

Viliui Sakha Post-Soviet Adaptation: A Subarctic Test of Netting's Smallholder–Householder Theory

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The Sakha of northeastern Siberia, Russia, are the highest latitude contemporary agropastoralists practicing horse and cattle husbandry. In the last 100 years their rural livelihood has gone from household-level subsistence food production in clan clusters of single-family homesteads scattered across the landscape, to village-level state agribusiness farm production in compact settlements dependent on Soviet socialist infrastructure, to the present-day post-socialist reliance on household-level subsistence food production. This paper explores how Viliui Sakha are adapting in the post-Soviet context. Since the fall of the Soviet Union and the concomitant dissolution of the centralized state farm system, rural inhabitants have developed household and interhousehold food production capacities based on keeping cows and relying on exchange among kin. One of the basic tenets of Robert Netting's smallholder–householder theory is that in times of change, the household system is the most resilient subsistence production unit because of specific qualities including intimate ecological knowledge and implicit labor contracts. This research shows in what ways Netting's householder theory applies for subarctic agropastoralists.

KEY WORDS: Viliui Sakha; cultural ecology; circumpolar indigenous peoples; agropastoralism; post-Soviet.

INTRODUCTION

The transition from a communist infrastructure to a market economy presents a great challenge to indigenous agropastoralists of the former Soviet Union. The Sakha (Yakut) are a Turkic-speaking people today numbering

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approximately 360,000 and inhabiting the Sakha Republic of northeastern Siberia, Russia (Fig. 1).² Rural Sakha practice horse and cattle breeding, a subsistence strategy brought to the northern latitudes by their southern Turkic ancestors in approximately the fifteenth century (Forsyth, 1992; Gogolov, 1980, 1993; Ksenofontov, 1992). Tungus, most notably Evenk, and nonagropastoralist Sakha were the reindeer-herding inhabitants of the Viliui Regions prior to colonization by Sakha agropastoralists. Today rural Evenk, Even, Yukagir, and Dolgan are the other ethnic groups inhabiting the Sakha Republic. They herd reindeer, hunt, fish, and forage. Viliui Sakha inhabit the Viliui River watershed areas of the western Sakha Republic. They, along with the Sakha of the central region, make up the two ethnic enclaves of horse and cattle breeding Sakha, the highest latitude practicing agropastoralists in the world today. Sakha constitute the majority of the Viliui watershed where one third of the total Sakha population live.

Prior to the seventeenth century, Sakha practiced subsistence horse and cattle husbandry in relative isolation from the outside world. The centuries that followed saw increasing infringement by Russian colonists on Sakhas' lands and resource wealth. With the twentieth-century Soviet collectivization process, Sakha were forced to give up their traditional subsistence lifestyle, including their private holdings, and live in compact villages to work in some facet of the Soviet agroindustrial farming system. The early 1990s demise of Soviet power and the concomitant loss of those encompassing agrarian infrastructures presents Sakha with a variety of problems related to adopting new subsistence strategies in the post-socialist context.

In this paper I show that subsistence survival in the twenty-first century for rural Viliui Sakha is based on household-level cultural ecology, focusing on keeping cows and exchanging labor and products with kin (Crate, 2001). This paper takes up Robert Netting's smallholder-householder theory (1993). Netting argues that in times of change, the household system is the most resilient unit for subsistence production, having both integrity and longevity through ethnic, political, and geographic changes because of its specific qualities. First, the household is a repository of ecological knowledge with which its members are able to make the most effective use of resources on the basis of their intimate understanding of the specific microenvironments of their smallholding. Second, the household is a joint enterprise based in implicit labor contracts. Third, the bonds of

²For more detailed information on Sakha ethnicity and historical background see Balzer and Vinokurova (1995), Cruikshank and Argunova (2000, pp. 98–102), Tichotsky (2000), and Crate (2001).



Fig. 1. The Contemporary Sakha Republic, showing its location within the Russian Federation and, to the right, showing the location of the capital city, Yakutsk, the Viliui river, the Suntar regional center, and the two research villages, Elgeei and Kutana.

kinship, family, and household enact a strong work ethic and a specialization of work by gender to dependably fulfill the labor load of daily chores and seasonally specific bottleneck demands. Lastly, the implicit contracts bind household members in an innate social security system, providing for children and elders. As the household continues to function and pass the title of its operation on to its inheritors, generations move through a cycle of either the cared-for (children and elders) or the caretakers (youths and adults).

Netting describes parallels between the household and a corporate entity in that both maintain their own labor force, manage their own productive resources, and organize consumption for the household unit. The household generally also produces for subsistence and for the market, with at least one of its members involved in outside employment. The household has ownership or usufruct rights over its land base to maintain production.

How well does Netting's householder theory hold for subarctic agropastoralists? The Viliui Sakha case is fertile ground for testing Netting's theories for several reasons. Netting provides an overview of various householder systems throughout the world and explains his desire to conduct comparative research on householder systems in the Swiss Alps to "see a system that had persisted for centuries in an easily damaged environment of steep slopes, short growing seasons, and low rainfall" (Netting, 1981, 1993; p. 8). The present research with Viliui Sakha is also set in an easily damaged environment, in this case a subarctic ecosystem with extreme temperatures and short growing seasons. Much recent research in the circumpolar north analyzing how groups have adapted to recent historical changes also emphasizes the importance of household-level production (Caulfield, 1997; Nuttall, 1992, 2000; Ziker, 1998a,b). The present study also extends Netting's theories, in that he focuses on intensive agriculturalists, and I wish to show that his model potentially includes pastoralist societies. Lastly, the demise of the Soviet era, along with its imposed economic and subsistence infrastructures, presents a unique opportunity to understand what form households took in the precollective and collective eras, and what form they take today. This study is the first to apply Netting's theories in a post-Soviet context.

I begin by discussing the demands of keeping cows in a subarctic environment—in effect, the cultural ecology problem faced by the Sakha. Next I explain the research methods and analysis that lead to my central finding of the cows-and-kin system. Following this I describe the six most prevalent cows-and-kin household patterns, and illustrate how these cows-and-kin systems work with two case studies. I then analyze the Viliui

Sakha case in the context of Netting's householder theory. In conclusion, I discuss the future prospects of Viliui Sakha contemporary cows-and-kin adaptation.

HAVING WHAT IT TAKES: THE DEMANDS OF KEEPING COWS IN THE SUBARCTIC

In Viliui Sakha villages cows are not only *everywhere*, but they are *everything* to survival. Meat and milk products are the staple foods of the Sakha diet traditionally and today. If you keep cows, meat is in constant supply for daily soup and main dishes. Similarly, you have milk for tea, considered the only way to drink tea. With a supply of milk, you are able to produce all the Sakha milk foods.³ You also have a ready supply of milk for any young children in your own or neighboring kin households. Cows provide Sakha with their main subsistence source, but at a high cost.

Having cows is labor and time intensive. A time allocation analysis of cow labor shows that it is age and sex defined (Table I).⁴ Of the cow-keeping household members most typically involved in cow care, male elders spend one fifth of their waking hours in cow care, female elders spend one sixth, and male and female adults spend one tenth.⁵ A labor division with elders acting as primary cow caregivers would make sense in a society where male and female adult household members tend to have salaried positions and little time for domestic responsibilities. For Viliui Sakha household this is not the case. In the post-Soviet context there are many examples of households in which either one or both adult heads are unemployed. Despite this elders tend to perform major cow care until they are physically unable to do so, when adult members take over cow duties. Contemporary elders involved in daily cow care explained to me that they held the major responsibility for household cow care because they have done it all their lives, it gives them a purpose, and they are most knowledgeable at it. Non-cow-keeping households contribute labor to cow-keeping kin households, with most of this labor contribution coming during the summer hay season (see discussion below). Additionally, on an annual basis, adult and elder females of non-cow-keeping households spend one-half to 1% of their time in daily cow care duties of cow-keeping kin households.

³Sakha have 35 different foods they make from milk of which eight are most popular in contemporary times, including crème fraiche, butter, cream butter, whipped cream, kefir, *kymys* (fermented mare or cow milk), curds, and ice cream.

⁴The percentages in Table I are annual averages and so obscure the seasonal variance of labor.

⁵Female children spend an average of 1%, male children 0%, female youth 3%, and male youth 1% of their waking hours in cow care.

