

**SUBSISTENCE AS AN ECONOMIC SYSTEM IN ALASKA:
THEORETICAL AND POLICY IMPLICATIONS**

by
Thomas D. Lonner

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ABSTRACT

The purpose of this paper is to provide better definition of subsistence use in Alaska by drawing upon research findings in economic anthropology. Findings indicate that subsistence is a system for the local production and distribution of goods, services, and other nonmaterial products. This economic system, while often interactive with larger market economies, is aimed at the minimization of risk and insecurity through local provision of daily food and other needs. Its relationship to cash is explored in some detail, along with investment of labor, land, resources, and other inputs...

Also explored is the continued role and viability of villages in the modern world. The relationship of changing social and environmental factors to subsistence patterns is described.

Implications for resource managers are drawn using the framework of subsistence economics as an organizing principle.

Much of the difficulty in the implementation of Alaska's Subsistence Law is based on the lack of consensus about the definition of subsistence. This paper will suggest that this difficulty results from a too limited definition of subsistence, a definition found in the dictionary and common parlance. This paper will further suggest that the uses protected by the Subsistence Law derive from a recognition and appreciation of a socially significant subsistence economic system affecting a significant portion of the State's population.

By "economic system " we refer to the structured arrangements and rules which assure that material goods and specialist services are provided in a repetitive fashion. By "economic", we do not mean only those arrangements requiring monetary transactions and market systems, but also the general arena of man's livelihood and the different forms of integration through which the economy as a unit is institutionalized. More generally, economic refers to "the combination of things in movement and persons in situations" (Polanyi 1971) and "where people are going and how quickly they want to get there" (Olson 1980).

In this paper, we will suggest that "subsistence" is not derived from dictionary definitions, but from the very large international body of research and knowledge of subsistence found in economic anthropology and human ecology (Bruhn 1974). Internationally "subsistence" refers to those economic activities (hunting, fishing, gathering, farming, herding, crafting, trading, tool-making, transportation, skill training, storage, energy development, and so on) which are relatively self-contained within a community or region, which are not conducted primarily for profit-maximization, which aim primarily for present consumption, and which are governed by traditional

patterns rather than market conditions or immediate needs. A subsistence farmer, for example, is one who consumes most of what he produces, sells little in the cash market, buys few items for production and consumption, uses little non-family labor, employs noncapital demanding technology, possesses a limited standard of living, and whose decisionmaking is dominated by family survival (Wharton 1971).

Subsistence is a system of production for both use and exchange. Its objective is not total self-sufficiency nor capital formation but an endless flow of goods, services, and other products (Sahlins 1971).

Production for use leads to a non-intensive domestic economy, nonexhausting of resources and intermittent in scheduling, resulting in an excess of labor power and therefore time free for recreation and socializing (Sahlins 1971). In this not-for-profit economic system, explanations of household and community activities often focus on their institutional and traditional aspects in pursuit of "noneconomic" goals and resultant patterns of order and stability. However, basic subsistence needs of households are explained not only by intergenerational prescriptions but also as outcomes of many decisions, separately taken, by practical people living under similar conditions. It is their attempt to maximize material and psychological security, without wealth or other alternatives, and is natural when set against both cash economic and environmental fragility and uncertainty (Johnson 1971). For example, in subsistence herding, the number of livestock maintained is based on the production not of a marketable surplus but of a regular and secure daily supply of food (Dyson-Hudson 1969).

The objective, then, of a subsistence system is to provide material and psycholo-

gical security and self-sufficiency in the face of uncertainty in extra-regional economic systems by conserving energy through the reduction of capital dependency, labor intensity, material and energy importation, transportation, costs and waste. A subsistence economic system, while clearly not identical to capital economies, contains a number of parallel concepts to capital systems--labor, technology, investment, exchange, transportation, energy, product diversity, producers, consumers, maximization, and so on. These are useful concepts to systematically examine a subsistence economy and explain it to an audience. However, these concepts are not sufficient to explain such an economy, since production-for-profit, formal contracts, market structures, surplus value, capital accumulation, and so on are generally absent in subsistence economies.

In order to explain a subsistence economy, it is necessary to examine the inputs and outputs of the system. In a modern subsistence system, inputs include labor, cash, tools, skill, storage, transportation, equipment maintenance, distribution, willingness to deal with hardship and risk, wild resources and lands i.e., "natural capital" (Olson 1980). Lands provide the habitat necessary to the continuation of resources which underlay the subsistence economic system. Where competing land values exist (e.g. resources extraction vs. habitat) or access is at risk, difficult decisions must be made. For example, the desire of Native regional corporations to create a landbank and delay land taxation may result in commitment of land to habitat protection, in other words, a provisional investment of lands to subsistence.

Another input, cash, is common. Cash derives from wage employment, transfer payments, and corporate proceeds. To the degree that wage employment is

intended to underwrite subsistence equipment, the time, energy, and opportunity cost committed in wage employment may be seen as investment in subsistence. Similarly, transfer payments from the government may also be seen as investment in subsistence. In Canada, the government in some cases directly and explicitly subsidizes subsistence activities through an income security program. Social welfare, in these cases, does not replace subsistence but underwrites it. Elsewhere in this paper we shall discuss the value to government of providing for and subsidizing subsistence.

The outputs of a subsistence economic system (as with other economies) include multiple social, nutritional, economic, and cultural products. Thus, a subsistence economy is a highly specialized mode of production and distribution of not only goods and services, but of social forms (Marks 1976, 1977), culture, and "psychic income" (Neale, 1971), that is, nonmonetary personal rewards.

In order to explain the preference for subsistence rather than export markets, estimates must be made of value locals place on subsistence products. A local resident often values products produced and consumed at home considerably higher than their market price, based on objective and subjective measures. This is correct since he in effect pays the retail price for what he buys and receives the wholesale price for what he sells. However, it is difficult to assign a retail price for subsistence production. The problems with assigning retail prices include: (1) risk and uncertainty (2) instability of consumption patterns (3) valuing a product according to use (4) instability of retail prices, and (5) multiplicity of retail prices (Chibnik 1973).

