLING	HERRING	SMELT
DOLLY	1.000				
WHITE1	0.817	1.000			
GRAYLIN	0.518	0.569	1.000		
HERRING	0.522	0.048	0.347	1.000	
SMELT	0.324	0.447	0.558	0.784	1.000
COD	0.451	0.490	0.328	0.632	0.416
HALIBUT	0.638	0.727	-0.021	0.404	0.288
Q2D1	0.021	-0.031	-0.142	0.238	0.326
Q2D2	0.110	0.058	-0.353	0.215	0.364
Q2E1	0.250	0.010	-0.141	0.124	0.400
Q2E2	0.154	0.020	-0.321	0.067	0.314
Q2F1	0.131	-0.108	-0.219	0.160	0.339
Q2F2	0.126	-0.049	-0.325	0.108	0.398
Q2G1	0.347	0.028	-0.184	0.260	0.466
Q2G2	0.156	0.119	-0.308	0.220	0.485
Q3H	0.214	0.130	-0.215	0.480	0.354
Q3I	0.358	0.298	-0.207	0.235	0.343
Q3J	0.281	0.370	-0.163	0.391	0.448
Q4A	0.342	0.379	0.168	-0.093	0.366
Q4B	0.404	0.303	0.186	0.160	0.533
Q4C	0.261	0.529	0.007	0.188	0.471
Q51F	-0.182	-0.120	-0.401	-0.154	0.268
Q52E	-0.100	0.277	-0.015	0.184	0.589
Q52F	0.141	0.120	-0.012	0.370	0.589

	COD	HALIBUT	Q2D1	Q2D2	Q2E1
COD	1.000				
HALIBUT	0.942	1.000			
Q2D1	-0.089	0.502	1.000		
Q2D2	0.084	0.418	0.730	1.000	
Q2E1	-0.247	0.412	0.999	0.693	1.000

Q2E2	0.032	0.386	0.773	0.980	0.764
Q2F1	-0.256	0.481	0.997	0.695	0.999
Q2F2	-0.021	0.418	0.787	0.937	0.785
Q2G1	-0.185	0.368	0.995	0.735	0.995
Q2G2	0.091	0.332	0.673	0.956	0.638
Q3H	0.112	0.353	0.649	0.865	0.657
Q3I	0.047	0.316	0.825	0.820	0.823
Q3J	0.145	0.357	0.668	0.836	0.685
Q4A	0.096	0.520	0.586	0.502	0.796
Q4B	0.300	0.599	0.749	0.528	0.733
Q4C	0.141	0.500	0.528	0.618	0.636
Q51F	0.353	0.310	0.742	0.555	0.764
Q52E	0.526	0.510	0.754	0.611	0.750
Q52F	0.445	0.392	0.770	0.681	0.767

	Q2E2	Q2F1	Q2F2	Q2G1	Q2G2
Q2E2	1.000				
Q2F1	0.771	1.000			
Q2F2	0.957	0.802	1.000		
Q2G1	0.767	0.997	0.801	1.000	
Q2G2	0.934	0.651	0.956	0.703	1.000
Q3H	0.850	0.664	0.801	0.681	0.856
Q3I	0.856	0.828	0.887	0.799	0.853
Q3J	0.840	0.648	0.840	0.679	0.906
Q4A	0.576	0.645	0.508	0.765	0.517
Q4B	0.507	0.774	0.508	0.746	0.435
Q4C	0.592	0.580	0.479	0.672	0.549
Q51F	0.574	0.673	0.611	0.695	0.537
Q52E	0.632	0.766	0.728	0.736	0.674
Q52F	0.709	0.797	0.744	0.772	0.679

	Q3H	Q3I	Q3J	Q4A	Q4B
Q3H	1.000				
Q3I	0.974	1.000			
Q3J	0.983	0.981	1.000		
Q4A	0.538	0.631	0.527	1.000	
Q4B	0.628	0.621	0.567	1.000	1.000
Q4C	0.527	0.457	0.413	0.950	0.943
Q51F	0.647	0.782	0.732	0.444	0.493
Q52E	0.792	0.853	0.873	0.603	0.705
Q52F	0.825	0.884	0.833	0.573	0.679

	Q4C	Q51F	Q52E	Q52F
Q4C	1.000			
Q51F	0.336	1.000		
Q52E	0.469	0.930	1.000	
Q52F	0.423	0.909	0.997	1.000

Table 35K

BIRDS: MATRIX OF GAMMA COEFFICIENTS, 19 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

	DUCKS	GEESE	CRANES	SWANS	GULLS
DUCKS	1.000				
GEESE	0.821	1.000			
CRANES	0.517	0.765	1.000		
SWANS	0.677	0.606	0.798	1.000	
GULLS	0.619	0.696	0.063	0.296	1.000
PTARM	0.452	0.498	0.306	0.199	0.367
OWL	0.042	0.234	0.189	0.230	0.375
Q2Q1	-0.263	-0.342	-0.269	-0.545	-0.136
Q2Q2	-0.190	-0.256	-0.390	-0.223	-0.163
Q2R1	-0.297	-0.366	-0.345	-0.623	-0.165
Q2R2	-0.184	-0.272	-0.397	-0.241	-0.181
Q2S1	-0.404	-0.422	-0.408	-0.583	-0.241
Q2S2	-0.235	-0.264	-0.230	-0.109	-0.319
Q2T1	-0.353	-0.368	-0.349	-0.583	-0.157
Q2T2	-0.194	-0.224	-0.282	-0.099	-0.174
Q4F	0.169	0.060	-0.153	0.066	0.336
Q4G	0.160	0.194	-0.061	-0.174	0.552
Q4H	0.089	0.224	-0.018	-0.281	0.338
Q4I	0.200	0.307	0.117	-0.195	0.605

	PTARM	OWL	Q2Q1	Q2Q2	Q2R1
PTARM	1.000				
OWL	0.642	1.000			
Q2Q1	-0.240	-0.200	1.000		
Q2Q2	-0.351	-0.224	0.738	1.000	
Q2R1	-0.193	-0.100	0.979	0.749	1.000
Q2R2	-0.367	-0.240	0.741	1.000	0.755
Q2S1	-0.204	-0.117	0.978	0.768	1.000
Q2S2	-0.402	-0.455	0.761	0.980	0.761
Q2T1	-0.222	-0.161	0.998	0.785	1.000
Q2T2	-0.347	-0.356	0.720	0.980	0.739
Q4F	-0.055	-0.196	0.443	0.542	0.478
Q4G	0.021	-0.034	0.633	0.516	0.632
Q4H	-0.021	0.107	0.530	0.508	0.568
Q4I	0.184	0.294	0.556	0.482	0.597

	Q2R2	Q2S1	Q2S2	Q2T1	Q2T2
Q2R2	1.000				
Q2S1	0.768	1.000			
Q2S2	0.980	0.801	1.000		
Q2T1	0.789	0.998	0.812	1.000	
Q2T2	0.960	0.822	1.000	0.789	1.000
Q4F	0.551	0.505	0.598	0.494	0.641
Q4G	0.527	0.624	0.591	0.633	0.626
Q4H	0.508	0.553	0.487	0.521	0.525
Q4I	0.482	0.558	0.440	0.546	0.499