Table I. Time Allocation for Cow Care by Age/Sex

Age–sex of members and household cow status	% of annual time in daily cow care	% of annual time in hay production
Cow-keeping households		
Male elders (age 56+)	20	6
Female elders	17	3
Male adults (19–55 yrs)	10	8
Female adults	10	1
Male youth (12–18 yrs)	1	5
Female youth	3	1
Male children (4–11 yrs)	—	2
Female children	1	1
Average across age–sex of cow-keeping households	10	4
Non-Cow Households		
Male elders	—	3
Female elders	.3	—
Male adults	—	3
Female adults	.2	—
Male youths	—	—
Female youths	—	—
Male children	—	—
Female children	—	—
Average across age–sex of non-cow households	.5	1.5

Cow care has high seasonal variance. Summer is most labor intensive because of the need to harvest sufficient hay from natural meadows to over winter herds. Households need two tons of hay for each cow with a new calf to fodder them over the 9-month winter. For this the household needs the land, the tools, the labor, and the machinery to harvest and transport the hay back to their homes. Adult and elder males spend the most time haying, 8 and 6%, respectively for cow-keeping households, 3 and 3%, respectively for non-cow households. However, haying is a crucial activity and a major labor bottleneck so all household members are called to help, across the age–sex groups.

Although summer is a bottleneck for haying activity, it is the least labor intensive season for daily cow-keeping chores. In the temperate months from the end of May through early September, cows go to pasture each morning after milking, to return in the late evening for a second milking. Of the dairy-keeping⁶ households, summer cow care took from 2 to 4 h/day, depending on whether the cow tenders were young or elderly. Half of that time was spent in the straining, separating, and overall transformation of the milk into the various Sakha milk foods.

⁶By “diary-keeping” I am referring to those 11 households that kept economic diaries for me over the course of the research year. For a full explanation of this, see the discussion on economic diaries in the section “Research Methods.”

In winter, cows spend most of their time in a *khoton* (cow barn). Daily chores involve morning feeding, milking, and cleaning and hauling of manure from the barn, midday feeding, and evening milking, feeding, and manure cleaning and hauling. This daily cycle can take dairy households anywhere from 3 to 7 h of per capita labor. Most of the cold season cow care is taken up with manure management. Households make *balbaakh* by forming the fresh manure into compact symmetrical shapes, which freeze and are easy to transport, either in single blocks or in large columns. *Balbaakh* piles continue to grow through the winter. Some of the annual accumulation of *balbaakh* is used as fertilizer in household gardens. In late March, households arrange to have the bulk of their *balbaakh* hauled away, either to a village *balbaakh* dump or to a random location in the woods adjoining the village. In the winter months there are also bottlenecks, the most demanding when cows calve, increasing daily cow care time to a total of 5–7 h.

Subarctic cows also need good housing. Sakha keep cows in *khotons* (cow barns), the size of which depends on herd size to both maintain heat in the -50°C winter and prevent crowding. Barns are built with a certain cow number in mind. If your barn is too big, cows may freeze and if it is too small, calves get trampled. Some inhabitants remarked that they housed their cows at a kin household where their additional cows made the barn's internal temperature suitable for all. Adapting *khoton* size to the current number of cows can be an annual event and the majority of cow-keeping households spend some part of their summer rebuilding to suit their herd's needs. *Khotons* also require sealing with fresh manure. This is an annual activity, necessary to insulate the barn through the winter. Sakha reported that a proper sealing requires at least three layers, beginning with a 2-in. thick "primer" followed by a 1-in. second coat and a $\frac{3}{4}$ -in. final coat. This seasonal activity takes several hours a day for about a week to complete.

In the stacked bar graph below I compiled time allocation observations of cow care to show the annual cycle of all (seasonal and year-round) cow care activities except hay labor, which I left out of this plot to show activities directly related to cow tending. Peaks in the plot below show the increase in activity during spring calving and fall slaughtering. The dip in summer shows a period of low work intensity (Fig. 2).

Having cows and the daily care they require ties a household to their *khoton*. However, this is not considered an inconvenience since meat and milk remain central to survival and household-level production is, for most, the only way in the post-Soviet context to access cow products, in lieu of Soviet period regular salaries to purchase cow products and the access to cow products for purchase. Both the number of cow-keeping households and household herd size have increased in the post-Soviet era. Whereas in 1992, 10% of all surveyed households kept cows, and of those only one milk

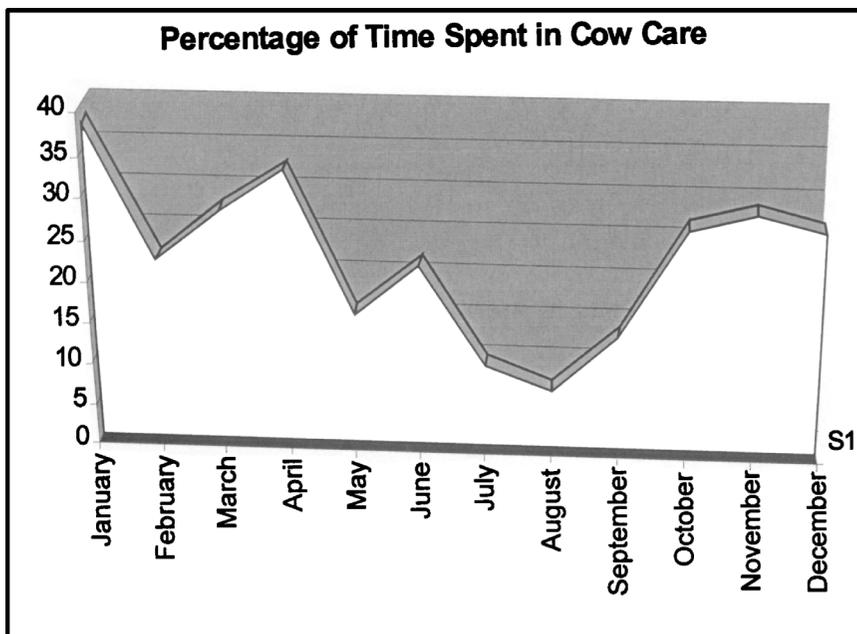


Fig. 2. Time allocation observations of cow care activities by month.

cow, in 2000, 55% of all households were keeping cows and the average among them was three milk cows.⁷ When asked why they keep cows most households said in order to have fresh meat and milk products, which they could not afford to buy otherwise and were no longer available for sale in village stores.

There is some local level cultural antagonism between cow-keeping and non cow-keeping households. Cow-keeping households consider themselves the hard-working “real” Sakha and they perceive non-cow-keeping households as lazy and transient. In contrast, many non-cow-keeping households explain that they presently do not keep cows precisely because they had not been raised in a cow-keeping household and are used to a non-cow household regime and diet. Most of them drink black tea and depend on wild game meats, including duck, rabbit, squirrel, reindeer, bear, moose, and water and wood fowl, for their protein source. Many of these non-cow-keeping households are however playing an active role in cow-keeping via their interdependency with a cow-keeping kin household. They supply much needed

⁷To a large extent the low herd numbers prior to the 1991 Soviet break-up was a carryover from policies of the Khrushchev era that limited households to keeping only one cow and calf.

labor during the summer hay-cutting bottleneck in exchange for a significant supply of bovine products from kin households.

In the broader context, contemporary Viliui Sakha cow-keeping is a mixed blessing. Cow keepers are locally revered as the true Sakha who are maintaining the traditions and are not fleeing the village for the “better life” in the regional center or capital. They maintain ties to the land to harvest hay and pasture their herds. The social status of being decidedly more Sakha is a positive attribute and a response to increased ethnic awareness in the post-Soviet setting. However, in the wake of the “new market economy” and overall economic restructuring, cow-keeping is considered by many a dead end occupation with no future prospects, despite its overwhelming centrality to contemporary survival.

RESEARCH METHODS

I collected the data for this study with Viliui Sakha households in Elgeei and Kutana villages of the Suntar region, Sakha, between July 20, 1999, and June 16, 2000, 8 years after the fall of the USSR.⁸ I used both qualitative and quantitative research methodologies that both fit my research question needs and seemed compatible with my research environment including household surveys, time allocation observations, household economic diaries, sequential elder life history interviews, archival research necessary to fill out the local historical record, and semiformal interviews with local, regional, and state specialists concerning issues of demography, history, ecology, politics, environmental degradation, and ethnology. I annotated all my quantitative data, drawing on my qualitative habits and an inexhaustible thirst for details. For the purposes of analysis, I will detail the methodologies relevant to the research described in this paper. (For analysis and discussion of the other research methods, see Crate, 2002a, 2002b, 2003a, 2003b, 2004.)