It is doubtful that cash equivalents could or should be applied to measure

these inputs and outputs. It may be useful to assign comparable energy units to examine the flow of inputs and outputs; however, the assignment of uniform energy units to land investment, opportunity costs, social interaction, product exchange, product preparation, replacement costs, risks, and so on is a difficult, if not impossible, task.

Interpenetration of Cash and Subsistence Economies

There are special problems raised when attempting to understand what happens when two quite different economic systems interact and exchange. One problem is the identification of boundaries between units of analysis, particularly in cases of regular and sustained interaction between separate social and economic production. What is needed is a model which recognizes both systems and explains how their inputs and outputs articulate (Møller-Wille 1978). This is particularly true when producers regularly alternate between the two contexts on a seasonal basis (Tanner 1979).

Contrary to popular belief, it is possible for two economic systems to interface and interpenetrate without losing their distinctive sets of rules and obligations. For example, while the market economy is the larger economy of the Western world, it does not always dominate the operations of local economies. In establishing commercial trading in Canada, the Hudson Bay Company had to alter its operations in order to meet the requirements of trapping populations. Equally, while the cash economy may be dominant over large areas, its principles and demands are often marginal in nonurban sub-regions.

The relationship between two distinct economies need not be characterized either by total separation or total assimilation, but may occupy some

middle ground characterized as competitive, interactive, and beneficial to both. As Tuck (1980) points out, subsistence economics are so different from traditional Western economics that some value conflict must occur, particularly over the issue of economic development.

Subsistence economies tend to be old and conservative systems with their own patterns of checks, balances, and adaptations. Conflicts between subsistence and market economies often result from misperceptions and misinformation about the older, local, complex, and often unseen subsistence economies.

Conflicts occur for many reasons in the day-to-day village reality. For example cash often provides a level of independence and competition destructive to local rules of obligation. The operating costs of government-built public water and energy facilities often create a cash dependency unfilled by local cash resources. Changing tastes and technology also create dependency on external markets, a process called "delocalization" (Pelto 1978).

Affiliation with the market economy often leads to local feelings of insecurity, powerlessness, and addiction to growth and dependency. Given the volatility of the Alaska and world economies, involvement in the market economy often creates new risks as well as new opportunities not altogether different from risks and opportunities in the subsistence economy. A solid base in more traditional forms of security is of great benefit in the process of transformation to a some mixed economy. Subsistence is one way of protecting local areas from cash inflation, erosion of purchasing power, boom-bust cycles of development and employment, maldistribution of employment and income, and unsuccessful ventures in local commercial development.

A cash-free society, even at the local level, is neither possible nor desirable. The use of cash, even dependency on cash, is the result of both choice and necessity, particularly as resources decline in proportion to increasing demand, regional centers grow, and technology and energy are provided from outside the region.

There is a large amount of Western hard goods and foodstuffs in villages. This is indicative of interaction between economic systems; not replacement of the subsistence system. While the availability and use of certain non-subsistence foodstuffs in local stores is of both economic and nutritional interest, it is clear that the continued high use of subsistence foods cannot be offset by wages and transfer payments.

It is also likely that cash to local stores provides primarily carbohydrates to the diet; vital protein and fats tend to be provided primarily through local production. Nutritionally, it might be desirable if more rather than less subsistence foods were to appear in village stores.

It is important at this point to be careful in defining some terms. It is not cash which characterizes the Western economy, but "export" and "market" elements. The use of money, in and of itself, does not mean that the society has become "commercialized" nor does it even tell us the kinds of transactions in which money is used (Neale 1971). "Monetization", the use of money in exchanges, is a useful tool to compare activities and values, but it is not a sufficient condition of commercialization. Significant commercialization requires production for profit-making and dependence on markets rather than just an interest in markets and prices (Neale 1971).

Commercial dependence does not occur unless all (or nearly all) the productive activities of the person or people being analyzed are designed to result in sales and unless/until the productive activities would stop given changing costs of operations and price structures. Commercialization of some kinds of economic activity does not mean that all, or even the "most important", economic activities are highly sensitive to market prices--that is, are "market dependent" (Neale 1971).

The history of the last century shows that money has been a legitimate and routine mode of exchange in subsistence for some time. This is particularly true in the case of the local store where the exchange, much like that of the trading post, provides nutritional diversity, subsistence technology capitalization, and outlets for trapping products and the crafting of resource byproducts. This is best described as "incomplete commercialization", involving only partially monetized activities oriented to only certain markets.

There is no objective measure of the relative worth of subsistence goods and services since they are not reduced to a generalized medium of exchange. The value of subsistence products cannot be reduced to uniform monetized measures, such as "replacement cost." Monetized measures require some supply and demand system. Nonmarket values in subsistence economies generally depend on individual evaluations of "use value", "exchange value", the amount of work expended in creating a product or providing a service, or the relative equality of value perceived in exchanges by the principals.

In addition, there is great variability over time in the value of subsistence goods, depending on resource availability, desirability of the goods, season of consumption, lean and rich years, and so on.

Labor and Subsistence

It is a popular belief that rural areas suffer from an unacceptably high level of unemployment. Unemployment in the wage economy may be too high, particularly as perceived by local job seekers. However, subsistence is a form of significant employment for tens of thousands of Alaskans. Thus, there is a great deal of "disguised employment," a systematic underestimation of the amount of labor performed (Swetnam 1980). In one study of rural non-Alaska communities, it was found that 98% of labor days available are used in productive labor if one includes nonpaid activities (Swetnam 1980). This disguised employment remains disguised because measurements of employment are based on poorly defined units and unwarrantable observations (Swetnam 1980; Nietschmann 1972).