	Q4F	Q4G	Q4H	Q4I
Q4F	1.000			
Q4G	0.920	1.000		
Q4H	0.839	0.953	1.000	
Q4I	0.865	0.997	0.993	1.000

Table 37K

COGNITIVE ATTITUDES ABOUT THE ENVIRONMENT, MATRIX OF GAMMA COEFFICIENTS, 30 VARIABLES, N = 108, TOTAL KIP SAMPLE, REINTERVIEWS, 1989

	Q51A	Q51B	Q51C	Q51D	Q51E
Q51A	1.000				
Q51B	0.971	1.000			
Q51C	0.945	1.000	1.000		
Q51D	0.882	0.877	0.822	1.000	
Q51E	0.938	0.965	0.939	0.873	1.000
Q51F	0.938	0.965	0.939	0.873	1.000
Q51G	0.938	0.965	0.939	0.871	0.977
Q51H	0.858	0.851	0.794	0.919	0.908
Q52A	0.966	0.871	0.798	0.926	0.875
Q52B	0.942	0.959	0.960	0.897	0.947
Q52C	0.912	0.950	0.952	0.864	0.920
Q52D	0.815	0.664	0.594	0.979	0.804
Q52E	0.908	0.920	0.871	0.878	0.930
Q52F	0.911	0.927	0.886	0.847	0.909
Q52G	0.909	0.922	0.875	0.855	0.909
Q52H	0.880	0.802	0.751	0.878	0.832
Q6	-0.001	0.062	0.034	-0.007	-0.132
Q7	-0.060	-0.046	-0.008	-0.182	-0.263
Q8A	0.422	0.471	0.512	0.317	0.503
Q8B	0.303	0.352	0.400	0.201	0.435
Q8C	0.217	0.265	0.321	0.216	0.298
Q8D	0.260	0.309	0.362	0.145	0.352
Q8E	0.248	0.297	0.351	0.178	0.338
Q8F	0.194	0.243	0.302	0.099	0.344
Q9	0.240	0.326	0.342	0.290	0.129
Q10	0.086	0.052	0.052	0.005	0.018
Q11A	0.157	0.176	0.282	0.061	0.283
Q11B	0.358	0.531	0.539	0.093	0.400
Q11C	0.128	0.148	0.256	0.032	0.261
Q11D	0.385	0.556	0.566	0.116	0.420

	Q51F	Q51G	Q51H	Q52A	Q52B
Q51F	1.000				
Q51G	0.977	1.000			
Q51H	0.908	0.910	1.000		
Q52A	0.875	0.875	0.894	1.000	
Q52B	0.947	0.947	0.860	0.983	1.000
Q52C	0.920	0.920	0.822	0.945	0.985
Q52D	0.804	0.804	0.928	0.969	0.936
Q52E	0.930	0.973	0.877	0.974	1.000
Q52F	0.909	0.950	0.832	0.938	0.957
Q52G	0.909	0.957	0.855	0.945	0.941
Q52H	0.832	0.835	0.948	0.972	0.953
Q6	-0.132	-0.080	-0.076	-0.286	-0.332
Q7	-0.263	-0.216	-0.202	-0.337	-0.395
Q8A	0.503	0.513	0.529	0.594	0.776
Q8B	0.435	0.385	0.350	0.475	0.681
Q8C	0.298	0.302	0.290	0.485	0.726
Q8D	0.352	0.321	0.359	0.574	0.745
Q8E	0.338	0.334	0.377	0.558	0.731
Q8F	0.344	0.286	0.242	0.453	0.717
Q9	0.129	0.111	0.137	-0.293	-0.206
Q10	0.018	-0.077	-0.127	0.393	0.149
Q11A	0.283	0.250	0.002	0.472	0.760
Q11B	0.400	0.333	0.153	0.077	0.746
Q11C	0.261	0.225	-0.029	0.437	0.750
Q11D	0.420	0.356	0.170	0.246	0.819

	Q52C	Q52D	Q52E	Q52F	Q52G
Q52C	1.000				
Q52D	0.950	1.000			
Q52E	1.000	0.945	1.000		
Q52F	0.962	0.925	0.997	1.000	
Q52G	0.946	0.933	0.997	1.000	1.000
Q52H	0.959	0.962	0.955	0.966	0.972
Q6	-0.353	-0.289	-0.341	-0.312	-0.439
Q7	-0.320	-0.300	-0.180	-0.100	-0.225
Q8A	0.741	0.325	0.504	0.427	0.515
Q8B	0.721	0.259	0.321	0.233	0.336
Q8C	0.677	0.169	0.319	0.225	0.333
Q8D	0.700	0.270	0.389	0.298	0.431
Q8E	0.705	0.300	0.376	0.282	0.420
Q8F	0.689	0.164	0.265	0.164	0.281
Q9	-0.154	-0.128	-0.311	-0.236	-0.316
Q10	0.392	0.671	0.357	0.383	0.357
Q11A	0.760	0.278	0.585	0.598	0.585
Q11B	1.000	0.110	0.400	0.499	0.400
Q11C	0.750	0.238	0.563	0.576	0.565
Q11D	1.000	0.209	0.486	0.562	0.486

	Q52H	Q6	Q7	Q8A	Q8B
Q52H	1.000				
Q6	-0.402	1.000			
Q7	-0.239	0.540	1.000		
Q8A	0.549	-0.246	-0.253	1.000	
Q8B	0.407	-0.184	-0.315	0.955	1.000
Q8C	0.425	-0.231	-0.229	0.959	0.938
Q8D	0.481	-0.242	-0.224	0.993	0.965
Q8E	0.474	-0.205	-0.193	0.959	0.946
Q8F	0.349	-0.232	-0.275	0.965	1.000
Q9	-0.147	0.289	0.145	-0.033	0.021
Q10	0.289	-0.365	-0.204	0.129	0.270
Q11A	0.419	-0.088	-0.219	0.214	0.361
Q11B	0.101	0.151	0.105	0.187	0.075
Q11C	0.386	-0.067	-0.260	0.199	0.349
Q11D	0.199	0.177	0.136	0.230	0.122

	Q8C	Q8D	Q8E	Q8F	Q9
Q8C	1.000				
Q8D	0.933	1.000			
Q8E	0.911	0.965	1.000		
Q8F	0.951	0.978	0.939	1.000	
Q9	0.005	-0.044	-0.020	-0.034	1.000
Q10	0.281	0.194	0.205	0.285	-0.302
Q11A	0.348	0.341	0.341	0.428	0.205
Q11B	-0.098	0.030	0.072	-0.016	-0.067
Q11C	0.333	0.317	0.316	0.417	0.173
Q11D	-0.045	0.077	0.118	0.031	-0.084

	Q10	Q11A	Q11B	Q11C	Q11D
Q10	1.000				
Q11A	-0.191	1.000			
Q11B	-0.210	0.658	1.000		
Q11C	-0.198	1.000	0.658	1.000	
Q11D	-0.185	0.664	1.000	0.664	1.000

Table AK

SEA MAMMALS: COGNITIVE ATTITUDES ABOUT THE AVAILABILITY AND MANAGEMENT OF SEA MAMMALS, 108 KI RESPONDENTS (REINTERVIEWS), SCHEDULES A&B, 1989