I administered a survey to a random sample of 30% of all households in both villages ($n = 289$) for economic, demographic, genealogical, historical, agricultural, and environmental data. This produced the source data used to test my original hypothesis and to develop a supplementary survey to further test the cows-and-kin theory.

To both complement and give the survey data depth and breadth I recorded time allocation observations of all household members in the random sample and kept economic diaries with a representative sample of 11 sample households. My time allocation field method is based on the model

⁸My field research time fell short of one year due to travel restraints that limited my family's leave from the United States to less than one year. Because of this there is one month of data missing from the annual cycles constructed from household surveys, time allocation observations, and household dairy records.

described by Borgerhoff Mulder and Caro (1985) and my activity codes are based largely on the parameters set by Johnson and Johnson (1988). I located my observations in the households themselves mainly because household members could be found in their household or nearby vicinity most of the year, due to the subarctic environment. I made observations every sixth day, to maintain an even representation of the 7 days of the week over the course of the year, each day making rounds within one of seven blocks of 30 households within the 30% random sample in Elgeei ($n = 210$).

For the economic diaries I chose households that I interpreted as representing different levels of home food production and a diversity of household make-up. A head from each household kept daily records of production, consumption, expenditures, informal exchanges, kin interaction, and menus. I met with each diary-keeper every 2 weeks to review progress and record changes and new developments.

I had the great advantage of working in my base village for the eight years prior to my dissertation research and so I was known to most inhabitants and myself familiar with the rhythms of daily village life. I also knew both the native Sakha and Russian languages. This all factored in to my choice of methodologies and the time frame within which I estimated I could accomplish my schedule of data collection.

DATA ANALYSIS: GETTING TO COWS-AND-KIN

My original hypothesis assumed that households could be placed on a continuum of home food production ranging from “neo-traditional” to “market-oriented.” I predicted that household position on that continuum would be a factor of what I called “Soviet standing.” My premise was that when the Soviet Union fell, and local state farm operations disbanded, state farm resources were unequally distributed with the majority of state farm wealth allocated by the local Soviet elite to themselves and their constituents. Therefore, household wealth would be one factor affecting a given household’s place in the Soviet hierarchy, or Soviet standing.

I assumed that those who fell closer to the “neo-traditional” pole would rely on indigenous Sakha lifeways, including household-level food production based on strong interdependent kinship relations and local ecological knowledge, and a desire for private land ownership. The indigenous knowledge intrinsic to these lifeways was passed down from ancestors who were successful agropastoralists in pre-Soviet times, but who lost their private holdings with the advent of Soviet power.⁹ The generations to follow

⁹I use the term “indigenous knowledge” because it includes knowledge that is not just “traditional,” or TEK (Wenzel, 1999), gleaned from oral histories and describing the past, but also includes contemporary knowledge (Stevenson, 1996, p. 280).

maintained a central reliance on the ancestral lifeways with minimal participation in the local Soviet infrastructure. This disadvantaged them when, at the time of Soviet dissolution, state-owned resources were redistributed into private control.

Those tending toward the market-oriented pole, or of “high” Soviet standing, would depend minimally on home food production since they were in a position to buy their food products and, still being part of the employed sector of the village, would have little time for home food production. In the contemporary context they would live in relative independence of their kin networks and ancestral lifeways. Historically their ancestors would have been less successful in pre-Soviet times and therefore had everything to gain from the Sovietization process. They held positions of power during the Soviet period, which proved advantageous when they were in a position to make the local decisions regarding privatization of state-owned resources when the Soviet period ended.

Testing the Hypothesis of Soviet Standing

To test the feasibility of my original hypothesis, I conducted a preliminary data analysis of the first round of household surveys. I created a measure for Soviet standing by scoring households for contemporary and Soviet period membership in the communist party and komsomol, the communist youth league. Likewise, I assigned households a home food production score by valuing the various forms of domestic and wild food production.

I found my hypothesis only partially accurate. Households with members who were formerly part of the local Soviet elite did have more “wealth” and resources. However, this did not result in those households moving away from home food production. In most cases it meant they were equally and often more involved in home food production for subsistence and for market, because their “wealth” was in exactly the resources needed for food production: access to adjacent and plentiful land,¹⁰ farming equipment, *BX* farming status,¹¹ and the expertise they carried over from their work on the state farm. Additionally, households that ranked “low” in Soviet standing did not consistently depend on home food production but were diverse in

¹⁰Land remains state property and is allotted according to household or peasant farming status. In Elgeei in 2000 each household head was allotted 1.5 hac and each peasant farmer 8 hac. For analysis and discussion of Viliui Sakha land issues, see Crate, 2003b.

¹¹*BX* is the shortened form for *Bahanai khozaistsvo*, or peasant farming cooperative. The majority of these groups were formed in direct response to the state farm disbanding and were organized by former farm workers who had some clout within the local hierarchy. These groups enjoy a number of perks including the use of considerably more land per member (8 hectare per member in comparison to the 1.5 hectare per inhabitant household), tax relief, subsidies, first dibs on machinery and supplies, etc.

the extent of that production, with some households involved in all facets of home production and others not at all involved.

In response to these findings I abandoned my original hypothesis and reflected on the knowledge base I had after completing 289 surveys and eight years of participant observation to hypothesize what *did* constitute the post-Soviet pattern of household food production. I asked what *is* the common predictor of high household food production? The answer was *cows*. That led to the next question, how *did* cowless households access their cow products? By and large my data showed that this happened via their kin networks. On the basis of these new assumptions I developed and administered a 1-page supplementary questionnaire delving specifically into the cow and kin characteristics of households.

RESULTS: INTER/HOUSEHOLD COWS-AND-KIN DEPENDENCIES

Using data from the original and supplemental surveys, I determined how each household maintained a supply of cow products. I defined several common modes of acquisition. Households could be classified by having “reciprocal,” “one-way” or “non-kin” dependence.¹² *Reciprocal dependence* is based on either having cows and providing meat and milk products in exchange for labor in the haying season or supplying labor in the haying season in exchange for year-round products. If a household is not reciprocal dependent, I next determined if they had *one-way dependence*, meaning that they either received cow products from kin with no direct exchange of labor in return or gave products to kin expecting no labor in return. If neither a reciprocal or one-way dependence was operating, the household either had cows and was internally independent by having both cow tenders and hay laborers “in house,” or had no cows and either went without or purchased all the products they needed from non-kin sources.

Figure 3 shows how kin-based distribution via these types of inter-household dependencies indirectly increases the overall household-level food production for the villages by evening out the distribution of cow products among households. Two thirds (63%) of all households are supplied with milk and meat products from their own cows. However, if household supply includes both household production and interhousehold distribution, 90% of all households are supplied.

¹²I use the term “reciprocal” to contrast this interhousehold dependency from “one-way” and “non-kin” to clarify that it is only in these dependencies that households conduct an exchange of resources, in this case, labor for products. My intent is not to call up the more elaborate discussion of reciprocity covered by Sahlins (1972, p. 188–275).

Access to Cow Products

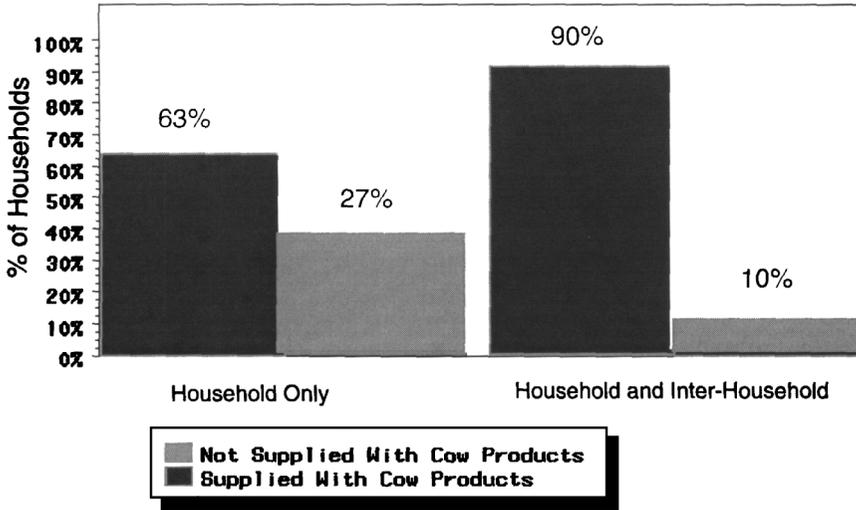


Fig. 3. Access to cow products.