Subsistence labor is based on a pattern, division, or distribution of labor of men, women, and children determined by age, sex, task, skill, training, equipment, kinship, social organization, capital, time, season, location, reciprocity and distribution system, and so on. Subsistence labor is communally organized according to skills, interests, kinship, and planning. Vital skills cannot be removed without altering the efficiency and productivity of the group.

As noted earlier, production for use results in intermittent scheduling and nominal excess of labor power (Marks 1977). The timing of wage employment is critical if the time is diverted from seasonal subsistence employment rather than from leisure time. The temporary nature of much northern employment often conflicts with seasonal subsistence activities and creates risks for the employee who must choose between cash and subsistence rewards. Many persons choose wage unemployment during subsistence seasons, unless

the household or community organization of subsistence requires additional cash investment or if the reduction of the subsistence labor force does not reduce subsistence productivity. However, the loss of a skilled hunter or fisherman to wage employment may seriously jeopardize a household or community dependent on his skills, particularly when he provides product for more than one household.

Research in Alaska (Kruse 1979; Nowak 1975) indicates that increasing wage or other income does not result in decreased resource dependence or utilization. Increased income appears to lead to more efficient, reliable, useful, and less-demanding subsistence technology. Improved technology provides wider ranging transportation to offset both resource scarcity in the immediate area and reduced time availability to engage in subsistence activities. If we think of employment and part of the wage income as investments underwriting subsistence, the resulting total human effort resulting from wage employment and devoted to subsistence may have increased in recent years. It is possible that both increases and decreases in local employment may lead to increased subsistence effort in both urban and rural areas. This increase in effort may or may not, of course, result in greater productivity.

Productivity and Efficiency

It is inappropriate to assume that subsistence production results from either pure chance or some simple repetition of past harvest patterns. Studies note that the hunting economy is not dominated by chance and that productivity is not determined entirely by uncontrollable forces of nature, but involves a good deal of calculation. While there are strict limits on the range of possible adaptive procedures, there is also a considerable degree of economic planning (Tanner 1979; Nietschmann 1972).

Economic planning requires certain human resources including the ability to integrate information leading to decisionmaking (e.g., weather, terrain, animal behavior, and relevant resource condition--weight, density, fat content, nonfood yields, aggregation size, location time, pursuit time). Researchers (Jochim 1976) have designed elaborate models on how these variables interact, as modified by available storage techniques, changing material aspirations (e.g., quantity needs replaced by quality aspirations as a season progresses), accessibility costs, and the costs of technology required to reduce risks in resource exploitation. In addition, there are non-resource considerations (e.g., temporary employment opportunities) which may result in fluctuating resource dependency.

The commitment of human effort, then, results from individual, household, or community assessment of various economic possibilities as well as ecological, social, and psychological factors. As individuals and households weigh these variables differently and pursue different goals with different means, a number of economic strategies typify a community's annual subsistence activities.

Variability within a community also results from a lack of economic uniformity. For example, it is possible that temporary or permanent wage employment may result in less individual or family dependency on secure systems of subsistence obligations. Similarly, social and cultural products may be more desired by some individuals or families than others.

While many traditional social and economic relationships of the past may be absent or weak in northern villages, the insecurity and uncertainty which characterized earlier times have continued into the present. Material in-

security in the sense of an uncertain food supply, together with the absence of reliable and sufficient alternative sources of livelihood, characterized most traditional economies. This insecurity resulted in extreme dependence on one's kin and one's local community and an economy and society inextricably "embedded" in one another (Dalton 1971).

Today, this same uncertainty is expressed over the future of both wild resources and wage employment. Security is found in a combination of cash and subsistence resources. Neither resource alone is generally considered a safe source of livelihood. What appears to be maximized in subsistence economics, then, is not profit or wealth but security. This desire to safeguard material security would account, in part, for the hesitation of northern communities to embrace high-risk, high opportunity cash alternatives. Tanner (1979) suggests that we should stop looking at northern residents as a group in conflict between traditional and modern elements or between the contrary demands of wage and subsistence economies, but try to understand it as a social and economic form in its own right.

To satisfy food and nonfood needs of a population, a certain security level of production must be maintained, which involves a consideration of risk-minimization and effort minimization. The limiting of effort forms an important goal guiding the economic behavior of hunter-gatherers, leading to considerations of energy expenditures, wastage, and leisure. Considerations dictating effort include: (1) assessment of caloric and other goals (2) risk-minimization (3) security (4) reliability (5) limiting of effort (6) ease of exploitation (7) difficulty of exploitation (8) timing to reduce effort (9) changes in subsistence costs (10) reduction in distance traveled or time expended (11) distribution of human and resource populations

(12) need for human aggregation and social contacts (13) differential desirability of certain foods--taste, fat content, ease of preparation and storage, variety in diet, prized rarity, seasonal needs (especially in early spring), feast needs (14) desire for prestige and (15) maintenance of division of labor and sex roles. It is probable that, in some instances, apparent lack of effort in certain apparent resource opportunity situations results less from lack of interest than from a realistic assessment of risks, costs, efficiencies, and likely products (Nietschmann 1972).

Similarly, Binford (1978) argues that the variability in the procurement and consumption of game animals is due to complex interactions between the availability of the natural game resource and specific contingencies such as transport distance, storage characteristics (especially as they are affected by changes in weather), and weather itself as it affects travel and transport. He notes the complexity of accounting for the amount and choices of parts salvaged and transported; the order and significance of the parts used the costs; losses, and security in preparation; the desire for "bulk" and "gourmet" products in the diet; and differential skills and forms of hunting, butchering, preparing, and transporting. Examples of such accounting are common.

Big game animals are such large food packages that hunting, under certain circumstances, is significantly more energy-efficient and therefore more important than gathering, fowling, and fishing (Jochim 1980). On the other hand, hunting may be a more high-risk activity than low-risk, high productivity fishing. Questions about prized products, efficiencies, and security are not answerable except within the economic situation confronted by the subsistence hunter or community.