Crosstabulation: BWALRUS AMOUNT OF WALRUS
By BBOWHEAD AMOUNT OF BOWHEAD

BWALRUS \ BBOWHEAD-> (Count)	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 INSUFFICIENT FOR	3	3	1	7 26.9
2 SUFFICIENT FOR N	1	7	3	11 42.3
3 MORE THAN SUFFIC	2	4	2	8 30.8
Column Total	6 23.1	14 53.8	6 23.1	26 100.0

Statistic	Symmetric	With BWALRUS Dependent	With BBOWHEAD Dependent
Somers' D	.13176	.13725	.12670

Crosstabulation: BQ2B2 BOWHEAD, WHO SHOULD MANAGE?
By BBOWHEAD AMOUNT OF BOWHEAD

BQ2B2 \ BBOWHEAD-> (Count)	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 NATIVE-NATIVE ORG	4	8	7	19 70.4
2 BALANCED COMBIN	2	3		5 18.5
3 ADF&G-FEDERAL GOV	1	2		3 11.1
Column Total	7 25.9	13 48.1	7 25.9	27 100.0

Statistic	Symmetric	With BQ2B2 Dependent	With BBOWHEAD Dependent
Somers' D	-.29648	-.25541	-.35329

Crosstabulation: BQ2B2 BOWHEAD, WHO SHOULD MANAGE?
By BQ2B1 BOWHEAD, MANAGE?

BQ2B2 (Count) / BQ2B1->	ONLY GOD CAN MAN 1	NO PERSO N CAN MA 2	PERSONS CAN MANA 4	INSTITUT IONS CAN 5	Row Total
1 NATIVE-NATIVE ORG	7	1	16	14	38 43.2
2 BALANCED COMBIN			4	22	26 29.5
3 ADF&G-FEDERAL GOV			3	21	24 27.3
Column Total	7 8.0	1 1.1	23 26.1	57 64.8	88 100.0

Statistic	Symmetric	With BQ2B2 Dependent	With BQ2B1 Dependent
Somers' D	.44980	.51481	.39937

Crosstabulation: BQ2B2 BOWHEAD, WHO SHOULD MANAGE?
By BQ3C MANAGEMENT OF BOWHEAD

BQ2B2 (Count) / BQ3C->	POORER T HAN NATI 1	EQUIVALE NT TO NA 2	BETTER T HAN NATI 3	Row Total
1 NATIVE-NATIVE GOV	32	5	2	39 43.3
2 BALANCED COMBIN	9	10	7	26 28.9
3 ADF&G-FEDERAL GOV	1	4	20	25 27.8
Column Total	42 46.7	19 21.1	29 32.2	90 100.0

Statistic	Symmetric	With BQ2B2 Dependent	With BQ3C Dependent
Eta		.71865	.71960

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BWALRUS AMOUNT OF WALRUS

BQ2A2 (Count) / BWALRUS->	INSUFFIC IENT FOR 1	SUFFICIE NT FOR N 2	MORE THA N SUFFIC 3	Row Total
1 NATIVE-NATIVE GOV	13	13	5	31 59.6
2 BALANCED COMBIN	6	3	2	11 21.2
3 ADF&G-FEDERAL GOV	4	5	1	10 19.2
Column Total	23 44.2	21 40.4	8 15.4	52 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BWALRUS Dependent
Somers' D	-.03634	-.03473	-.03811

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ2A1 WALRUS, MANAGE?

BQ2A2 \ BQ2A1-> Count	ONLY GOD CAN MAN 1	NO PERSON CAN MA 2	PERSONS CAN MANA 4	INSTITUTIONS CAN 5	Row Total
1 NATIVE-NATIVE GOV	6	2	18	13	39 42.9
2 BALANCED COMBIN			4	23	27 29.7
3 ADF&G-FEDERAL GOV		1	2	22	25 27.5
Column Total	6 6.6	3 3.3	24 26.4	58 63.7	91 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ2A1 Dependent
Somers' D	.46588	.52607	.41805

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS

BQ2A2 \ BQ3A-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	32	8	1	41 43.6
2 BALANCED COMBIN	8	12	7	27 28.7
3 ADF&G-FEDERAL GOV	1	5	20	26 27.7
Column Total	41 43.6	25 26.6	28 29.8	94 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Somers' D	.66527	.66551	.66504

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ51G KNOWLEDGE TO UNDERSTAND SEA MAMMALS

BQ2A2 \ BQ51G-> Count	NATIVES 1	NATIVES AND SOME 2	SCIENTISTS 3	Row Total
1 NATIVE-NATIVE ORG	32	6	1	39 42.9
2 BALANCED COMBIN	7	16	4	27 29.7
3 ADF&G-FEDERAL GOV	7	11	7	25 27.5
Column Total	46 50.5	33 36.3	12 13.2	91 100.0

Statistic	With BQ2A2 Symmetric	With BQ51G Dependent	Dependent
Somers' D	.46856	.49108	.44802

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ52G UNDERSTAND SEA MAMMALS BY USE

BQ2A2 / BQ52G-> Count	NATIVES 1	ALASKA DEPARTMEN 3	MMS OR FEDERAL A 4	Row Total
1 NATIVE-NATIVE ORG	38	1	1	40 47.1
2 BALANCED COMBIN	21	3	1	25 29.4
3 ADF&G-FEDERAL GOV	8	12		20 23.5
Column Total	67 78.8	16 18.8	2 2.4	85 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ52G Dependent
Somers' D	.42058	.60097	.32348

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for RSEX Sex of R = 1.00 Male

BQ2A2 / BQ3A-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE	17	4	1	22 44.9
2 BALANCED	5	7	4	16 32.7
3 GOVERNMENT		2	9	11 22.4
Column Total	22 44.9	13 26.5	14 28.6	49 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Somers' D	.64942	.64691	.65195

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for RSEX Sex of R = 2.00 Female

BQ2A2 / BQ3A-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE	13	4		17 40.5
2 BALANCED	3	5	3	11 26.2
3 GOVERNMENT	1	3	10	14 33.3
Column Total	17 40.5	12 28.6	13 31.0	42 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Somers' D	.65690	.65577	.65803

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for D28 Race? = 1.00 ALASKA NATIVE

BQ3A-> Count		POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2A2					
NATIVE	1	32	8		40 54.1
BALANCED	2	8	9	4	21 28.4
GOVERNMENT	3	1	4	8	13 17.6
Column Total		41 55.4	21 28.4	12 16.2	74 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Somers' D	.59481	.60000	.58971

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for D28 Race? = 2.00 OTHER

BQ3A-> Count		EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2A2				
NATIVE	1		1	1 7.1
BALANCED	2	1	3	4 28.6
GOVERNMENT	3	1	8	9 64.3
Column Total		2 14.3	12 85.7	14 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Somers' D	.08219	.12500	.06122

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for COMNONFI = NONCOMMERCIAL FISH

BQ3A-> Count		POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2A2					
NATIVE	1	22	7	1	30 66.7
BALANCED	2	4	5	1	10 22.2
GOVERNMENT	3		3	2	5 11.1
Column Total		26 57.8	15 33.3	4 8.9	45 100.0

Statistic	Symmetric	With BQ2A2	With BQ3A
Somers' D	.47438	.45126	.50000

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for COMNONFI = COMMERCIAL FISH