When type of reciprocal dependencies is broken down (Fig. 4), I found 29% of all these households depend on receiving kin labor in exchange for products, one fifth depend on receiving kin’s cow products in exchange for labor, and 4% both have cows and depend for labor and products. On average, in both villages 15% of all households surveyed had one-way dependence, with half of those on the receiving end, one fourth on the giving end and the remainder both receiving and giving with no expected reciprocation. Households with no reciprocal or one-way dependence are either internally independent or have no interhousehold interaction, the latter case due to having no kin in the immediate village, or not to being on sociable terms with the kin they have. Across the two villages, of the households with no reciprocal or one-way dependencies, 2% go without meat and milk products and 8% purchase and barter. Twenty-two percent of all households in both villages are “independent,” meaning they are self-sufficient in producing meat and milk by having an ample labor force in-house for haying and cow-tending. Besides these village-level interhousehold relations, there are also many households who routinely send products out of the village, most often to cowless kin either in the regional center, Suntar, or the capital, Yakutsk. One fourth of all households surveyed send products.

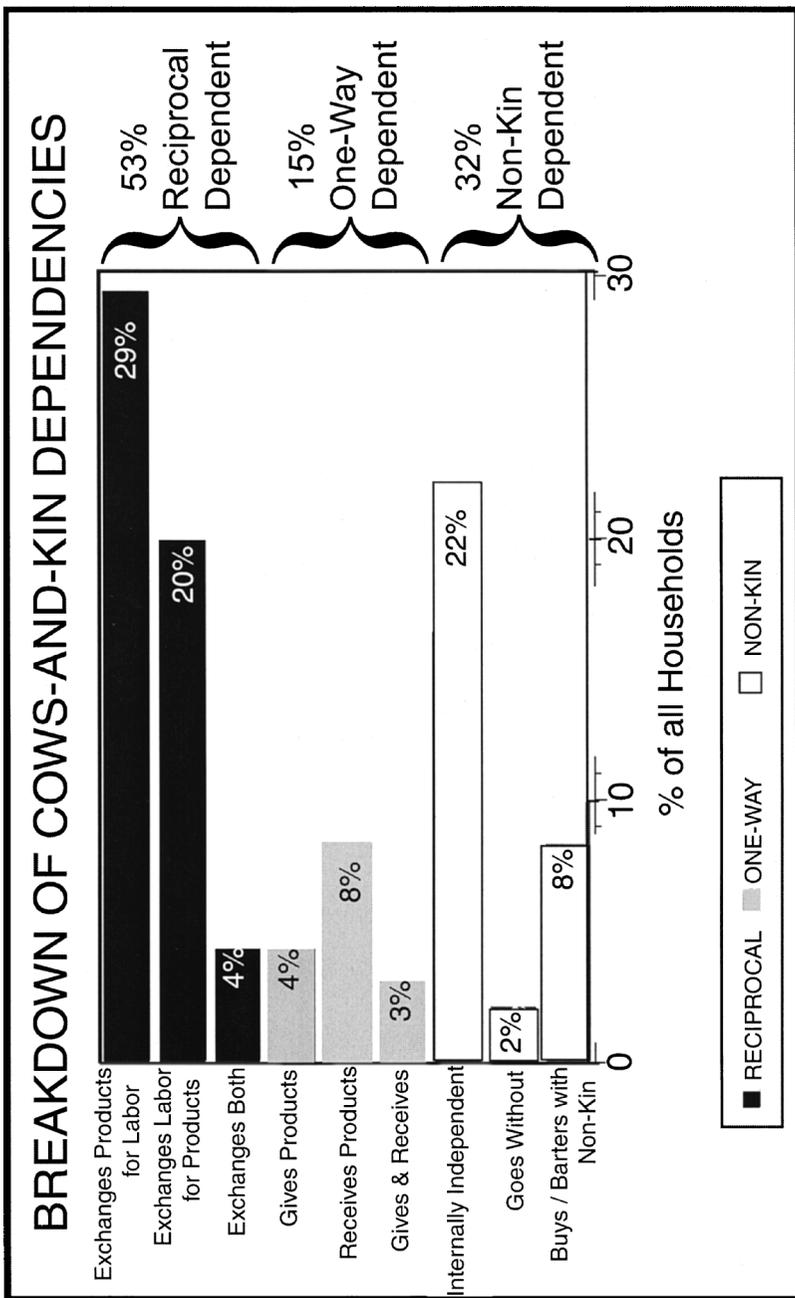


Fig. 4. Breakdown of cows-and-kin dependencies.

THE CENTRALITY OF KIN

For the majority of contemporary Viliui Sakha households, kin, like cows, play a major role in subsistence. Almost all of the households surveyed said they have close kin (parents, grandparents siblings, cousins, aunts, and uncles) in their immediate village. Over half of these are sibling or parental relationships. When asked how it would be to live without their kin, over half (57%) of all household surveyed said their lives would be difficult or significantly changed without their kin (Table II: first four responses). The remainder were either independent and not needing any outside help or they relied on friends or monetary resources.

The centrality of kin is not a new development. Traditional Sakha proverbs, still standard fare in contemporary conversation, emphasize the long-standing reliance on kin. One popular saying when discussing kin is, *Aimaakhtaakh siljar ere kihi buoluo*, meaning literally, “Only the person who has kin can call themself a person.” Another is, *Oiuurdaakh kuobakh oiuurtaan tuspet*, literally translated, “the rabbit in the woods is not shot down,” meaning if you have kin all around you, you will survive. Such references to kin are common in other pastoralist cultures. A colleague conducting research in Outer Mongolia quoted a Mongolian saying she first heard from her grandmother, *Hun nembel huns nemne*, or, “As your people increase, your food increases” (personal communication, Manduhai Buyandelgeriyn).

Kin are the main operative ideology of intracultural relationships for the majority of world cultures (Collier & Yanagiasko, 1987; Engels, 1985;

Table II. Attitudes Toward Kin Relations

How live without kin?	Elgeerii (#)	Elgeerii (%)	Kutana (#)	Kutana (%)	Both (#)	Both (%)
Could not survive w/o their help	38	18	26	33	64	23
It would be very difficult w/o them	20	10	9	11	29	10
Could-but with kin better—only kin help	34	16	11	14	45	16
Can not live w/o helping and getting help	21	10	3	4	24	8
Could manage—could pay for all kin do	5	2	0	0	5	2
Could—do not depend on kin at all now	63	30	23	29	86	31
Could—do not depend and have friends	19	9	7	9	26	9
Could—we only give to them, we are fine	2	5	0	0	2	1

Faubion, 1996; Goody, 1990; Morgan, 2000; Needham, 1971; Schneider, 1984). Similarly, kin that serve as a major source of household labor and exchange goods is nothing new to Sakha or other cultures across the world (Chayanov, 1986; Humphrey, 1998; Netting, 1993; Schweitzer, 2000; Wilk, 1997). What is interesting and compelling about Viliui Sakha kin relations is understanding the extent to which kin networks have had a central function over time *and* the extent that kin networks are being utilized anew after a long period of political oppression of such social relations, economic abundance, and relative stability.¹³

Despite the apparent utility of kin in the contemporary Viliui Sakha context, kin is not valued by all. Since the fall of the USSR kin relations are often strained, largely a result of the growing gap between “haves” (meaning those with all or any combination of cows, resources, salaried jobs, and high home food production) and “have nots” (meaning those without any of these), and the unprecedented rise of alcoholism and crime. Of the households surveyed, the “haves” complain that they are seeing too much of their “have not” kin. “Have nots” complain that their “haves” kin are cutting them off. Many inhabitants referenced a kin proverb expressing antagonism, *Uu chugaha, uuru yraakh*, translating literally, “Keep water close and kin/in-laws far.” I heard several interpretations, the most popular was, that water is essential for life and it will not deceive you or be offended—so it is safe and important to live near water. Kin, however, are deceptive and offensive so it is best to keep them at a distance. Clearly antagonism toward kin is nothing spurred by the post-Soviet times but, similarly to the congenial post-Soviet kin relations, has also been revived in the last decade. For the most part these antagonistic relationships exist between “haves” and “have nots” outside the context of exchange within the cows-and-kin system.