The community's economy and population exercise a considerable influence on subsistence effort; Sahlins (1971) notes that the intensity of subsistence labor increases in relation to the rise in the proportion of consumers.

The objective of the producing population is not to work at maximum efficiency and effort to create a surplus, but to produce sufficient products to satisfy the needs of the less effective majority.

We have to be careful not to overemphasize the role of efficiency of effort; we have to consider other determinants of effort. Resource status, for example, determines much of subsistence effort. Under conditions of game (or food) scarcity, when search and pursuit time would necessarily be high, we expect maximizing to take the form of maximum utilization of food regardless of labor costs in transport and processing (Binford 1978; Nietschmann 1972). Conversely, under conditions of game abundance or increased subsistence security, with accompanying decreases in search and pursuit time, we expect maximizing to shift increasingly to limited labor investment and more selective utilization. Efficiency considerations alone would not equally explain effort under different resource conditions (Jochim 1980).

Different multiple resource conditions also may dictate different hunting strategies and result in different rates of utilization of different alternative resources. Winterhalder (1980) suggests that, once the hunter has reached an optimum diet breadth, he will not incorporate a potential resource into his diet simply because that species has increased in abundance. Diet breadth is dependent on the absolute abundance of species which the hunter ranks highly, and not on the absolute abundance of low-ranking species, those outside the existing diet. In the short-term, in which

diet breadth is fairly stable, the harvest will not be sensitive to population fluctuations of "potential" prey. Conversely, if the absolute abundance of a highly-ranking food type decreases, the hunter might begin harvesting the low-ranked food type even though its absolute population density had not changed.

The reader will note that the foregoing discussion does not lead to predictions about the behavior of hunters but only notes that, in subsistence as in most economic situations, a large number of situational variables will dictate economic behavior. The relationships among time, effort, cash, technology, kinship needs, community needs, resource status, and so on constitute the critical elements of subsistence study. It is also axiomatic that all subsistence economic behavior can never be explained solely in terms of material economic rationality (Dornstreich and Morren 1974).

Distribution System

As noted earlier, subsistence is a mode of economic production and distribution. Distribution provides nutritional and other materials, and social products among households, within communities, within regions, and so on. Without an effective distribution system, much of production loses its purpose.

While subsistence is not based on profit-maximization or surplus creation, the elements and methods of distribution are similar to those in market economies ---trading, sharing, selling, bartering, gifting, debt, credit, obligations, reciprocities, partnerships, middlemen, and so on. (This topic will be the subject of a special research report this winter). Such distribution features allow subsistence participants to specialize and to divide their labor to maximize skills, minimize redundancy and competition, obtain a

sufficient quantity and diversity of goods and services, and provide for the very young, the very old, and the luckless and unskilled consumers. These features are not controlled by "market" principles, but by well-defined social rules (Dalton 1971).

While the basic purpose of a subsistence economy is not to produce for wealth or profit, it is clear that subsistence activities do create surplus products, that is, products beyond those needed for direct household consumption. These products are used to trade, barter, or sell to obtain other products which the household cannot or does not produce. The introduction of cash into this system, either from wages or the community store, does not necessarily indicate that the exchange is commercial rather than subsistence. Cash is only one medium of exchange among many--food, clothing, gas, equipment, services, and so on.

The subsistence distribution system it possesses special features of significance to insecure northern communities. Barter, for example, provides an appropriate array of goods and services in an unmonitored, unmeasured, unofficial, and untaxed fashion; the "cost" of product is not subject to commercial or government surcharge. Barter exchanges tend to be conducted through continuous person-to-person negotiation, resulting in basically non-profit transactions, short (therefore less costly) lines of transportation, appropriate levels of production, reliable and timely sources of supply, and little waste and stockpiling. Since barter occurs everywhere, transactions need not be centralized in regional centers; where it utilizes village or town stores, it contributes to regional nutritional diversity and self-sufficiency.

Barter assists in buffering communities from external economic changes. By using the energy and skill required to produce a product rather than external market conditions to determine the value of products, exchanges tend to be noninflationary. In addition, barter increases community cash flow (or buying power) by requiring less cash outlay for necessities. It also releases cash for those goods and services that cannot be bartered.

Social products of barter should not be overlooked. These include, among others, the provision of a direct sense of self worth, the value of one's labor, products, and skills, and the building or maintenance of relationships through reciprocities and obligations.

The role and flow of cash in northern communities has been subject to insufficient research. It has been noted that cash is anonymous, readily concealed, and fragmented. It is possible that cash may reduce the sense of community obligation and security of wage earners, but this has not been systematically explored. It is not subject to the same rules of exchange and distribution although it may travel swiftly through communities with positive market economic and wage employment benefits. What is also needed is a study of how those without sufficient cash (for whatever reason) to purchase basic subsistence technology (rifles, ammunition, gasoline, nets, etc.) can capitalize their subsistence enterprise.

Subsistence and the Modern Village

A common belief in Alaska is that subsistence is a primitive vestige peculiar to the state and Canada, the final "frontiers" in the Western world. However, according to a recent estimate (Chibnik 1973), approximately two-thirds

of the people in the "developing world" engage in or are dependent on subsistence agriculture, greatly effecting their national economies.

Another common belief is that Alaska and Canada are the only places in the Western world containing significant and viable village population. However, rural populations constitute 55-60% of the world population (20-42% in Europe, 26% in North America), most of whom live in villages and camps (Reining and Lenkard 1980). Villages constitute the most prevalent form of human settlement; inhabitants number between 1000 and 3000 persons resulting in extensive personal and frequently long-term contacts with a relatively large and stable group of people similar to themselves, as well as special characteristics distinct from mere collectivities of individuals. Villages are a very successful and durable human invention which serves to organize a collection of individuals in a variety of role relationships into a group with common goals, a commonly shared subsistence economy, and provisions for mutual support.