BQ3A-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2A2 1 NATIVE	8	1		9 19.6
2 BALANCED	4	7	6	17 37.0
3 GOVERNMENT	1	2	17	20 43.5
Column Total	13 28.3	10 21.7	23 50.0	46 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Somers' D	.66667	.67375	.65973

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for RAGE Age of R = 18-29

BQ3A-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2A2 1 NATIVE	3	3		6 40.0
2 BALANCED	2	1		3 20.0
3 GOVERNMENT		2	4	6 40.0
Column Total	5 33.3	6 40.0	4 26.7	15 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Eta		.70514	.77988

Crosstabulation: BQ2A2 WALRUS, WHO SHOULD MANAGE?
By BQ3A MANAGEMENT OF WALRUS
Controlling for RAGE Age of R = 30=39

BQ3A-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2A2 1 NATIVE	11	1	1	13 39.4
2 BALANCED	5	7	3	15 45.5
3 GOVERNMENT	1		4	5 15.2
Column Total	17 51.5	8 24.2	8 24.2	33 100.0

Statistic	Symmetric	With BQ2Q2	With BQ3A
Eta		.56863	.56920

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Crosstabulation:      BQ2A2        WALRUS, WHO SHOULD MANAGE?
                   By BQ3A         MANAGEMENT OF WALRUS
     Controlling for RAGE          Age of R       =       40-49
             Count   |POORER T|EQUIVALE|BETTER T|
  BQ3A->             |HAN NATI|NT TO NA|HAN NATI|   Row
                     |     1  |     2  |     3  |  Total
BQ2A2       ---------+--------+--------+--------+
               1     |   11   |    1   |        |    12
  NATIVE             |        |        |        |   60.0
                     +--------+--------+--------+
               2     |    1   |    2   |    1   |     4
  BALANCED           |        |        |        |   20.0
                     +--------+--------+--------+
               3     |        |    2   |    2   |     4
  GOVERNMENT         |        |        |        |   20.0
                     +--------+--------+--------+
            Column       12        5        3        20
             Total     60.0     25.0     15.0     100.0
                                         With BQ2A2         With BQ3A
Statistic                Symmetric       Dependent          Dependent
---------                ---------       -------------      -------------
Eta                                        .81090             .80144

Crosstabulation:      BQ2A2        WALRUS, WHO SHOULD MANAGE?
                   By BQ3A         MANAGEMENT OF WALRUS
     Controlling for RAGE          Age of R       =       50-59
             Count   |POORER T|EQUIVALE|BETTER T|
  BQ3A->             |HAN NATI|NT TO NA|HAN NATI|   Row
                     |     1  |     2  |     3  |  Total
BQ2A2       ---------+--------+--------+--------+
               1     |    2   |    2   |        |     4
  NATIVE             |        |        |        |   50.0
                     +--------+--------+--------+
               2     |        |    2   |        |     2
  BALANCED           |        |        |        |   25.0
                     +--------+--------+--------+
               3     |        |    1   |    1   |     2
  GOVERNMENT         |        |        |        |   25.0
                     +--------+--------+--------+
            Column        2        5        1         8
             Total     25.0     62.5     12.5     100.0
                                          With BQ2A2         With BQ3A
Statistic                Symmetric       Dependent          Dependent
---------                ---------       -------------      -------------
Eta                                        .70065             .69156

Crosstabulation:      BQ2A2        WALRUS, WHO SHOULD MANAGE?
                   By BQ3A         MANAGEMENT OF WALRUS
     Controlling for RAGE          Age of R           =       60-69
             Count   |POORER T|BETTER T|
  BQ3A->             |HAN NATI|HAN NATI|   Row
                     |     1  |     3  |  Total
BQ2A2       ---------+--------+--------+
               1     |    2   |        |     2
  NATIVE             |        |        |   25.0
                     +--------+--------+
               2     |        |    2   |     2
  BALANCED           |        |        |   25.0
                     +--------+--------+
               3     |        |    4   |     4
  GOVERNMENT         |        |        |   50.0
                     +--------+--------+
            Column        2        6         8
             Total     25.0     75.0     100.0
Statistic                Symmetric        With BQ2A2         With BQ3A
---------                ---------       -------------      -------------
Eta                                         .87039             1.00000
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Crosstabulation:      BQ2A2     WALRUS, WHO SHOULD MANAGE?
                   By BQ3A      MANAGEMENT OF WALRUS
     Controlling for RAGE       Age of R        =      70-89
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BQ3A-> Count	POORER THAN NATI 1	BETTER THAN NATI 3	Row Total
BQ2A2			
1 NATIVE	1		1 20.0
2 BALANCED		1	1 20.0
3 GOVERNMENT		3	3 60.0
Column Total	1 20.0	4 80.0	5 100.0

Statistic	Symmetric	With BQ2A2 Dependent	With BQ3A Dependent
Eta		.87500	1.00000

Table BK

LAND MAMMALS: COGNITIVE ATTITUDES ABOUT THE AVAILABILITY AND MANAGEMENT OF LAND MAMMALS, 108 KI RESPONDENTS (REINTERVIEWS), SCHEDULES A&B, 1989

Crosstabulation: BMOOSE AMOUNT OF MOOSE
By BCARIBOU AMOUNT OF CARIBOU

BMOOSE (Count) / BCARIBOU->	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 INSUFFICIENT FOR	6	7	3	16 28.6
2 SUFFICIENT FOR N	6	17	3	26 46.4
3 MORE THAN SUFFIC	3	1	10	14 25.0
Column Total	15 26.8	25 44.6	16 28.6	56 100.0

Statistic	Symmetric	With BMOOSE Dependent	With BCARIBOU Dependent
Somers' D	.30312	.30148	.30478

Statistic	Value	Significance
Kendall's Tau C	.29273	.0060
Gamma	.42500	

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BCARIBOU AMOUNT OF CARIBOU

BQ2M2 (Count) / BCARIBOU->	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 NATIVE-NATIVE ORG	7	17	13	37 54.4
2 BALANCED COMBIN	4	12	2	18 26.5
3 ADF&G-FEDERAL GOV	3	6	4	13 19.1
Column Total	14 20.6	35 51.5	19 27.9	68 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BCARIBOU Dependent
Somers' D	-.09993	-.09852	-.10138

Statistic	Value	Significance
Kendall's Tau C	-.09083	.1833
Gamma	-.16355	

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ2M1 CARIBOU, MANAGE?