How do inhabitants themselves perceive the reemergence of kin relations since the Soviet break-up? Half of all surveyed said there has been no change and that they interact with kin to the same degree they did in the Soviet past. Almost one third said there was more kin interaction now because of the need to help each other to survive, especially as the division of “haves” and “have nots” grows. The remaining one tenth said there was more kin interaction in the Soviet period when everything was inexpensive and all could afford to house and feed each other.

Despite the attitudes, proverbs, and cultural orientation of contemporary Viliui Sakha towards their kin relations, kin remain essential to most inhabitants for productive resources, most clearly witnessed by the frequency

¹³The Soviet period was marked by a deliberate policy to break down “clan survivals” (*rodovyye perezhitki*) by separating kin households within and across villages (Humphrey 1998, p. 283).

Table III. Percentage of Households That Share Based on Household Survey Data (Reported)

Product category	Elgeei # households	Elgeei % share	Kutana # households	Kutana % share	Both # households	Both % share
Cow products	124	65	63	92	187	79
Horse products	42	69	26	88	68	79
Pigs and/or chicken products	42	26	21	33	63	30
Garden produce from gardens	147	53	62	56	209	55
Berries from foraging	137	81	58	86	195	84
Ducks from hunting	126	58	60	66	186	62
<i>Sobo</i> from fishing	109	75	61	85	170	80

of interhousehold kin sharing (Table III). One third of households keeping pig and chickens share these products with their kin. Of those with gardens, a little over half share their garden produce with kin. Eighty-five percent of households who forage for berries share their berry crop with kin. Similarly, over half of all duck hunting households share a substantial portion of their ducks with nonhunting kin households. Over three fourths of *sobo*-fishing households share their catch with kin.

Sharing among kin households is not limited to food production resources. On the basis of survey results and household economic diaries, monetary resources are also shared, most often in the form of elder pensions redistributed to young kin households. Money is in short supply in the villages with paychecks and other subsidies arriving several months late. Elder pensions, so far, are received on time and are regularly reallocated among most cows-and-kin networks.

COWS-AND-KIN IN CASE STUDIES

There is a lot of variation within cows-and-kin exchanges largely due to differences in household make-up, access to resources, and kin relations. I identified six main patterns. (1) Household type A is a young to middle-aged family, with one or both sets of individual parents also resident in the immediate village. The parents perform the daily tasks of cow keeping, supply the children’s household with meat and milk in exchange for all or part of the labor required to cut, stack, and haul the hay to overwinter those cows. (2) Household type B is a young to middle-aged family whose parents may be present in the village but are too old or unable for health reasons to tend cows. The children keep cows and provide the parents with all their meat and milk. (3) Household type C is a young to

middle-aged family with one elder parent living with them who performs all or most of the cow care on a daily basis and the children perform all the heavy work of haying. (4) Household type D is a group of siblings who never married and whose parents are deceased. Their oldest female siblings, who were taught cow care and were responsible for taking over the cow care in the household they all were brought up in, live in the village with their own families and tend cows. The sibling households get all their meat and milk from the cow-keeping households in exchange for performing most of the heavy labor involved in haying. (5) Household type E is a young to middle-aged couple who both work and whose parents live in nearby villages where they were brought up. They get all their meat and milk from these parents and spend the summers commuting to their homelands to cut all the hay for their parents. (6) Household type F is a young couple with cows and a parental household(s) in the village also with cows. Despite their ability to produce independently (having their own cows and labor “in-house”) they interact with the elderly households to supply labor in the summer and to receive extra resources to make ends meet.

To provide a sense of how cows-and-kin works I will now discuss two cases, one that shows the essential cows-and-kin pattern and another that shows nascent entrepreneurial activities within the cows-and-kin framework.

HOUSEHOLD TYPE A: YELLI'S HOUSEHOLD

The first cows-and-kin pattern is a young household dependent on a parental household for cow products in exchange for labor during the haying season. In this example Yelli (age 28) lives with her husband Sasha (age 31) and two young daughters, aged 4 and 7, (Fig. 5: Household 1) in a new house on the village perimeter. She and her husband both have full time jobs, she is a dance choreographer at the village culture center and he is a local fireman. One of Yelli and Sasha's children attends preschool, the other elementary school. Both Yelli and Sasha's mothers live in the village center, convenient to day care, school, and work places. Yelli and her family spend most of their time when not at work or school, at Yelli's or Sasha's mother's house. Yelli and Sasha's mothers not only supply the young family with all the meat and milk products they need, but also provide childcare and regular meals.

Yelli's mother, Rozalia (age 62; Household 2), is the main supplier of cow products to Yelli's household, with a majority of those products given in the form of daily meals. Rozalia keeps 5 milk cows or a total herd of 12 cattle. One is her own, three belong to each of her three children, and the

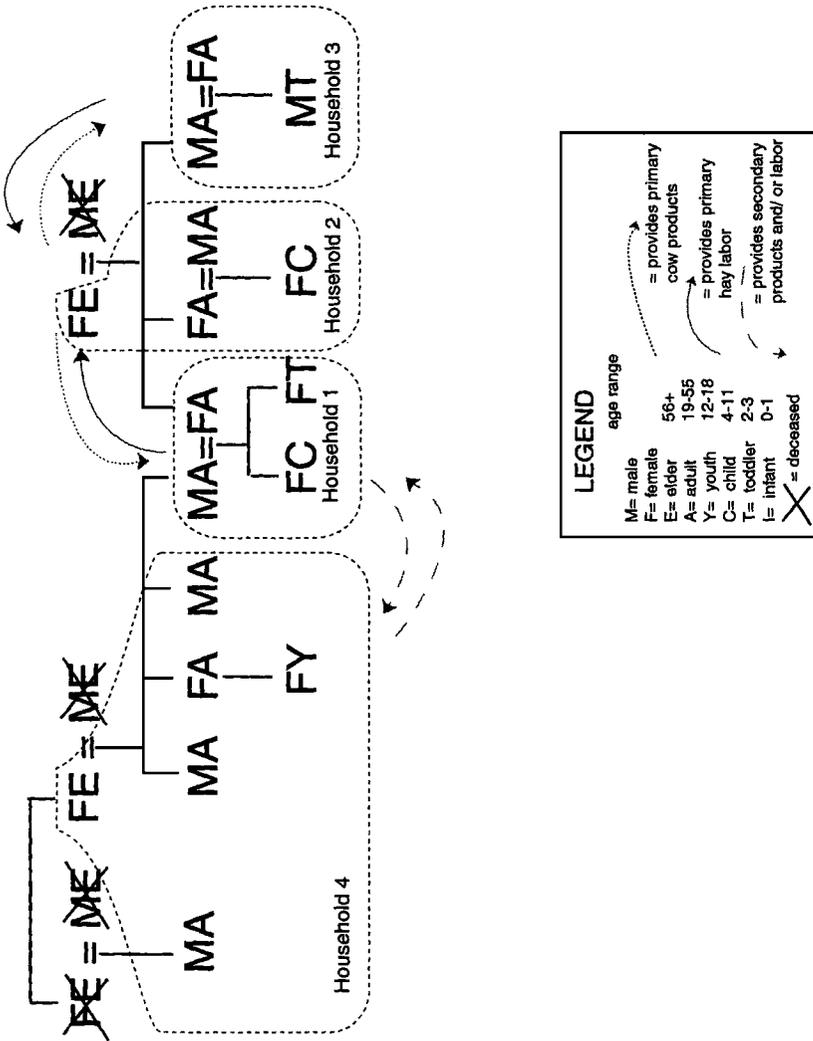


Fig. 5. Yelli's cow-kin cluster.

last one is owned by her late husband's brother, whose wife, the household cow-tender, died several years ago. This brother-in-law provides the tractor needed to care for all the cows in exchange for Rozalia's daily tending of his cow. Yelli's cow, not unlike the cows belonging to her sister and brother, was a gift from Rozalia upon marriage. The mother continues to give her children the gift of daily care and tending for the cows. Each child's cow produces a calf annually which, when slaughtered after 2–3 years, provides a year's worth of meat for a family of four. With the meat from an average cow slaughter at 160 kg, this represents 526,400 kcal. For Yelli's household, this is one fifth of their annual total kcal requirement. But Rozalia also gives daily meals to Yelli's family of four which supplies the majority of Yelli's household's total kcal needs. Rozalia lives with Yelli's sister, husband and two small children. Yelli's brother also has his own household (Household 3) in Elgeei but, like Yelli, depends on the mother for all his meat, milk, and daily meals.