A healthy renewable resource base allows local communities to persist longer than those communities with a finite, exhaustible nonrenewable resource base--thus, hunting, fishing, farming, and herding communities tend to persist longer than mining communities. Such persistence requires the conservative use of local and nonlocal sources of energy, food, and other resources. However, villages are not historically static, in terms of organization, composition, or location.

Villages recur through history, constantly changing, modernizing, adapting, disintegrating, and reintegrating. Village characteristics are based on the historical mix of kinship, resources, and economic conditions and survive as

long as basic self-regulating structures remain intact. Villages are newly constructed in the modern world through industrial developments, wars, return migration, and resettlement of traditional sites. Movement has always been a part of cyclic village history due to immigration, outmigration, nomadism, seasonal relocation, and so on. Villages are liable to be extremely destabilized, from time to time, by external forces. However, villages cannot be assumed to be either tragic or idyllic, but sufficient to the desires of residents and the resource and economic opportunity; as these changed, villages become towns or are abandoned or adapt to new exigencies (Reining and Lenkard 1980).

Alaska villages were never isolated from one another; historically, they have engaged in an immense amount of travel, trade, sharing, and learning. If there is anything traditional about villages, it is the fact that they constantly were adapting to changing external and internal forces and events. Increasing outside contacts does not necessarily diminish communal life but may intensify the locals' sense of being different.

It is not external contact that is threatening villages but the integrity or wholeness of communities confronted by economic mobility of members, schools, technologies, corporate obligations, communications, and so on. The "modern village" is a viable combination of the new and the old based on tests of inclusiveness, completeness, and cohesiveness. The village "conditions and sociocultural traditions" cannot be assumed but systematically investigated, reported, and accounted for (Reining and Lenkard 1980).

There are countless sources of village change, including population growth, population composition change, urbanization, institutionalization, industrialization, resource change, technology change, government growth, and so on.

The cumulative effects of forces cannot be explored here, particularly in their impacts on kinship, family roles, and ties, division of labor, distribution of goods and services, language use, religion and ritual, migration, status, prestige, social control, social well-being and stratification, political organization, world-views and horizons, childrearing practices, economic organization, reference group identification, personal and social identity, values, and expectations.

The autonomy of a subsistence-oriented village results not from the ability of the village to resist the process of externally-caused change but to modify its mode and organization of production in a way to retain control of the conditions of production (Tanner 1979). There is no doubt that modern villages display a decline in certain kinship obligations, increased use of modern amenities, reliance on cash, centralization into larger settlements, and so on. However, they also display great regional variability in their manner of response to and management of externally-caused change--it cannot be assumed that the course of village history is predetermined given the strength and complexity of the internal processes and local indigenous institutions which mediate the rate, magnitude, and type of change.

The reader may take exception to the emphasis, in this paper, on the dependence of rural villages on the subsistence economy. It has been suggested earlier that a subsistence economy is a community, rather than an individual or household, enterprise. However, village residency is not the critical criterion in belonging to a community subsistence economic system; rather, it is kinship and exchange ties which maintain the system (Spencer 1953). If villages are defined by multiple intergenerational knowledges and exchanges, villages may, in

fact, exist within larger towns and cities. These villages-within-towns exist as communities-of-interest, based on family, exchange systems, kinship ties, or traditional use and dependency patterns. (It may even be assumed that community affiliation and residency are only a surrogate for these ties). As towns absorb villages, the villages do not disappear but continue. Similarly, as villages grow and become towns, to the degree that harvesting and distribution continue and grow, the subsistence economic system, rather than dissolving, grows.

Management for subsistence

By controlling access to the renewable resource base, government also controls community economies. The actions of a variety of government agencies (land, fish and game, economic development, etc.) need to be coordinated if rural village life is to persist.

There is little evidence in the history of Alaska to support a conclusion that the economy and the resources of the state have a clearly predictable future. Similarly, there is little evidence that rural communities are "transitioning into the cash/welfare economy." Considering the past patterns of rural resource exploitation (whaling, gold, fur), it is as likely that the rural future will resemble the rural past as it will the urbanizing present.

Given the positive value currently ascribed to energy self-sufficiency systems, it is common practice for government not only to tolerate such systems, but to partially subsidize them. Partial subsidies may be less costly to the public treasury than encouraging or requiring total dependency of rural areas on central government for food, energy, and other needs. While current oil revenues to the state treasury could theoretically replace

(through out-of-state food imports) all the food resources used in the state, the long-term ability or desire of government to replace the entire subsistence economy is doubtful. To the degree that government is invested in village futures, its management plans, transfer payments, and regulations become the institutional guarantors of subsistence economies as alternative bases of local self-sufficiency. There is no doubt that the state partially subsidizes village subsistence economies, much the same way as it underwrites the growth of significant portions of the private capital economy.

Conversely, it can be argued that is likely that there is a need for government to tamper as little as possible with existing economic systems until the conditions demand it and the knowledge base allows it. Given the uncertain future of rural market economic development, there is little purpose served by limiting the magnitude or adaptations of subsistence uses until and unless compelling and conflicting human purposes appear (i.e. until the use is found to be unjustified in terms of the health of the resource or the legitimate needs and aspirations of other residents).

It must be noted that the weak legislative history underlying the Subsistence Law did not indicate an awareness of the economic nature of Alaska subsistence. Similarly, an examination of public debate about subsistence in Alaska over the past ten years reveals a lack of perceptions about subsistence economics. This lack is probably due to limited frames of reference and unsupported assumptions about rural economic life.