Count BQ2M1-> BQ2M2	ONLY GOD CAN MAN 1	NO PERSO N CAN MA 2	PERSONS CAN MANA 4	INSTITUT IONS CAN 5	Row Total
1 NATIVE-NATIVE ORG	4	2	25	9	40 44.4
2 BALANCED COMBIN			3	23	26 28.9
3 ADF&G-FEDERAL GOV			4	20	24 26.7
Column Total	4 4.4	2 2.2	32 35.6	52 57.8	90 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ2M1 Dependent
Somers' D	.53333	.58824	.48780

Statistic	Value	Significance
Kendall's Tau C	.47407	.0000
Gamma	.80503	

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU

Count BQ3E-> BQ2M2	POORER T HAN NATI 1	EQUIVALE NT TO NA 2	BETTER T HAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	32	4	2	38 43.2
2 BALANCED COMBIN	9	10	7	26 29.5
3 ADF&G-FEDERAL GOV		6	18	24 27.3
Column Total	41 46.6	20 22.7	27 30.7	88 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Somers' D	.67321	.68099	.66561

Statistic	Value	Significance
Kendall's Tau C	.65083	.0000
Gamma	.86777	

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ4K INFLUENCE OVER CARIBOU

BQ2M2 \ BQ4K-> Count	NOT AT ALL 1	RARELY OR SELDOM 2	FREQUENTLY 3	Row Total
1 NATIVE-NATIVE ORG	12	19	4	35 42.7
2 BALANCED COMBIN	4	14	7	25 30.5
3 ADF&G-FEDERAL GOV	1	12	9	22 26.8
Column Total	17 20.7	45 54.9	20 24.4	82 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ4K Dependent
Somers' D	.33048	.34613	.31617

Statistic	Value	Significance
Kendall's Tau C	.30964	.0005
Gamma	.51714	

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ51E KNOWLEDGE TO UNDERSTAND LAND MAMMALS

BQ2M2 \ BQ51E-> Count	NATIVES 1	NATIVES AND SOME 2	SCIENTISTS 3	Row Total
1 NATIVE-NATIVE GOV	31	8		39 43.3
2 BALANCED COMBIN	6	15	5	26 28.9
3 ADF&G-FEDERAL GOV	8	10	7	25 27.8
Column Total	45 50.0	33 36.7	12 13.3	90 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ51E Dependent
Somers' D	.44585	.46592	.42743

Statistic	Value	Significance
Kendall's Tau C	.41778	.0000
Gamma	.63657	

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ52E UNDERSTAND LAND MAMMALS BY USE

BQ52E-> Count	NATIVES 1	ALASKA DEPARTMEN 3	MMS OR FEDERAL A 4	Row Total
BQ2M2				
1 NATIVE-NATIVE ORG	37	3		40 46.5
2 BALANCED COMBIN	23	2	1	26 30.2
3 ADF&G-FEDERAL GOV	8	12		20 23.3
Column Total	68 79.1	17 19.8	1 1.2	86 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ52E Dependent
Somers' D	.39156	.56809	.29873

Statistic	Value	Significance
Kendall's Tau C	.28597	.0000
Gamma	.73209	

Relation between Who Should Manage Caribou and Who Would Manage Caribou Better

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for RSEX Sex of R = *1.00 Male*

BQ3E-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2M2				
1 NATIVE-NATIVE ORG	15	2	2	19 43.2
2 BALANCED COMBIN	6	4	4	14 31.8
3 ADF&G-FEDERAL GOV		3	8	11 25.0
Column Total	21 47.7	9 20.5	14 31.8	44 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Somers' D	.57674	.58621	.56757

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for RSEX Sex of R = 2.00 *Female*

BQ3E-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2M2 1 NATIVE-NATIVE ORG	15	2		17 40.5
2 BALANCED COMBIN	3	6	3	12 28.6
3 ADF&G-FEDERAL GOV		3	10	13 31.0
Column Total	18 42.9	11 26.2	13 31.0	42 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Somers' D	.76125	.76522	.75731

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for D28 Race? = 1.00 *ALASKA NATIVE*

BQ3E-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2M2 1 NATIVE-NATIVE ORG	32	4	1	37 55.2
2 BALANCED COMBIN	9	7	3	19 28.4
3 ADF&G-FEDERAL GOV		4	7	11 16.4
Column Total	41 61.2	15 22.4	11 16.4	67 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Somers' D	.62118	.64338	.60045

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for D28 Race? = 2.00 *OTHER*

BQ3E-> Count	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2M2 1 ALASKA DEPARTMEN		1	1 6.3
2 VARIOUS FEDERAL	1	4	5 31.3
3 BALANCED COMBINA	2	8	10 62.5
Column Total	3 18.8	13 81.3	16 100.0

Statistic	Symmetric	With BQ2M2	With BQ3E
Somers' D	-.05769	-.07692	-.04615

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for COMNONFI = *NON COMMERCIAL FISH*

BQ3E-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2M2				
1 ALASKA DEPARTMEN	20	3	2	25 65.8
2 VARIOUS FEDERAL	4	3	1	8 21.1
3 BALANCED COMBINA		4	1	5 13.2
Column Total	24 63.2	10 26.3	4 10.5	38 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Somers' D	.46154	.45479	.46849

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for COMNONFI = *COMMERCIAL FISHING*

BQ3E-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2M2				
1 ALASKA DEPARTMEN	10	1		11 22.9
2 VARIOUS FEDERAL	5	7	6	18 37.5
3 BALANCED COMBINA		2	17	19 39.6
Column Total	15 31.3	10 20.8	23 47.9	48 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Somers' D	.73270	.74483	.72096

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for BK4 HOUSEHOLD ANNUAL INCOME

	$0-20,000				*$20,001-40,000*			
BQ3E-> Count	POOR 1	EQAL 2	BETT 3	Row Total	POOR 1	EQAL 2	BETT 3	Row Total
BQ2M2								
1 NATIVE-NATIVE ORG	6	2	1	9	12	2		14
2 BALANCED COMBIN	4	1	2	7	1	6	2	9
3 ADF&G-FEDERAL GOV		2	3	5		1	5	6
Column	10	5	6	21	13	9	7	29

	With BQ2M2 Dependent	With BQ3E Dependent	With BQ2M2 Dependent	With BQ3E Dependent
Eta	.621	.582	.846	.856

	40,001-60,000				*60,001 and over*			
BQ3E-> Count	POOR 1	EQAL 2	BETT 3	Row Total	POOR 1	EQAL 2	BETT 3	Row Total
BQ2M2								
1 NATIVE-NATIVE ORG	11			11 45.8	3		1	4
2 BALANCED COMBIN	2	2	1	5 20.8	2	1	2	5
3 ADF&G-FEDERAL GOV			8	8 33.3		3	2	5
Column	13	2	9	24	5	4	5	14

	With BQ2M2 Dependent	With BQ3E Dependent	With BQ2M2 Dependent	With BQ3E Dependent
Eta	.928	.932	.684	.424

Crosstabulation: BQ2M2 CARIBOU, WHO SHOULD MANAGE?
By BQ3E MANAGEMENT OF CARIBOU
Controlling for RAGE Age of R = *18-29*

BQ3E-> Count / BQ2M2	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	5	1		6 35.3
2 BALANCED COMBIN	3	2	1	6 35.3
3 ADF&G-FEDERAL GOV		2	3	5 29.4
Column Total	8 47.1	5 29.4	4 23.5	17 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Eta		.71005	.71744

Age of R = *30-39*

BQ3E-> Count / BQ2M2	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	13	1	1	15 44.1
2 BALANCED COMBIN	5	6	2	13 38.2
3 ADF&G-FEDERAL GOV		1	5	6 17.6
Column Total	18 52.9	8 23.5	8 23.5	34 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Eta		.69553	.70675

Age of R = *40-49*

BQ3E-> Count / BQ2M2	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE GOV	9	1		10 58.8
2 BALANCED COMBIN	1	1	1	3 17.6
3 ADF&G-FEDERAL GOV		2	2	4 23.5
Column Total	10 58.8	4 23.5	3 17.6	17 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Eta		.79794	.78392