Rozalia spends from late May until the end of August at her *saylykh* (summer home), located 7 km from the village. Rozalia purchased the summer house in 1994 for 1000R (U.S. \$40), which, she said, "was a lot of money back then but I can't live in the village in the summer—at the *saylykh* the air is fresh and my kids come there daily—they can't live without me and the *urung as* (white or milk foods)." She not only maintains the cow herd and chickens throughout the summer, but also grows all the potatoes and greenhouse vegetables for her and her children's households. In exchange, Yelli and her families, along with her sister's and brother's families, cut all the hay that Rozalia needs to over-winter the families cow herd.

The balance of Yelli's household's annual kcal needs comes from Sasha's mother's household (Household 4) consisting of his mother (age 68), three of her five children including two sons (ages 35 and 42) and a daughter (age 40), and an orphaned nephew. The household keeps five cows and, because the mother is feeble, relies on one daughter to perform the daily cow care. The two sons have a membership in a village *BX* (peasant farming cooperative), and supply all the household's tractor needs and access to ample hay land for fodder. The five cows produce meat and milk mostly for the consumption of their immediate household and for another daughter's household in the village. Yelli's family only relies on this household for childcare and occasional meals. They participate marginally in the hay season, since the two brothers readily supply all the hay needs to the household through their *BX* cooperative.

Yelli's cows-and-kin pattern shows how these households are able to negotiate among themselves to maximize the meeting of kin household needs with available labor and resources.

Household Type F: Katia's Household

The sixth cows-and-kin pattern is a young family with a parental household(s) all of whom keep cows. The elderly kin or parents' household(s) are dependent on the younger household(s) for labor help during hay cutting season. This pattern is the case for the two generations of Spiridonovs (Fig. 6).

Arcadii and Katia (aged 30 and 32, respectively) live with their three young girls, ages 9, 6, and 5 (Household 1). They keep cows and chickens, grow a home garden, and forage, supplying most of their household's needs. They keep two milk cows which supply them with ample meat and milk for their household, and for sharing and selling. Over the year they produce an average of 5000 l of milk from which they make 200 l of *suugey* (creme fraiche), 100 l of *sorat* (yogurt), 200 kg of *yejegei* (curds), and 200 l of *kymys* (fermented milk). They slaughter two cows annually, one for their own eating and sharing with kin or *kehii* (a house gift) and the other to sell, in part to finance Katia's two trips a year to Moscow for therapy for their invalid child.

Both Katia and Arcadii are avid gardeners and produce all the vegetables they need. They eat this produce all year, either fresh from the garden, preserved in the form of the annual 40 or more gallon jars of pickles, marinated vegetables, dilled carrots, and canned tomatoes or, from the five bushels of root crops, including carrots, beets and turnips, that they store in sand in their cellar. The area of their backyard that is not taken up by cow pen and hay stacks is a potato field which produces an annual average of 350 kg, half of which they use within their household. The rest they either share with kin or sell.

To supplement home food production Katia and Arcadii hunt, fish, and forage. They use most of their berry forage within their household as an essential source of vitamins for their young children. Over the 2000 diary year they shared 25% of their hunting and fishing resources with kin households.

Although Arcadii and Katia are relatively independent in terms of their home food production, they do depend greatly on their parents (Households 2 and 3) for other needs, first and foremost, childcare. Arcadii and Katia both work full time and both go away each year for 6–8 weeks at a time. Since Katia's mother is 15 years older than Arcadii's parents they limit childcare requests from her to last resort needs. Over the course of the diary year, Arcadii's parents provided 92 days of childcare, on some days caring for all three girls.

Katia's mother (age 73) lives in Elgeei with Katia's twin brother, his wife and their infant (Household 3). They are relatively independent, keeping two milk cows, using the majority of the products within their immediate household, and performing the bulk of the annual hay cutting themselves.

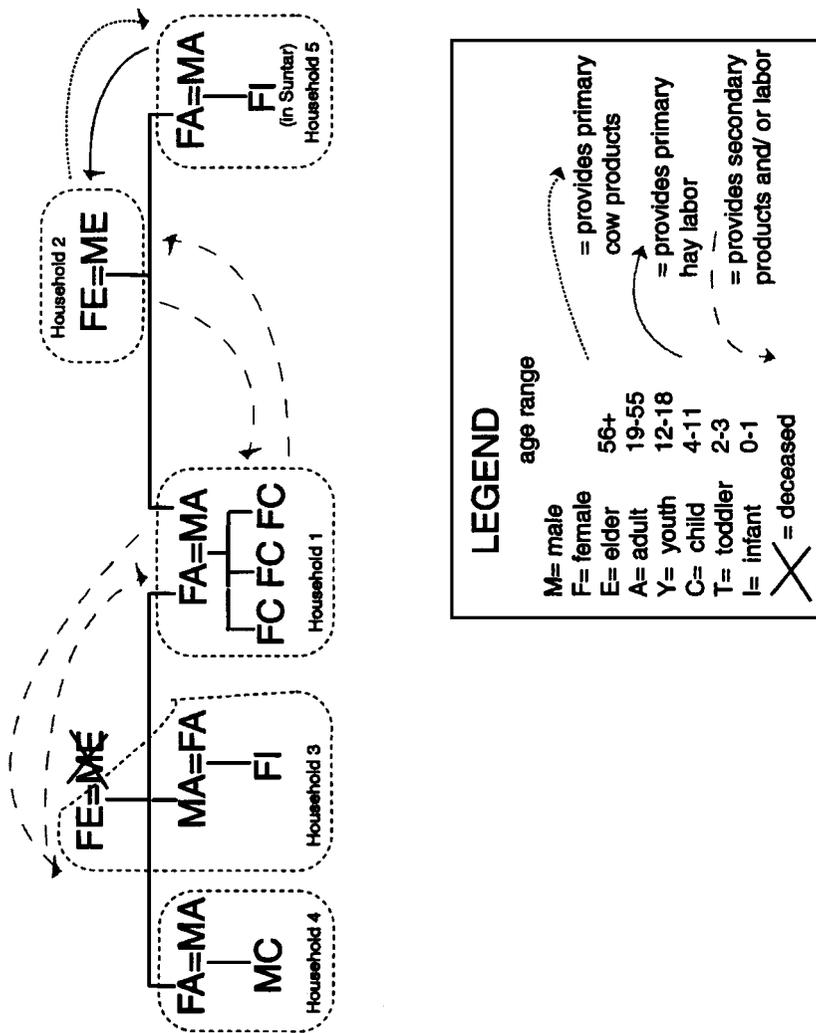


Fig. 6. Katia's cow-kin cluster.

Interaction with Katia's household is only occasional, mostly because the households are located at opposite ends of the village, inconvenient to daily foot travel to and from work and schools.

Arcadii's parents, Nikifor and Tania (aged 60 and 58, respectively), are independent for home food production (Household 2). However, they depend more and more each year on Arcadii's help during the summer hay season. Arcadii's parents grow their own vegetables and raise all of their own meat. They have 2 milk cows and 15 chickens. They slaughter two cows annually, of which they eat three legs and send one to their daughter, Maria, in Suntar (Household 5). Their two milkers produce approximately 5000 l of milk a year. From this milk Tania and Nikifor make a wide variety of milk foods for their household and for commercial purposes. The other cow they sell.

Nikifor is an active fisherman. He leads two village fishing brigades, one to trap *sylyhar*, or burbot (*Lota lota*), a bottom-feeding anadromous river fish, and one to *mungkha*, or to sweep net the lakes in winter for *sobo*, or crucian carp (*Carassius carassius*). In the temperate months from late May to early September Nikifor regularly checks his *ilim* or standing net for *sobo*. Table IV shows the annual tally of Nikifor's 2000 fish harvest, how he allocated that harvest, the time he spent, and the income realized. In addition to being active foraging resources, Tania and Nikifor purposely produce excess animal and vegetable products to sell or barter. They sell about 30% of the milk, meat, fish, and garden products they produce. These transactions can as much double their income in a given year. Table V shows Tania and Nikifor's annual 2000 income broken down by source.

Commercial sales give Tania and Nikifor an income substantially higher than most Elgeei households. They share their excess income with their children. Arcadii's sister Maria lives in the regional center of Suntar where she took a job in 1998 with the regional statistics bureau. Recently her parents bought her a one-bedroom apartment for 55,000 rubles (U.S. \$1965) plus

Table IV. Nikifor's Annual Fishing Activity for 2000: Totals Harvested, Use Allocations, Time Spent, and Income

Category	Sylyhar	Sobo-Mungkha	Sobo-Ilim	Totals
kg caught	67.5	396	300	763.5
kg to kin	30	111.5	76.5	218
kg sold	20	181.5	105	306.5
kg to household	17.5	66	113.5	197
kg to chairty	—	33	—	33
kg for barter	—	—	5	5
Total hours	50	150	116	316
Total income	845 rubles (U.S. \$30)	2450 rubles (U.S. \$88)	2486 rubles (U.S. \$89)	5781 rubles (U.S. \$207)

Table V. Tania and Nikifor's Total 2000 Income Broken Down by Source

Income source	Annual amount	% of total income
Tania pension	17,820 rubles U.S. \$636	24
Nikifor pension	17,460 rubles U.S. \$624	23
Nikifor salary	8500 rubles U.S. \$304	11
Total pensions and salary	43,780 rubles U.S. \$1564	58
Meat sales	10,450 rubles U.S. \$373	14
Daily sales from home	3815 rubles U.S. \$136	5
Suntar sales	8420 rubles U.S. \$301	11
Fish sales	5781 rubles U.S. \$207	8
Special orders: berries	800 rubles U.S. \$29	1
Special orders: milk foods	2650 rubles U.S. \$95	3
Total sales	31,916 rubles U.S. \$1140	42
Total income	75,696 rubles U.S. \$2703	100

about 10 days of the father's time in negotiation and apartment renovations. Tania and Nikifor consider this their expected duty to their daughter. They had done the same for Arcadii's family, by supplying all the materials and organizing all the labor to build their house and set them up with a cowherd and chickens. In Maria's case, she needed affordable housing in the regional center close to her work at the statistical department.

One of the main obstacles to most households when they consider producing to sell, like Tania and Nikifor do, is access to a market. Most village households fill their product needs in the cows-and-kin mode, leaving only a small local population in need. Even if there are households needing products, they usually do not have money to buy them with since salaries and subsidies are often months late. For these reasons, Nikifor travels to the regional center, Suntar, to tap the market there, going first to the regional administrative buildings to peddle their wares then to the local stores to sell the remainder.

In addition to giving most of their financial resources to their children, the elder Spiridonovs give their human resources. In addition to childcare, they secure raw materials for ongoing building projects, distribute food products from fishing, hunting, domestic animals, gardens, and foraging, and negotiate hay land rights for their kin networks.

These two cases exemplify the cows-and-kin dependence of Viliui Sakha post-Soviet adaptation. The extent to which resources flow between these two cows-and-kin cases is the norm for the majority of contemporary rural Viliui Sakha households.

COWS-AND-KIN AND NETTING

Viliui Sakha households possess salient cultural ecological features detailed by Netting. First, Viliui Sakha households are a repository of ecological

knowledge, allowing members to make effective use of resources based on intimate understanding of the local microenvironments. Since the end of the Soviet period the focus of Viliui Sakha survival has gone from dependence on the socialist infrastructure for employment and consumer goods to dependence on household-level production. Whereas in 1992, 10% of all surveyed households kept cows and of them only one milk cow, in 2000, 55% of all households were keeping cows and the average among them was three milk cows. To accomplish this, Viliui Sakha depend on an ancestrally known landscape for their usufruct land holdings and on centuries-old knowledge pertaining to horse and cattle husbandry in their subarctic environment.

In the context of Netting's householder theory the cases show how Viliui Sakha households are analogous to corporate entities because they maintain their own labor forces, manage their own productive resources and organize consumption for their household units, both internally and with dependencies between kin households. Viliui Sakha households produce first and foremost for subsistence, with some involved in nascent entrepreneurial activities for the market. The majority of households have at least one member involved in outside employment. Viliui Sakha households have usufruct rights over their land base (hay meadows, garden sites) to maintain home food production. Most Viliui Sakha households are restricted to a ration of hay land as well as the limitations of their immediate household yard for growing produce. The households who raise animals and grow produce as a sole means of income are able to do so because of special allotments of land (*BX*) given to certain individuals when the Soviet regime fell. This makes a difference because if more households desire to move into market production, they will need access to more land, specifically to harvest more hay and to grow more gardens. Overall, in the post-Soviet context, Viliui Sakha have moved to household-level production with their households possessing many of the characteristics that Netting describes.

Another aspect of the household-as-joint-enterprise is the implicit contracts that bind the household members. Viliui Sakha households and their kin networks function efficiently on a daily basis, caring for their herds, engaging in food production tasks, seasonally harvesting hay and other consumption resources, foraging for wild foods, and slaughtering. Because of renewed kin interdependence, 35% of all households, those that have no cattle, are supplied with cow products. With exchange a total of 90% of all households are self-sufficient for their milk and meat needs. The remaining 10% make enough money to buy their cow products. This cows-and-kin adaptive pattern also is the key to survival in nearby Kutana village, a former sector of the Elgeei state farm.

On average, a household of four needs an average of two milk cows or a herd of five or six head total to supply its daily needs of meat and milk.

However, to keep a herd over the 9-month subarctic winter, each household must harvest an average of 2 tons of hay per cow and new calf. The majority of households depend on kin labor to realize this production.

To a large degree the efficiency of the household is credited to specialization by gender. This tendency is best exemplified in Viliui Sakha labor specialization during the intensive summer period. During this time males spend their waking hours cutting and stacking hay while females are busy foraging for wild berries and plants, tending the home gardens and greenhouses and keeping the herds when they return from daily pasture in the late night.

Netting states that households do not live in isolation from important external markets. This is also the case for a small group of Viliui Sakha. About 10% of all households generate substantial income through entrepreneurial efforts marketing garden and greenhouse produce, meat and dairy products, and traditional crafts, all with a grounding in the essential cows-and-kin knowledge. In one sense the contemporary trend of cows-and-kin survival strategies is a return to the pre-Soviet reliance on animal husbandry, haying, foraging, garden production, and interhousehold clan dependence. On the other, it reflects a society's ability to adapt to modernity by appropriating seemingly "old-fashioned" lifeways to respond to contemporary trends such as market forces and globalization.

The cows-and-kin system is based in implicit contracts among kin groupings within a home village, less frequently among adjacent villages. Most typically this involves a parental household which performs the daily tasks of cow care, and one or more children's households who perform the intensive bottleneck labor of the summer hay harvest. In all cases task specialization is determined by gender and age. This is clear by looking at time allocation data. Work is performed as it needs to be done by those most able or most available. Other household members perform the tasks that remain to the best of their ability. These cows-and-kin systems epitomize Netting's points regarding the social safety net provided by household systems. Typically elders perform cow care, maintain household herds, and supply dependable income from pensions. As they age and can no longer perform these duties, the children assume cow care tasks and supply their aging parents with products. The household wealth, in the form of the cow herds and land rights, is passed on to the adult children who in turn assume caretaking responsibilities of the parents and whose children begin entering the labor force to participate in the hay harvest. Although in the Elgecii village we see many single-parent and nuclear family households, the households most involved in home food production are either internally multigenerational or function this way on an interhousehold basis.

In the case of Viliui Sakha, the dependence on kin for necessary labor is integral to subsistence survival. The personal knowledge investment and the trust inherent to kin networks is key to the daily negotiated labor demands of the food and resource activities that are crucial to Viliui Sakha survival. Households have neither the material resources to buy labor nor the time to train and manage outside laborers. It is during the summer bottleneck of labor, especially the high demands of hay production, when we see just how efficiently the kin networks function for Viliui Sakha. Characteristically kin groups coordinate their efforts to work their various hay plots through the initial cutting to the final stacking. Decisions are made on a day to day basis in accordance to the local conditions of the various hay fields and the weather. Additionally, these kin groups either pool their own or negotiate with others for the use of technology (i.e., tractors and their haying attachments) and necessary resources to realize their hay harvests. Kin are also essential as a means of pooling land resources in the resource-scarce subarctic environment.

Household production is a matter of balancing labor and need. In most of the cases where these are imbalanced (less labor and greater need or more labor and less need), kin often provide the compensating factor, supplying labor and resources or receiving surplus products. In several cases in which households are producing above and beyond their household needs, they sell the surplus for a profit. Even here the household member labor force is used to its maximum as well as the available kin labor force. The latter is compensated with products or labor in return.

Because Netting's theory fits well in Viliui Sakha contemporary context, I argue that it can be extended beyond "intensive agriculturalist" household systems on which he focuses to include intensive pastoralists. Viliui Sakha are agropastoralists who rely on the harvesting of substantial fodder in the brief summer periods to over-winter their cattle in barns for the 9-month winter. Although they are not technically so defined as intensive agriculturalists, they nonetheless embody Netting's key qualities of householder survival strategies.

CONCLUSION

The majority of Viliui Sakha have made the transition from dependence on centralized industrialized socialist agriculture to decentralized household-level production, using what I have termed the cows-and-kin system. Their case provides an example of Robert Netting's householder theory at work. We might also ask what is the future of these contemporary adaptations, in the face of the external pressures of economic forces and

globalization? I have already established that cow-keeping in the villages is considered by many to be a dead end, and an impediment to modernity in the villages. Most crucial, it is unknown if contemporary youth, most of whom have parents presently fulfilling their household's cows-and-kin duties, will take up those duties once the parents are unable to continue to do so. In Yelli's household case, what will happen when Rozalia can no longer tend the family herd? In the context of Katia's case, will her daughters also go on to higher education, financed by the resources of Nikifor's household, and find work and family in the urban centers?

These questions are in the hearts and minds of the Sakha themselves. They are also part of a larger dialogue concerning the future of rural Sakha villages, which in turn has sparked efforts to bring modernity to the rural areas. These include regional internet centers for access throughout the village school system and regional branches of the state university. How these initiatives will pan out is not known. What can be said is that in the present context, cows-and-kin represents a unique adaptation which offers, in the wake of Soviet infrastructure collapse, a sound mode of household-level food production for contemporary rural Viliui Sakha.

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REFERENCES

- Balzer, M. M., and Vinokurova, U. (1995). Nationalism, interethnic relations and federalism: The case of the Sakha Republic. *Europe-Asia Studies* 48(1): 101–120.
- Borgerhoff Mulder, M., and Caro, T. M. (1985). The use of quantitative observational techniques in anthropology. *Current Anthropology* 26(3): 323–335.
- Caulfield, R. A. (1997). *Greenlanders, Whales, and Whaling: Sustainability and Self-Determination in the Arctic*, University Press of New England, Hanover, Germany.
- Chayanov, A. V. (1986). *The Theory of Peasant Economy*, University of Wisconsin Press, Madison.
- Collier, J., and Yanagiasko, S. (eds). (1987). *Gender and Kinship: Essays Toward a Unified Analysis*, Stanford University Press, Stanford.
- Crate, S. A. (2001). *Cows, Kin and Capitalism: The Cultural Ecology of Viliui Sakha in the Post-Soviet Era*, Doctoral Dissertation, Curriculum in Ecology, University of North Carolina at Chapel Hill.
- Crate, S. A. (2002a). Viliui Sakha oral history: The key to contemporary household survival. *Arctic Anthropology* 39(1).
- Crate, S. A. (2002b). Co-option in Siberia: The case of diamonds and the Viliui Sakha. *Polar Geography* 2002(4).
- Crate, S. A. (2003a). The legacy of the Viliui reindeer herding complex. *Cultural Survival Quarterly* 27(1): 25–27.
- Crate, S. A. (2003b). The great divide: Contested issues of post-Soviet Viliui Sakha land use. *Europe-Asia Studies* 55(6): 869–888.
- Crate, S. A. (2004). The gendered nature of Viliui Sakha post-Soviet adaptation. In Kuehnast and Nechemias (eds.), *Post-Soviet Women Encountering Transition*. Baltimore: Johns Hopkins University Press.
- Cruikshank, J., and Argunova, T. (2000). Reinscribing meaning: Memory and indigenous identity in Sakha Republic (Yakutia). *Arctic Anthropology* 37(1): 96–119.
- Engels, F. (1985). *The Origin of the Family, Private Property and the State*, Penguin Books, Middlesex, England.
- Faubion, J. (1996). Kinship is dead. Long live kinship. *Comparative Studies in Society and History* 38: 67–91.
- Forsyth, J. (1992). *A History of the Peoples of Siberia*, Cambridge University Press, Cambridge.
- Gogolov, A. I. (1980). *Istoricheskaya Etnografiya Yakutov* [Historical ethnography of the Sakha], Yakutsk State University Press, Yakutsk.
- Gogolov, A. I. (1993). *The Problem of Sakha Ethnogenesis*, Yakutsk State University Press, Yakutsk.
- Goody, J. (1990). *The Oriental, the Ancient and the Primitive: Systems of Marriage and the Family in the Pre-Industrial Societies of Asia*, Cambridge University Press, New York.
- Humphrey, C. (1998). *Marx Went Away—But Karl Stayed Behind*, University of Michigan Press, Ann Arbor.
- Johnson, A., and Johnson, O. R. (1988). Time allocation among the machiguenga of shima. In Johnson, A. (ed.), *Cross-Cultural Studies in Time Allocation, Vol. 1. Human Relations Area Files*, UCLA, Los Angeles, pp. 25–28.
- Ksenofontov, G. V. (1992). *Uraangkhai Sakhalar*, 2nd edn., Vol. 2, Natsinal'noye Izdatel'stvo, Yakutsk.
- Morgan, L. H. (2000). *Ancient Society*, Transaction, New Brunswick, Canada.
- Needham, R. (ed.) (1971). *Rethinking Kinship and Marriage*, Tavistock, London.
- Netting, R. Mc. (1981). *Balancing on an Alp: Ecological Change and Continuity in a Swiss Mountain Community*, Cambridge University Press, New York.
- Netting, R. Mc. (1993). *Smallholders, Householders: Farm Families and the Ecology of Intensive, Sustainable Agriculture*, Stanford University Press, Stanford.
- Nuttall, M. (1992). *Arctic Homeland: Kinship, Community and Development in Northwest Greenland*, University of Toronto Press, Toronto.

- Nuttall, M. (2000). Choosing kin: Sharing and subsistence in a Greenlandic hunting community. In Schweitzer, P. P. (ed.), *Dividends of Kinship: Meaning and Uses of Social Relatedness*, Routledge, London, pp. 33–60.
- Sahlins, M. (1972). *Stone Age Economics*, Aldine de Gruyter, New York.
- Schneider, D. (1984). *A Critique of the Study of Kinship*, University of Michigan Press, Ann Arbor.
- Schweitzer, P. P. (ed.) (2000). *Dividends of Kinship: Meaning and Uses of Social Relatedness*, Routledge, London.
- Stevenson M. (1996). Indigenous knowledge in environmental assessment. *Arctic* 49(3): 278–291.
- Tichotsky, J. (2000). *Russia's Diamond Colony: The Republic of Sakha*, Harwood Academic, Amsterdam.
- Wenzel, G. (1999). Traditional ecological knowledge and Inuit: Reflections of TEK research ethics. *Arctic* 52(2): 113–124.
- Wilk, R. R. (1997). *Household Ecology: Economic Change and Domestic Life Among the Kekchi Maya in Belize*, Northern Illinois University Press, Dekalb.
- Ziker, J. P. (1998a). Kinship and exchange among the Nganasan of northern Siberia. In Isaac, B. (ed.), *Research in Economic Anthropology*, 19, JAI, Greenwich.
- Ziker, J. P. (1998b). *Kinship, Exchange, and Ethnicity Among the Dolgan and Nganasan of Northern Siberia*, Doctoral Dissertation, University of California, Santa Barbara.