There is a noticeable lack of theoretical economic findings in Alaska rural research. The reader may well ask whether international findings are necessarily applicable to the Alaska scene. In response, it is suggested

that the reader examine any representative sample of the hundreds of empirical and historical studies conducted on subsistence use and economics in Alaska (e.g., Josephson 1974; .. Eisler 1978; Burns 1977; Marshall 1933; Nowak 1975; Muller-Wille 1978; Dumond 1977; Fejes 1966; Giddings 1956; Jenness 1970; Nelson 1969, 1973; Nelson, et al. 1977; Anderson, et al. 1976; Bane 1966; Foote 1961; Spencer 1959; Clark and Clark 1978; Federal Field Committee 1968; Chance 1966; Nielson 1977; Spearman 1979; Bishop 1978; Uhl and Uhl 1977,1979; Caulfield 1979; Vanstone 1974; Kruse and Travis 1979; University of Alaska 1978; Yupiktak Bista 1974; Worl and Worl 1978; Davis 1979; Braund and Behnke 1980; Ellanna 1980; Behnke 1977, 1979). It is suggested that such an examination will reveal no contradictions and many parallels between Alaska and international findings, as well as a far greater complexity and variability than can be described in this paper. There is not one, but many, subsistence economies in Alaska.

In order to protect both market and nonmarket economies of both urban and rural Alaska communities, it is necessary to identify and protect the resources and systems upon which they rely. This may result in a greater investment in management in order to enhance the resource base beyond immediate demand, to meet projected future demand. Current management decisions, to the extent that they involve allocation (social rather than biological) issues, tend to be based on concepts of current scarcity (resource availability compared to human demand for a harvestable surplus). It may be desirable and possible in the future to project future human populations and their resource demands (and possibly alter these demands and expectations) and manage resources to provide sufficient opportunity to meet these demands.

If subsistence is to be provided for, then the population of wildlife species

used for subsistence must be maintained at adequate levels. Subsistence, by its very nature, requires successful harvest. Subsistence cannot be maintained merely by providing nominal opportunity. Without the harvest, the individuals involved cannot continue to subsist and must seek another economic base to survive. Thus, management should project future demand, reduce wildlife and habitat disturbances and human conflicts, reduce unnecessary regulatory impediments to harvest opportunity, and encourage conservation of resources.

Questions of Definition

Relying on an understanding of subsistence derived from economics and economic anthropology, some basic definitional questions are clarified. However, it should be noted that subsistence economies are neither uniform nor ubiquitous; they vary by time and place and must be analyzed accordingly by decisionmakers.

The following pages will briefly note several commonly voiced perspectives and compare them to the perspective drawn from subsistence economics.

"Subsistence is a special privilege, not a right." The subsistence priority has often been characterized as just a special privilege for rural people to take common property resources. It has been argued in the paper that the subsistence economy is, in fact, a beneficial use of these resources, a use that is superior, in specific cases, to some other uses. This use cannot be terminated or impeded without reference to provisions in Title 16 or the Alaska Constitution; the subsistence "right" is really only a set of procedures required by statute rather than a right to take resources.

"Subsistence is a welfare system for low income people." This perspective assumes that rural life is impoverished and that subsistence is an unfortunate feature of this condition. This perspective, also reflected in the position "let's get them off subsistence", is a value judgement, not an established fact. As noted earlier, subsistence appears to be a viable economic system marginal to the market economic system. To the extent that it is supplemented (not supplanted) by transfer payments, it is capitalized, not replaced, by government.

"Subsistence is based on protein needs only." As noted earlier, food is and has been only one aspect of a complex production and distribution system which includes values, desires, and traditions in addition to "need" or "dependency."

"Subsistence is a dying way of life." Claims that the subsistence economy is declining are based on the growth of rural employment, cash availability, and competition for and declines in resource populations. However, there is no evidence to support these claims, based either on amount of subsistence effort, total productivity, or relative productivity over time. It can be inferred from legislative action that the Legislature both supports and promotes the continuance of the use of wild resources to serve the needs, customs, and traditions of residents.

"True subsistence is limited to traditional methods and means." This perspective assumes that the activity and the tools are more significant than the ultimate use of the resource (as defined by statute). Economically, the technology used is relevant to concepts of economic efficiency rather than final

use. New tools do not necessarily change the subsistence use, any more than a carpenter investing in better tools to build a structure alters his being a carpenter or the use of the structure. It is also clear that new tools may constitute an unacceptable biological hazard; whether or not tools may need to be controlled, the tools used are not indicative of whether or not a subsistence activity is engaged. Finally, and ironically, some of the most efficient traditional methods and means available to subsistence users (e.g., fish traps, caribou drives, etc.) have been removed by regulation; that is, efficient technology is a feature of both modern and traditional subsistence economies (Marks 1977). A return to some primitive means could significantly increase the harvest.

"Subsistence is best left unregulated as a tolerated nonlegal activity." This perspective leaves the future economic system unprotected as well as the resources themselves. Given increased pressure on resources, it would result in extreme human conflicts and seriously damaged local resources. Mere regulation is less than the total management task to provide for resources and users.

"Subsistence is an individual, not community, activity." As noted throughout this paper, subsistence is a kinship-bound community economic system with an elaborate division of labor and special roles. By defining and confining activities to individuals only, regulatory systems may intrude seriously and unreasonably into these arrangements. On the other hand, there are a number of persons who live on their own in the bush, who live in urban areas but whose ties are to rural economies, who live in urban areas but who have been customary and traditional users of wild resources for long periods, and so on. These persons must have their interests protected through factual

research and documentaation and permitting systems.

"Subsistence is a voluntary lifestyle." While it is not uncommon for newcomers in rural areas to voluntarily adopt local economic activities, it is scarcely a voluntary system for locals born into it. The economic roles of local residents are clear from childhood on and nonsubsistence alternatives are often neither perceived, prepared for, nor actually present. The use of the term "lifestyle" is demeaning to these economic roles as if subsistence activities were similar to beachcombing or recreational trapping.

"As soon as cash enters the picture, subsistence becomes commercial." As noted earlier, "monetization" (the use of cash as a medium of exchange) is not interchangeable with "commercialization" (production to meet market demands). The selling of a portion of surplus subsistence products has historical roots going back to first contact.