Age of R = *50-59*

BQ3E-> / BQ2M2	Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
NATIVE-NATIVE ORG	1	2	1	1	4 57.1
BALANCED COMBIN	2		1		1 14.3
ADF&G-FEDERAL GOV	3		1	1	2 28.6
	Column Total	2 28.6	3 42.9	2 28.6	7 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Eta		.51299	.43301

Age of R = *60-69*

BQ3E-> / BQ2M2	Count	BETTER THAN NATI 3	Row Total
	2	2	2 40.0
	3	3	3 60.0
	Column Total	5 100.0	5 100.0

Age of R = *70-89*

BQ3E-> / BQ2M2	Count	POORER THAN NATI 1	BETTER THAN NATI 3	Row Total
	1	1		1 20.0
	2		1	1 20.0
	3		3	3 60.0
	Column Total	1 20.0	4 80.0	5 100.0

Statistic	Symmetric	With BQ2M2 Dependent	With BQ3E Dependent
Eta		.87500	1.00000

Table CK

FISH: COGNITIVE ATTITUDES ABOUT THE AVAILABILITY AND MANAGEMENT OF FISH, 108 KI RESPONDENTS (REINTERVIEWS), SCHEDULES A&B, 1989

Crosstabulation: BKING AMOUNT OF KING SALMON
By BRED AMOUNT OF RED SALMON

BKING \ BRED-> (Count)	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 INSUFFICIENT FOR	17	6	3	26 38.2
2 SUFFICIENT FOR N	2	26	2	30 44.1
3 MORE THAN SUFFIC		3	9	12 17.6
Column Total	19 27.9	35 51.5	14 20.6	68 100.0

Statistic	Symmetric	With BKING Dependent	With BRED Dependent
Somers' D	.62165	.62843	.61501

Statistic	Value	Significance
Kendall's Tau C	.57937	.0000
Gamma	.80090	

Number of Missing Observations = 40

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BRED AMOUNT OF RED SALMON

BQ2D2 \ BRED-> (Count)	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 NATIVE-NATIVE ORG	9	16	1	26 36.1
2 BALANCED COMBIN	7	12	5	24 33.3
3 ADF&G-FEDERAL GOV	2	9	11	22 30.6
Column Total	18 25.0	37 51.4	17 23.6	72 100.0

Statistic	Symmetric	With BQ2D2 Dependent	With BRED Dependent
Somers' D	.36571	.37976	.35267

Statistic	Value	Significance
Kendall's Tau C	.35185	.0003
Gamma	.54578	

Number of Missing Observations = 36

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ2D1 SALMON, MANAGE?

BQ2D1-> Count / BQ2D2	ONLY GOD CAN MAN 1	NO PERSO N CAN MA 2	PERSONS CAN MANA 4	INSTITUT IONS CAN 5	Row Total
1 NATIVE-NATIVE ORG	9	1	20	11	41 42.7
2 BALANCED COMBIN			4	24	28 29.2
3 ADF&G-FEDERAL GOV		1	4	22	27 28.1
Column Total	9 9.4	2 2.1	28 29.2	57 59.4	96 100.0

Statistic	Symmetric	With BQ2D2 Dependent	With BQ2D1 Dependent
Somers' D	.47266	.51550	.43640

Statistic	Value	Significance
Kendall's Tau C	.42773	.0000
Gamma	.73000	

Number of Missing Observations = 12

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON

BQ3H-> Count / BQ2D2	POORER T HAN NATI 1	EQUIVALE NT TO NA 2	BETTER T HAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	35	7	1	43 43.4
2 BALANCED COMBIN	11	10	7	28 28.3
3 ADF&G-FEDERAL ORG	1	5	22	28 28.3
Column Total	47 47.5	22 22.2	30 30.3	99 100.0

Statistic	Symmetric	With BQ2D2 Dependent	With BQ3H Dependent
Somers' D	.66614	.67558	.65695

Statistic	Value	Significance
Kendall's Tau C	.64187	.0000
Gamma	.86546	

Number of Missing Observations = 9

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ4A INFLUENCE OVER SALMON

BQ4A-> Count	NOT AT ALL 1	RARELY OR SELDOM 2	FREQUENTLY 3	Row Total
BQ2D2				
1 NATIVE-NATIVE ORG	12	24	5	41 43.2
2 BALANCED COMBIN	2	18	7	27 28.4
3 ADF&G-FEDERAL GOV	2	14	11	27 28.4
Column Total	16 16.8	56 58.9	23 24.2	95 100.0

Statistic	Symmetric	With BQ2D2 Dependent	With BQ4A Dependent
Somers' D	.31156	.33542	.29086

Statistic	Value	Significance
Kendall's Tau C	.28454	.0004
Gamma	.50235	

Number of Missing Observations = 13

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ51F KNOWLEDGE TO UNDERSTAND FISH

BQ51F-> Count	NATIVES 1	NATIVES AND SOME 2	SCIENTISTS 3	Row Total
BQ2D2				
1 NATIVE-NATIVE ORG	32	6	2	40 41.7
2 BALANCED COMBIN	7	17	4	28 29.2
3 ADF&G-FEDERAL GOV	10	11	7	28 29.2
Column Total	49 51.0	34 35.4	13 13.5	96 100.0

Statistic	Symmetric	With BQ2D2 Dependent	With BQ51F Dependent
Somers' D	.38586	.40546	.36806

Statistic	Value	Significance
Kendall's Tau C	.36230	.0000
Gamma	.55511	

Number of Missing Observations = 12

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ52F UNDERSTAND FISH BY USE

Count BQ52F-> BQ2D2	NATIVES 1	ALASKA D EPARTMEN 3	Row Total
1 NATIVE-NATIVE ORG	37	3	40 44.4
2 BALANCED COMBIN	22	6	28 31.1
3 ADF&G-FEDERAL GOV	11	11	22 24.4
Column Total	70 77.8	20 22.2	90 100.0

Statistic	Symmetric	With BQ2D2 Dependent	With BQ52F Dependent
Somers' D	.35159	.50429	.26988

Statistic	Value	Significance
Kendall's Tau C	.34864	.0001
Gamma	.68147	

Number of Missing Observations = 18

Subclassification by Sex, Ethnicity, Commercial Fishing, Income and Age, the Relation between Who Should Manage Salmon and Who Would Manage Salmon Better

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for RSEX Sex of R = *1.00 Male*

Count BQ3H-> BQ2D2	POORER T HAN NATI 1	EQUIVALE NT TO NA 2	BETTER T HAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	19	4	1	24 46.2
2 BALANCED COMBIN	7	5	3	15 28.8
3 ADF&G-FEDERAL GOV		3	10	13 25.0
Column Total	26 50.0	12 23.1	14 26.9	52 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for RSEX Sex of R = 2.00 *Female*

BQ2D2 (Count) / BQ3H->	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	14	3		17 38.6
2 BALANCED COMBIN	4	5	4	13 29.5
3 ADF&G-FEDERAL GOV	1	2	11	14 31.8
Column Total	19 43.2	10 22.7	15 34.1	44 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for D28 Race? = 1.00 *ALASKA NATIVE*

BQ2D2 (Count) / BQ3H->	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	34	7		41 53.2
2 BALANCED COMBIN	11	7	3	21 27.3
3 ADF&G-FEDERAL GOV	1	3	11	15 19.5
Column Total	46 59.7	17 22.1	14 18.2	77 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for D28 Race? = 2.00 *OTHER*

BQ2D2 (Count) / BQ3H->	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE OR	1		1	2 12.5
2 BALANCED COMBIN		1	4	5 31.3
3 ADF&G-FEDERAL GOV		2	7	9 56.3
Column Total	1 6.3	3 18.8	12 75.0	16 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for COMNONFI = *NON COMMERCIAL FISH*

BQ3H-> / BQ2D2	Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG		24	7	1	32 65.3
2 BALANCED COMBIN		6	3		9 18.4
3 ADF&G-FEDERAL GOV			3	5	8 16.3
Column Total		30 61.2	13 26.5	6 12.2	49 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for COMNONFI = *COMMERCIAL FISH*

BQ3H-> / BQ2D2	Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG		9			9 19.1
2 BALANCED		5	7	7	19 40.4
3 GOVERNMENT		1	2	16	19 40.4
Column		31.9	19.1	48.9	100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for BK4 HOUSEHOLD ANNUAL INCOME = *1 $0-10,000*

BQ3H-> / BQ2D2	Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG		5	3		8 38.1
2 BALANCED COMBIN		3	1	2	6 28.6
3 ADF&G-FEDERAL GOV		1	1	5	7 33.3
Column Total		9 42.9	5 23.8	7 33.3	21 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for BK4 HOUSEHOLD ANNUAL INCOME = 2 *$10,001-20,000*

BQ3H-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2D2				
1 NATIVE-NATIVE ORG	3	1		4 50.0
2 BALANCED COMBIN	2			2 25.0
3 ADF&G-FEDERAL GOV			2	2 25.0
Column Total	5 62.5	1 12.5	2 25.0	8 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for BK4 HOUSEHOLD ANNUAL INCOME = 3 *$20,001-30,000*

BQ3H-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2D2				
1 NATIVE-NATIVE ORG	6	2		8 50.0
2 BALANCED COMBIN	1	3	1	5 31.3
3 ADF&G-FEDERAL GOV		1	2	3 18.8
Column Total	7 43.8	6 37.5	3 18.8	16 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for BK4 HOUSEHOLD ANNUAL INCOME = 4 *30,001-40,000*

BQ3H-> Count	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
BQ2D2				
1 NATIVE-NATIVE ORG	6	1		7 43.8
2 BALANCED COMBIN	1	3	1	5 31.3
3 ADF&G-FEDERAL GOV			4	4 25.0
Total	43.8	25.0	31.3	100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for BK4 HOUSEHOLD ANNUAL INCOME = 5 *40,001-60,000*

BQ2D2 \ BQ3H-> (Count)	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	12			12 50.0
2 BALANCED-COMBIN	2	2	1	5 20.8
3 ADF&G-FEDERAL GOV			7	7 29.2
Column Total	14 58.3	2 8.3	8 33.3	24 100.0

Crosstabulation: BQ2D2 SALMON, WHO SHOULD MANAGE?
By BQ3H MANAGEMENT OF SALMON
Controlling for BK4 HOUSEHOLD ANNUAL INCOME = 6 *60,001-OVER*

BQ2D2 \ BQ3H-> (Count)	POORER THAN NATI 1	EQUIVALENT TO NA 2	BETTER THAN NATI 3	Row Total
1 NATIVE-NATIVE ORG	3		1	4 28.6
2 BALANCED COMBIN	2	1	2	5 35.7
3 ADF&G-FEDERAL GOV		3	2	5 35.7
Column Total	5 35.7	4 28.6	5 35.7	14 100.0

Crosstabulation: BQ2D2 BY BQ3H Controlling for Age

AGE	18 - 29			30 - 55			56 - 80		
BQ2D2 \ BQ3H->	POOR	EQUAL	BETT	POOR	EQUAL	BETT	POOR	EQUAL	BETT
NATIVE	4	2		23	2	1	4	2	
BALANCE	3	1		7	9	4			3
ADF&G		1	6	1	3	6			10
	7	4	6	31	14	11	4	2	13

Table DK

BIRDS: COGNITIVE ATTITUDES ABOUT THE AVAILABILITY OF WATERFOWL AND THEIR MANAGEMENT, 108 KI RESPONDENTS, SCHEDULES A&B, 1989

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Crosstabulation:      BDUCKS     AMOUNT OF DUCKS
                   By BGEESE     AMOUNT OF GEESE
```

BDUCKS \ BGEESE-> (Count)	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 INSUFFICIENT FOR	14			14 16.3
2 SUFFICIENT FOR N	10	26	1	37 43.0
3 MORE THAN SUFFIC	6	5	24	35 40.7
Column Total	30 34.9	31 36.0	25 29.1	86 100.0

Statistic	Symmetric	With BDUCKS Dependent	With BGEESE Dependent
Somers' D	.64355	.62363	.66479

Statistic	Value	Significance
Kendall's Tau C	.62101	.0000
Gamma	.82091	

Number of Missing Observations = 22

```
Crosstabulation:      BQ2Q2      GEESE, WHO SHOULD MANAGE?
                   By BGEESE     AMOUNT OF GEESE
```

BQ2Q2 \ BGEESE-> (Count)	INSUFFICIENT FOR 1	SUFFICIENT FOR N 2	MORE THAN SUFFIC 3	Row Total
1 NATIVE-NATIVE ORG	11	16	15	42 51.2
2 BALANCED COMBIN	9	7	4	20 24.4
3 ADF&G-FEDERAL GOV	8	8	4	20 24.4
Column Total	28 34.1	31 37.8	23 28.0	82 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With BGEESE Dependent
Somers' D	-.16492	-.15955	-.17067

Statistic	Value	Significance
Kendall's Tau C	-.15839	.0487
Gamma	-.25558	

Number of Missing Observations = 26

```
Crosstabulation:     BQ2Q2     GEESE, WHO SHOULD MANAGE?
                  By BQ2Q1     GEESE, MANAGE?
```

BQ2Q2 \ BQ2Q1-> Count	ONLY GOD CAN MAN 1	NO PERSON CAN MA 2	PERSONS CAN MANA 4	INSTITUT IONS CAN 5	Row Total
1 NATIVE-NATIVE ORG	10	1	20	11	42 43.3
2 BALANCED COMBIN			4	24	28 28.9
3 ADF&G-FEDERAL GOV		1	4	22	27 27.8
Column Total	10 10.3	2 2.1	28 28.9	57 58.8	97 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With BQ2Q1 Dependent
Somers' D	.48018	.51935	.44651

Statistic	Value	Significance
Kendall's Tau C	.43650	.0000
Gamma	.73801	

Number of Missing Observations = 11