"Subsistence is growing out-of-hand and needs to have a lid put on it." There are not sufficient data available to determine whether, in fact, statewide subsistence effort or productivity has increased and what, if any, social or biological consequences results from such growth. In those localized instances where subsistence pressure alone result in resource decline, government has the regulatory tools to protect the resource. It is more common, however, for resources to decline due to pressure from a combination and growth of commercial, recreational, and subsistence efforts.

It may be necessary for resource managers to plan more carefully for subsistence particularly in those instances where subsistence constitutes the terminal

harvest. Restrictions on subsistence resulting from managed but excessive harvest allocated to other users probably does not meet statutory requirements. Many subsistence issues may be considered more as the consequence of failures to manage effectively than as unavoidable social conflict.

It has been suggested that the Legislature intended to protect subsistence "uses", not subsistence "users." This suggestion would lead to the conclusion that regulatory agencies cannot and should not curtail the entry of new persons into the protected use. Alternatively, it can be argued that, based on intent language, the Legislature intended to protect the needs, customs, and traditions of Alaska residents; these would be established through historical documentation. Where such individual, family, or community history does not include such needs, customs, or traditions, it can be argued that these residents are not necessarily traditional and customary subsistence users; their activity constitutes a noncommercial use of resources, rather than subsistence use.

It has been argued that the subsistence law, and the recent court decisions utilizing it, mean that no constraints can be placed on subsistence uses, that the number of subsistence users will grow logarithmically, that all historical methods-means-locations-seasons must be restored, and that commercial and sports uses will get only what is left over. However it can also be argued that unlimited growth will destroy the social and biological basis for traditional and customary economic use as well. As more people compete for space, traditional users may become squeezed out. As per unit productivity of subsistence gear declines, the efficiency necessary for economic subsistence use is destroyed. It is therefore arguable that allowing an endless growth in the number of noncommercial harvesters in no way protects traditional and customary economic use and may,

in fact, destroy it.

A subsistence use becomes traditional and customary because it has produced nutritional, economic, social, or cultural products for a significant period of time. Subsistence use, in human economic terms, has developed to produce a significant amount of product for a limited investment in human energy. We can think about traditional efficiency (energy input/ product output) as an element which regulatory agencies should consider and protect, if possible. In investigating the basic determinants of traditional efficiency, we should consider times, locations, methods and means, target species and stocks, opportunity, and other factors of productivity (Marks 1977).

Adopting regulations which constrain such factors should not be adopted in the absence of factual investigation of traditional efficiency nor for administrative convenience alone. In particular, however, it may be singularly inappropriate to sacrifice this traditional efficiency in order to allow the unregulated entry into the protected traditional subsistence use of a large number of persons who are not traditionally and customarily part of any economic system dependent upon the resource. It can be argued that decision-makers should protect such efficiency given the language of AS. 16.05.251(b) "Whenever it is necessary to restrict the taking of fish to assure the maintenance of fish stocks on a sustained yield basis or to assure the continuation of subsistence uses of such resources...". Management plans should assure that the threshold levels of efficiency required for rational economic activity are, if possible, maintained in regulation. Efficiency can, of course, be reduced for biological reasons; Finally, management plans should not allow indiscriminate growth of nontraditional use, then use this growth as a rationale for disturbing traditional use.

In certain instances, regulatory agencies may determine that the personal use of wild resources is the best and highest use of these resources thus requiring restrictions on commercial harvest. For example, the Board of Fisheries has allowed an unrestricted entry into noncommercial set netting for salmon in Cook Inlet. It has characterized such fishing activity as "subsistence" for administrative purpose. It can be argued that the growth of such a use, while possibly desirable, is not as protected by statute as traditional (i.e., historical) use. This argument is supported by the three criteria used to select among subsistence users when necessary, particularly in the language "customary and direct dependence", which implies some time depth in participation. New growth, over passage of time, results, of course, in "customary dependence."

The criteria "traditional" and "customary" vary by region and use. The historical depth required is discretionary to decisionmakers, based on analysis of evidence. The current year's use is probably an insufficient indicator of appropriate harvest levels, particularly if the level of use is or has been depressed by regulation. Average harvest level alone, if divorced from other economic conditions, may also be an insufficient indicator. Similarly, given the potential nonreliability of harvest reporting systems, such reports are probably not sufficient uniformly to establish actual use levels. Finally, regulatory restrictions may not necessarily reflect actual subsistence use. Managers should not assume that, because an activity has been eliminated by regulation, it has been eliminated in fact.

In terms of the "availability of alternative resources", the availability of cash and foodstuffs probably does not constitute sufficient cause to

restrict use; restriction should be based first on biological concerns. As noted earlier, "alternative resources" should be considered to be viable economic bases by the users to be effective alternatives.

"Dependency" is probably more a community than an individual characteristic. It may be measured by the degree of participation in a subsistence economic system. Dependency is not an unfortunate condition, but a continuing habituation to certain economic activities.

"Mainstay" is an unusual statutory term with nautical roots. However, if an individual, family, or community is dependent on a subsistence economic system and, through it, a particular resource, the degree of dependency is probably less relevant than whether there are acceptable and available alternatives to this dependency, large or small.

Questions of Fact

The focus on subsistence as an economic system leads to:

- A research focus on community, kinship ties, economics, and historical use more than species
- Use of indexes, ranges, time depths, standards, margins of error, models, and confidence levels comparable to that used in resource science

Resource decisions often must be made based on insufficient and debatable evidence on such elementary matters as how many animals there are; what is the harvestable surplus; how many animals are actually taken (by all predators); what the impact of human activity (predation, habitat change) has been or might be; what are the trends in subsistence, commercial and sport use

and needs by species; what is the significance of unreported and illegal harvesting by all users compared to total harvest objectives; what is the significance of modern technology on harvest objectives (i.e. are people taking more animals [in absolute numbers or ratios] or taking with less investment of time and energy?).

The test for subsistence sufficiency is not solely production "performance", that is, achievement of a certain harvest level but the health of the economic system. Decisions affecting subsistence should take reasonable account of historical, economic, legal, logical, and human considerations. This accounting may not require exhaustive data on the hundreds of variables within the system, but should acknowledge the factors and trends in the subsistence economic system. It should, if possible, avoid overreliance on a single variable or indicator, such as harvest level, and regulation using this indicator as a proxy for the entire system. Harvest level, for example, divorced from level of effort, per unit productivity, and resource availability, has little meaning beyond a simple index of one source of predation.

Analysis of subsistence begins with the day-to-day reality, not the somewhat obscure and arguable principles outlined to this point. If a subsistence economy has social value, the problem for decisionmakers is to manage to protect both the economy and the resource, not merely regulate the taking of excess resource populations (Marks 1977).

Regulations intervene normally when there is conflict over high-demand, prized species, not the entire constellation of resources, activities, and social networks within the subsistence economy. To the degree that conflict

is due to competition from increasing commercial or recreational uses, the conflict is not between persons but between economic systems.

It would be desirable, of course, to identify simple regulatory mechanisms (based on the principles outlined to this point) which managers may use universally across the many resource allocation issues confronting them. However, it is suggested that such mechanisms, preceding the factual analysis of case-by-case social and economic elements, will result in haphazard and damaging outcomes.

The problem for decisionmakers is that subsistence systems historically preceded regulatory systems. Regulatory actions are not part of normal evolutionary change in subsistence economic systems, but constitute impact.

Regulations, if followed, may result in a permanent loss of ecological position, similar to the difference between loss of a job and chronic unemployment. The broader the scope of regulation, the more prized the resources lost, the more central to basic social and economic functions, the greater will be the ramifications of loss, even to the invalidation of entire socioeconomic institutions (Padfield 1976).

In many instances, it is a researchable question whether day-to-day subsistence reality is, in fact, a reflection of the regulatory system. It is probable that, where regulations fail to account for or satisfy basic economic realities, compliance is minimal. Similarly, liberalizing regulations may not result in increased harvest if the existing harvest level is dictated by economic considerations rather than regulations. Noncompliance, then, is

likely to be due less to general lawlessness than to perceived irrelevance or incompatibility of regulations to economic concerns. Since noncompliance is not universal, but a selective disregard for certain regulations, it would be useful to both systematically examine our commonsense assumptions about human behavioral responses to regulations and the social and economic consequences of existing regulations.

One prominent, if relatively uncommon, area of noncompliance is that of waste. Concepts of waste appear in both Western and non-Western value systems. In northern communities, waste is generally conceived in relative rather than absolute terms. Waste results when a prized, scarce resource is destroyed and no replacement is available. Western concepts view waste in more absolute terms, i.e. nonutilization of a valued product, particularly loss to reproductive potential. However, neither market nor subsistence economies efficiently conserve renewable and nonrenewable resources. Energy and other deficits in both systems continue to be externally subsidized and/or deferred into the indefinite future (Krutilla and Fisher 1975).

Permitting, as a regulatory tool, is also subject to selective noncompliance. Confusion inevitably arises from a harvest reporting system which is supposed to simultaneously accomplish disparate functions:

- a) provide harvest data from which population status can be extrapolated,
and
- b) monitor compliance with regulations restricting and limiting resource
harvests

It is obvious that people are not going to report out-of-season or wrong sex harvests to an agency trying to reduce harvests and make harvest more

difficult. It is of no little concern that the most legitimate subsistence activities (from a subsistence economic perspective) may be the least permitted (in terms of actual participation in the permitting system) or most illegal activities. Under ideal conditions, people may accurately report harvests but, if increasing restrictions result, they will not do so very long. (Behnke 1980).

Subsistence Section field reports note that some residents object to mandatory reporting systems which rely on coercion (failure to report can lead to loss of next year's legal opportunity) rather than cooperation. They argue that the benefits of more data derived from "coercive" (as opposed to voluntary) data-gathering systems do not outweigh the drawbacks--namely, that residents report what they think management "wants" to hear. Some residents report higher harvests to demonstrate great dependency. Others report low harvests to preclude an imposition of harvest ceilings. Voluntary mechanisms (such as catch calendars and village surveys) for determining residency, effort, and harvest volumes, residents suggest, may require more work on the part of managers but tend to provide more accurate data over time. Residents also felt it was duplicative to report identical harvest information in three different contexts: 1) in catch calendars, 2) in subsistence harvest interviews, and 3) on subsistence fishery permit forms (Caulfield 1980).

It is a common belief that extensive regulations and permitting systems will be more prevalent in the future. This may, in fact, occur in those areas of urban population growth and increased competition for limited resources. However, declining prevalence may also occur as evidenced by the lack or loss of regulations (e.g. walrus, migratory waterfowl), loss of permits (e.g.

Western Arctic caribou herd), and the growth of nongovernmental resource management institutions (e.g Eskimo Whaling Commission).

It is also possible that many current subsistence issues can be resolved by review and removal of those existing regulatory impediments to opportunity not justified by biological management data and logic. Much can also be accomplished by closely monitoring the impact of new regulatory actions on subsistence economies.

It is also useful to examine the possibility of altering human behavior to achieve resource objectives without the adoption of regulations. One mechanism is to encourage and provide greater participation in resource

management through information and education efforts, including an attempt to alter perceptions, expectations, and behaviors in a noncoercive fashion. Another is to encourage local institutions to play a greater role in resource management and conservation. Finally, it would be useful to examine the traditional laws governing the use and conservation of resources, those derived from the subsistence economic system, to see if the form, content, and formulation of agency regulations can be modified to coincide with day-to-day economic realities.

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