```
Crosstabulation:     BQ2Q2     GEESE, WHO SHOULD MANAGE?
                  By BQ4F      INFLUENCE OVER GEESE
```

BQ2Q2 \ BQ4F-> Count	NOT AT ALL 1	RARELY OR SELDOM 2	FREQUENTLY 3	Row Total
1 NATIVE-NATIVE ORG	14	21	5	40 42.6
2 BALANCED COMBIN	3	15	9	27 28.7
3 ADF&G-FEDERAL GOV	2	12	13	27 28.7
Column Total	19 20.2	48 51.1	27 28.7	94 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With BQ4F Dependent
Somers' D	.35544	.36641	.34510

Statistic	Value	Significance
Kendall's Tau C	.33850	.0001
Gamma	.54214	

Number of Missing Observations = 14

Crosstabulation: BQ2Q2 GEESE, WHO SHOULD MANAGE?
By RSEX Sex of R

BQ2Q2 \ RSEX-> Count	Male 1.00	Female 2.00	Row Total
1 NATIVE-NATIVE ORG	25	17	42 42.4
2 BALANCED COMBIN	16	13	29 29.3
3 ADF&G-FEDERAL GOV	12	16	28 28.3
Column Total	53 53.5	46 46.5	99 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With RSEX Dependent
Somers' D	.12367	.14315	.10886

Statistic	Value	Significance
Kendall's Tau C	.14243	.0954
Gamma	.21637	

Number of Missing Observations = 9

Crosstabulation: BQ2Q2 GEESE, WHO SHOULD MANAGE?
By D28 Race?

BQ2Q2 \ D28-> Count	ALASKA NATIVE 1.00	OTHER 2.00	Row Total
1 NATIVE-NATIVE ORG	42	2	44 45.8
2 BALANCED COMBIN	22	5	27 28.1
3 ADF&G-FEDERAL GOV	16	9	25 26.0
Column Total	80 83.3	16 16.7	96 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With D28 Dependent
Somers' D	.29696	.49219	.21262

Statistic	Value	Significance
Kendall's Tau C	.27344	.0004
Gamma	.66879	

Number of Missing Observations = 12

Crosstabulation: BQ2Q2 GEESE, WHO SHOULD MANAGE?
By COMNONFI (COMMERCIAL-NON COMMERCIAL FISHING)

COMNONFI-> / BQ2Q2 (Count)	NON COM FISH 11.00	COMMERCE FISH 22.00	Row Total
1 NATIVE-NATIVE ORG	31	11	42 42.4
2 BALANCED COMBIN	10	19	29 29.3
3 ADF&G-FEDERAL GOV	8	20	28 28.3
Column Total	49 49.5	50 50.5	99 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With COMNONFI Dependent
Somers' D	.37447	.43224	.33032

Statistic	Value	Significance
Kendall's Tau C	.43220	.0000
Gamma	.60205	

Number of Missing Observations = 9

Crosstabulation: BQ2Q2 GEESE, WHO SHOULD MANAGE?
By BK4 HOUSEHOLD ANNUAL INCOME

BK4-> / BQ2Q2 (Count)	$0-10,000 1	$10,001-20,000 2	$20,001-30,000 3	30,001-40,000 4	40,001-60,000 5	60,001-OVER 6	Row Total
1 NATIVE-NATIVE ORG	8	4	9	7	11	5	44 43.1
2 BALANCED COMBIN	7	2	4	6	5	5	29 28.4
3 ADF&G-FEDERAL GOV	7	2	4	4	8	4	29 28.4
	22 21.6	8 7.8	17 16.7	17 16.7	24 23.5	14 13.7	102 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With BK4 Dependent
Somers' D	.00628	.00564	.00707
Eta		.10537	.00814

Statistic	Value	Significance
Kendall's Tau C	.00692	.4698
Gamma	.00863	

Number of Missing Observations = 6

Crosstabulation: BQ2Q2 GEESE, WHO SHOULD MANAGE?
By RAGE Age of R

BQ2Q2 (RAGE-> Count)	18.00	22.00	23.00	24.00	25.00	Row Total
1 NATIVE-NATIVE ORG		2		1	1	41 42.3
2 BALANCED COMBIN				1		29 29.9
3 ADF&G-FEDERAL GOV	1		1		1	27 27.8
Column Total (Continued)	1 1.0	2 2.1	1 1.0	2 2.1	2 2.1	97 100.0

BQ2Q2 (RAGE-> Count)	26.00	27.00	28.00	30.00	31.00	Row Total
1 NATIVE-NATIVE ORG	1		1		3	41 42.3
2 BALANCED COMBIN		1	4	2	2	29 29.9
3 ADF&G-FEDERAL GOV	1		3	1		27 27.8
Column Total (Continued)	2 2.1	1 1.0	8 8.2	3 3.1	5 5.2	97 100.0

BQ2Q2 (RAGE-> Count)	32.00	33.00	34.00	35.00	36.00	Row Total
1 NATIVE-NATIVE ORG	4	1	1	2	2	41 42.3
2 BALANCED COMBIN	1		1		2	29 29.9
3 ADF&G-FEDERAL GOV			2			27 27.8
Column Total (Continued)	5 5.2	1 1.0	4 4.1	2 2.1	4 4.1	97 100.0

BQ2Q2 (RAGE-> Count)	37.00	38.00	39.00	40.00	42.00	Row Total
1 NATIVE-NATIVE ORG		2		2	1	41 42.3
2 BALANCED COMBIN	3	1	3	2	1	29 29.9
3 ADF&G-FEDERAL GOV		1	3		2	27 27.8
Column Total (Continued)	3 3.1	4 4.1	6 6.2	4 4.1	4 4.1	97 100.0

Crosstabulation: BQ2Q2 GEESE, WHO SHOULD MANAGE?
By RAGE Age of R

RAGE-> Count / BQ2Q2	43.00	45.00	46.00	47.00	49.00	Row Total
1 NATIVE-NATIVE ORG	2	2	2	2	1	41 42.3
2 BALANCED COMBIN			1			29 29.9
3 ADF&G-FEDERAL GOV	1	1				27 27.8
Column Total	3 3.1	3 3.1	3 3.1	2 2.1	1 1.0	97 100.0

(Continued)

RAGE-> Count / BQ2Q2	50.00	54.00	55.00	56.00	58.00	Row Total
1 NATIVE-NATIVE ORG	1		1	1	2	41 42.3
2 BALANCED COMBIN		1				29 29.9
3 ADF&G-FEDERAL GOV					1	27 27.8
Column Total	1 1.0	1 1.0	1 1.0	1 1.0	3 3.1	97 100.0

(Continued)

RAGE-> Count / BQ2Q2	59.00	60.00	61.00	62.00	64.00	Row Total
1 NATIVE-NATIVE ORG				1	1	41 42.3
2 BALANCED COMBIN				1		29 29.9
3 ADF&G-FEDERAL GOV	1	2	1			27 27.8
Column Total	1 1.0	2 2.1	1 1.0	2 2.1	1 1.0	97 100.0

(Continued)

RAGE-> Count / BQ2Q2	68.00	69.00	70.00	72.	73.00	87.00	Row Total
1 NATIVE-NATIVE ORG					1		41 42.3
2 BALANCED COMBIN		1		1			29 29.9
3 ADF&G-FEDERAL GOV	1		1	1		1	27 27.8
Column Total	1 1.0	1 1.0	1 1.0	2 2.1	1 1.0	1 1.0	97 100.0

Statistic	Symmetric	With BQ2Q2 Dependent	With RAGE Dependent
Eta		.71675	.16345

Statistic	Value	Significance
Kendall's Tau C	.01180	.4508
Gamma	.01232	

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration.