Contested Arctic

Indigenous Peoples, Industrial States, and the Circumpolar Environment

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Negotiating Nature in Swedish Lapland: Ecology and Economics of Saami Reindeer Management

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This paper concerns the political dimensions of the ongoing debate about overgrazing and range deterioration in Swedish Lapland.[1] Reindeer herding in Sweden is a livelihood reserved exclusively for those of Saami ancestry. As recognized in Swedish legislation, reindeer-herding rights are all that remain in practice of Saami indigenous rights. Therefore, recent environmentalist claims of destruction by reindeer of the Swedish mountain habitat and new state regulations devised to protect ranges against what is regarded as Saami mismanagement, strike at the heart of Saami claims, cultural maintenance and self-determination. Many Saami have come to regard the ecology promoted by the state as yet another instrument of Swedish colonialism.

While scientists often regard the so-called problem of the commons from the perspective of an objectified, given nature that must be sustained by social regulations, my meaning is that such a perspective obscures the political formation of nature itself. The supposedly given environment is itself a matter of negotiation beyond the domain of *its* exploitation or preservation.[2]

Material in this paper has largely been gathered from Saami reindeer herders in the field, continuously from 1973-77, and intermittently thereafter. Research over the past three years in particular, focused upon overgrazing issues, has been made possible by funding from the Nordic Environmental Research Program and the Joint Committee of the Nordic Social Science Research Councils.

When pressed for content for their ideal "natural norm," state authorities refer facilely to the latest ecological slogans: sustainability and biological diversity. Yet, at the same time, state herding authorities continue to apply strong measures for the so-called rationalization of the reindeer industry to promote sustainable, but maximal, economic yields. Maximal yields will require that sustainability be stressed to its extreme; and even should maximal economic yields be harnessed at the breaking point of sustainability, this condition is certainly not conducive to the promotion of greatest biodiversity.

Newly instituted fines for herd-size transgressions as well as numerous forms of subsidies to the herders have been implemented in the effort to patch the equation between ecology and economy. However, the fines, as structured in the Reindeer Act of 1971 and its subsequent revisions, cannot inhibit potentially destructive herder competition for scarce grazing. And the subsidies carry the onus of depicting the Saami herding livelihood as an economically pointless hobby maintained by the Swedish taxpayers.

Given this scenario, the moral justification for a herding livelihood at all would come to rest solely on the rights of minority cultural preservation as upheld in international law. At the same time, Swedish rationalization policies and the free march of modernization propel herding toward full-blown ranching and technologies similar to that of other Swedish animal farming, developments which to the majority population have little or nothing to do with Saami culture and therefore should not imbue herding with any special indigenous resource rights. While much of the Saami counteroffensive against perceived Swedish "ecolonialism" confronts the state on its own terms, e.g., with claims that Saami herd management is in fact environmentally sound, Saami are with good reason vehement against being enfolded within a purely Swedish ecological framework.

Ecology or "Ecolonialism"?

As a result of the UN conference on environment and development in 1992, *Agenda 21* was adopted which urged all nations to produce strategies for sustainable development. The participation of indigenous peoples in the formulation of such national environmental strategies was emphasized. The Swedish Ministry of Environmental Protection received directives from the government in 1995 to present measures to attain sustainability in the country's mountain regions. In the resulting report entitled "Sustainable development in the country's mountain regions" (SOU 1995:100), the overly simplistic concept of sustainable development[3] is applied to Swedish Lapland and focuses to a considerable degree explicitly on reindeer herding.

> It is important to understand that a sustainable development encompasses *ecological and social, as well as, economic* development. Those who live in the mountain regions must be given the possibility of work, education, security and quality of life *within the limits that nature can tolerate.* (SOU 1995:100, p. 8; my translation and my italics)

While this position seems eminently reasonable, it takes for granted that an unregulated population, "those who live in the mountain regions," with links to the market economy can live comfortably and sustainably by utilizing nature's surpluses without in so doing affecting, changing, or actually defining nature. In fact, as the very existence of the report illustrates, a trade-off is demanded between the long-term preservation of nature and the short-term welfare of its human constituents. The report (SOU 1995:100) has resulted in a government bill to Parliament (Prop. 1995/96:226) of the same name and with basically the same recommendations which at this time (Sept. 1996) awaits Parliamentary process.

In the early summer of 1995 a large earthslide occurred on Stora Axhögen mountain in the Funäsdalen valley within the territory of Mittådalens Sameby. The prominent Swedish environmentalist Nils G. Lundh attributed the earthslide to overgrazing by reindeer. Soon thereafter, in a debate article, Margareta Ihse, a natural geographer, made the following statement based on her study (begun in 1993 for the World Wildlife Foundation) of vegetation changes in certain herding districts:

> During the last decades, the exploitation of the mountain regions has been discussed with growing intensity. The increased tourism with recreational building, alpine centers, trails and snowmobile traffic has occasioned increased pressure on a sensitive mountain nature. At the same time, that reindeer herding which has been practiced for thousands of years has altered character. It has experienced great changes. A traditional herding undertaken by nomadic Saami has been replaced by modern management and rationalization with mainly settled Saami and greatly increased numbers of reindeer as a result. In combination this increases pressure on the sensitive mountain nature. . . .
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> . . .The WWF report warned that such rapid erosion might also come to pass in the Swedish mountains. The newly observed earthslides show that this is the case and that it is urgent that solutions be found. (Ihse, in *Samefolket* 1995:14)

In the latter half of the 1800s, with the demise of the so-called "parallel theory," whereby it was thought that Saami herding and Swedish settlement could exist side-by-side without conflict, a massive body of legislation was enacted to minimize and to mediate the conflicts between herders and farmers. Detailed regulations were constructed to control herd movements and herder responsibilities for the protection of crops. As Swedish farming in the North ebbed away under the "rationalization" policies following

World War II, the basis of regulating herding on that score declined (Beach 1980).

The next regulatory justification was founded on the growing socialistic welfare ideology. Medical studies in the 1950s had shown that the "vital statistics" of the Swedish Saami were comparable to those of underdeveloped nations. Saami infant mortality, for example, pulled down the national average, and Sweden sought to solve the problem by devising a comprehensive program of rationalization for herding's structure and production embodied in the Reindeer Act of 1971 (often abbreviated RNL) (SFS 1971:437, updated as SFS 1993:36). Regulations were now oriented toward increasing the living standard of Saami herders—a praiseworthy goal, but to a great extent one pursued at the expense of diminishing the herder population (fewer mouths to share the same limited resources) (Beach 1983).

Today we are at the threshold of a new regulatory framework of the herding livelihood, that based upon environmental concern. The Reindeer Act has been embellished by a new paragraph (§65a) with so-called ecological objectives. Other new sections have been added to the Reindeer Act in the attempt to further control herd numbers and to decrease the risks of overgrazing (Proposition 1992/93:32). Statements by environmentalists and Swedish politicians make it clear that they regard proper ecological theory and practice as something belonging to the domain of Western science. If the Saami are at all recognized as practicing ecologists, they are considered to be poor ones.

> Sustainability demands, however, that reindeer herding take consideration of environmental conditions. It is both of national and international interest that the natural resources be utilized in a balanced and controlled manner. The limits for reindeer grazing should be coordinated and adapted according to the reindeer's natural wanderings, so that the ecological goal can be achieved. The *partial* responsibility of reindeer herding for this process is clear. Too much pressure on the grazing lands can lead to ecological damage and contribute to the destruction of the basis for reindeer herding. Therefore the educational base on environmental issues should be broadened among the Saami. (Sápmi, the Social Democratic Party's political program regarding the Saami, 1995)

Added to the understandable environmentalist motivation that the protection of nature is the business of all people, and not just that of populations local or indigenous to the area in question, is the motivation provided by international law. What Eide terms a "maximalist" interpretation of Article 27 of the Convention on Civil and Political Rights holds states responsible for protecting the resource base which is the precondition for the exercise of the rights of indigenous peoples (Eide,

1985:204). Of course, the Saami welcome the support of international law when it comes to protecting the reindeer grazing lands against massive destruction, for example, by the timber industry, but they now face a paternalistic twist whereby the same forces of protection are invoked against their own livelihood for their own good!

Newspaper headlines such as, "Trample of reindeer herds destroys the mountains," (*Norrbottens Kuriren*, Dec. 9, 1994) or reports that overgrazing by too many reindeer is transforming the mountains into a pile of rocks (*Dagens Nyheter*, July 21, 1995) have become commonplace. Herders are blamed for the decimation of scarce species (reindeer predators) and the use of high-tech equipment (such as motorbikes) in herding that destroys the tundra. Overgrazing and range destruction by the trampling of too many deer (or the motorized vehicles to herd them) have become major concerns of environmentalists, not just herding administrators who have had a long involvement with the problem on the grounds of protecting the sustainability of the herding industry. The issue has now grown far beyond this; concern does not stop with the viability of herding but with the fate of the Swedish mountains. As before, under the Swedish welfare ideology, the new phase of regulations is advertised to the Saami as being for their own good. Now as then, it is a truth with qualifications.

A number of hot issues dominate relations between the Saami and the Swedish regulators. They can usefully be broken down under two categories, the one concerning arguments over the equality or exclusivity of resource access, and the other having to do with environmental degradation. In the former category are items such as tourism, hunting and fishing. (New hunting regulations, not expropriating, but confiscating exclusive Saami hunting and fishing rights in the regions above the Agriculture Line were recently put in place.) In the latter category we have the debate over use of high-tech equipment among herders, the right to life of reindeer predators, tourism again, and the overgrazing issue. All issues involve discussion about both principles and practice. For example, should the Saami be permitted to develop their herding "industry" as they see fit as can so many other businesses? Or should they be forced to use only traditional methods in keeping with the principle of cultural preservation, the basis on which the state has granted them special resource privileges (Beach 1993a)?

The way in which the Saami manage or mismanage the resources to which they enjoy special rights of access impinges directly on the sympathies the Saami might cull among the majority voting population and, by extension, on the bills enacted by Parliament concerning matters of resource rights and access. For the Saami, a minority, and for the herding Saami, a minority within a minority (and there are indeed major conflicts between herding Saami and non-herding Saami) moral arguments are

essential. It is one thing to have a legal right, but quite another to keep it. Arguments used by the Saami to counter the equality-of-access supporters involve symbolic rhetoric such as accounts of national parks trashed by swarms of tourists. They point out the destruction of wildlife due to the new open-hunting regulations (Sametinget 1994), and they can invoke pro-indigenous international conventions ratified by Sweden (Beach 1994).

Those opposed to Saami interests can invoke arguments and symbols of the Saami as ecological "fallen angels." They point out that current Saami resource utilization is far from traditional and hardly different from what any Swede might do if given the chance. They confront in the courts Saami land ownership claims and claims of immemorial rights of usage, as for example in the ongoing Härjedalen conflict (Beach 1985, 1992; Cf. Sveg Case lower court verdict 1996).

Of course there are many sincere environmentalists who, rightly or wrongly, view certain aspects of Saami livelihoods as destructive of a natural habitat, the fate of which, regardless of any ownership debates, affects us all and is rightly a common concern. Naturally, given this situation, there are also those who find it convenient to affect an environmentalist stance, not out of concern for the habitat, but in order to discredit Saami moral arguments, to undermine special Saami rights of resource access with that justification, and ultimately to exploit these limited resources yet further. Just as naturally, a given Saami stratagem can be to discredit environmental arguments by insinuating ulterior motives. Unfortunately, even sincere environmentalists have sometimes felt their scientific integrity violated by accusations that they are anti-Saami racists. Among those points lobbied are: Which species and livelihoods are to be considered "natural?" To which forms of exploitation might one turn a blind eye, and for how long, before demanding sacrifices on the part of these or other forms of livelihood for the common ecological good? And for whom is nature anyway?—a question whose very formulation harbors dubious metaphysical presuppositions.

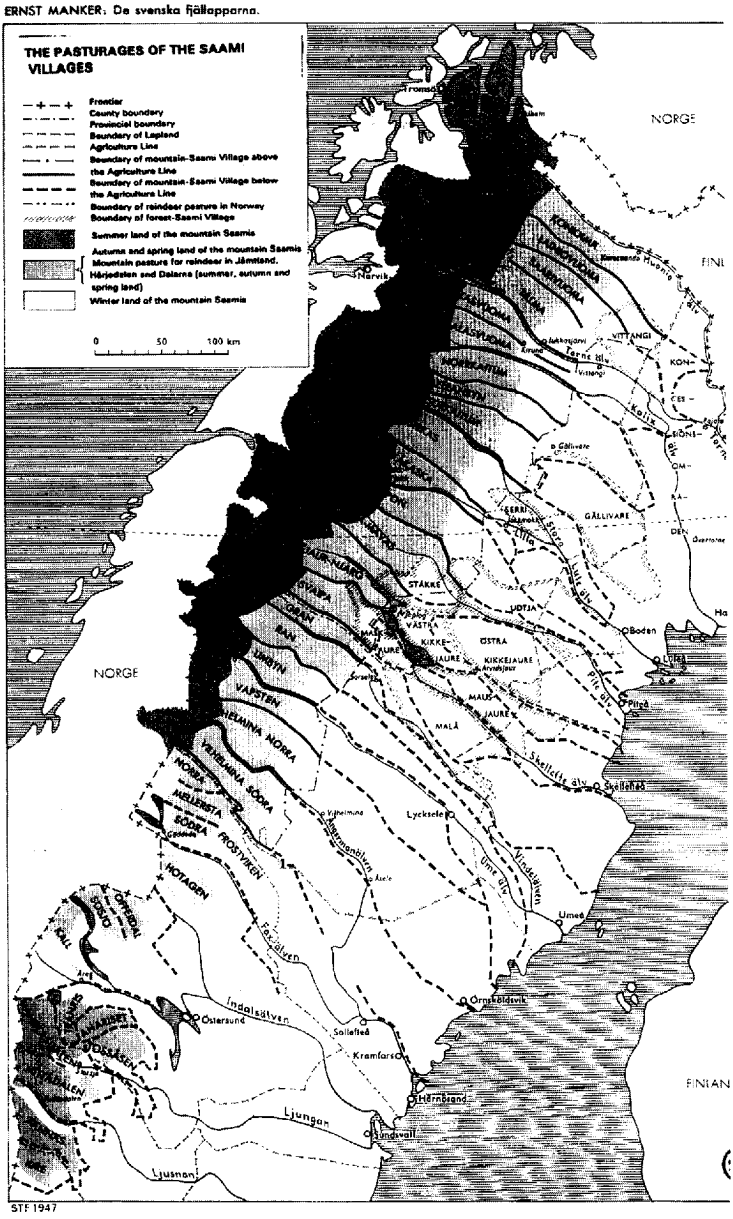
Placing "Eco-" in Economy: the Problem of the Commons

A number of terms must be defined in order to proceed. With reference to the goal ranges of a system (the ranges of states in which systems remain stable) mentioned by Rappaport, or its "limits of flexibility" according to Bateson, we can speak of "goal ranges" for the reindeer-grazing ecosystem, one inclusive of grazing and reindeer (*not herders*). When related to the reindeer element of the system, one can speak of "goal reindeer ranges" to signify the lowest to the highest number of reindeer which can be sustainably accommodated in the reindeer-grazing ecosystem.[4]

Another term related to herd size and used frequently by the herding authorities is "rational herd size." In Sweden, the land on which reindeer can be grazed is divided into about fifty so-called Samebys, which besides defining territorial units, also define social and to some extent economic herding units. Rational herd size is the term commonly used to define for a Sameby the greatest number of reindeer (of an age/sex composition to yield the greatest yearly profit) which can be regularly sustained on the seasonal range (usually the winter range) that forms the bottleneck in the Sameby's annual grazing cycle—that is, without endangering regenerative capacity of the pasturage. What is most rational at any time, of course, varies according to the integrated cost/profit shifts of numerous variables (see pp. 15 ff.). "Rational herd size" is a term whose origin lies squarely with the herding authorities, is grounded in the concepts of the Western market economy, and does not concern itself with satisfactions other than dollars and cents (within sustainable bounds). For an in-depth historical review and critique of rational herding policy, see Beach (1981). While an accurate rational herd size fits within a Sameby's goal reindeer range, it is not necessarily identical to its upper limit. Goal reindeer ranges take no consideration of the age, sex, size or meat quality of the reindeer utilizing the land. A Sameby sustained at its maximal goal reindeer range would probably in turn sustain its herders to a lesser degree than it would were the herd kept at the rational herd size.

Finally, there is the "total allowable reindeer quota" or (TAQ), the figure set by the herding authorities as the ceiling herd size permitted for a Sameby. TAQs are tailored to each Sameby according to the best educated guess of its bottleneck seasonal grazing capacity. This includes supposedly hard data from grazing inventories, but also past experience. Like the rational herd size (which unfortunately is often considered to be one and the same with the TAQ even in principle), a TAQ is supposed to be within the goal reindeer range of a Sameby, pressing its upper limit. While ideally the TAQ and the rational herd size of a Sameby are to coincide, TAQ values are quite stable and do not follow the rapid shifts of the market, slanting maximal profits toward the production of fewer, but bigger deer or increased numbers of smaller head. While a TAQ might be adjusted should a Sameby suffer major and permanent loss of territory due to the building of a hydroelectric dam, for example, TAQs are generally the same year after year, their margins of error recognized to be greater than most adjustments which might be justified by market shifts.

Given the fact that each of Sweden's fifty-odd Samebys has an individually designated total allowable reindeer quota (TAQ),[5] instituted precisely to obviate overgrazing, it is plain that the private herd size of any one herding Sameby member, his herding labor engagement, husbandry



MAP 6.1 Samebys

goals and success at realizing them, affect directly issues of herd size and management forms for all his other Sameby fellows.

Here as in other pastoral societies, a basic goal of the pastoralist is to maximize his herd size both for reasons of prestige and security. The risk of reindeer losses to predators or to the "bad winters" mentioned above motivates many herders, who own reindeer stock privately but who graze them on lands held in common by the Sameby group, to opt for an expansionist ideology. Moreover, the Swedish law regulating the herding livelihood, the Reindeer Act of 1971 (with subsequent revisions) bases a herder's voting power within the Sameby upon his herd size (justified by the same arguments that give a shareholder power in a company proportional to his or her share of stock in it), but with the stipulation that herders get one vote for each newly started hundred head of deer.

These conditions fit nicely the preconditions of the Hardinian model of commons dilemma leading to eventual tragedy of the commons. Environmentalists, especially their opportunistic, uncritical supporters, have not been lax in pointing this out. Yet, it does not follow that all cases of reindeer grazing tragedy are caused by the commons dilemma. Furthermore, biased opinions of northern farmers who prefer not to have reindeer in their fields, or of hunters who do not want reindeer interfering with their hunt, or of the timberland owners who do not want to negotiate with herders over their herding rights before beginning logging operations easily transform their claims that there are "too many reindeer" for their own self-interests into claims that there are too many head for the grazing lands. News of winter reindeer starvation, whether caused by climatic grazing blockage or not (see below), serves further to confirm the impression of tragedy of the commons.

Of course, this is not to say that such claims are categorically wrong or that the self-interests of those opposed to the herding livelihood and Saami special resource rights might not overlap with environmental interests and a correct assessment of tragedy of the commons. Claims of tragedy of the commons must be given careful consideration. Reindeer in excess of the Sameby TAQ provide only a short-hand, crude indicator, but one that is nonetheless legally compelling. Herders are known to tend to fudge the accuracy of their required annual herd counts (often for purposes of avoiding tax), and even with the best of intentions accuracy might be low under so-called "extensive" management forms (see below). Also, TAQs hold margins of error in relation to maximal goal reindeer ranges, and, as we have seen, such simple quantifiable values without considerations of variable herder pastoral mediation cannot be adequate measures for assessing real grazing tragedy.

The problem of the commons has attracted attention and been revisited a number of times, not least in anthropological fora, even before its succinct logical formulation by Hardin. It continues to fascinate, because in it we perceive not simply a puzzle whose solution(s) would entail practical economic benefit, but also in a nutshell the dilemma of purposiveness and rationality of living systems as members of a dynamic ecological whole. As such, the problem of the commons is one that confronts the evolutionary process with one of its most difficult challenges: how can a social category of behavior evolve (for example, to regulate the commons) which on one contextual level negates the lower-order optimizing behaviors of its individual constituents?[6]

The Problem of Defining the "Natural Norm"

We must proceed cautiously in this analysis when using such concepts as overpopulation and overgrazing, for these terms might not only be falsely proclaimed, but they often conflate important distinctions. For example, while it is commonly assumed that when reindeer starve to death it is due to an overly high reindeer/grazing ratio, starvation often occurs simply because ample grazing has been rendered temporarily inaccessible by crusted snow or ice lumps. The situation is all the more complex, since the aspects of grazing presence and grazing availability are tightly integrated. Not only are lichens (in Sweden generally the most limited grazing resource and therefore the bottleneck to herd increase) spread unevenly over the winter grazing lands, but climatic conditions frequently vary so much that while availability might be blocked in one area, it is undisturbed in another. Obviously, should a rise in reindeer numbers cause a strain on the overall reindeer/grazing ratio, the effects of "bad winters," where grazing availability is locked in broad patches, will become increasingly severe and will appear to be more and more frequent.

The herder mediates the relation between his reindeer and the grazing lands (Paine, 1994). Reindeer grazing preferences vary seasonally. Certain types of grazing follow a seasonally variable pattern of availability. In any one year a herder must regulate where and to what extent his herd utilizes a specific area of pasturage. He may well have to economize in one area at one time so as to have some left there at a crucial juncture later on. Moreover, a herder must be aware of grazing possibilities and alternatives throughout his range, not only for one year, but for many years. He must take all of these factors into consideration along with the economic needs of his family, the movements of other herders and the grazing pattern of their herds, seasonally available transportation routes and means, seasonal physiological changes of his animals, and numerous other factors. There are

as many different herding strategies as there are herders, in fact far more, since a single herder will avail himself of many strategies and must be able to switch on the spot.[7]

Because of the profound effect of the herder's mediation between his herd and the grazing lands, it is impossible in simple linear fashion to relate herd size and grazing pressure or depletion. Herders exercise different degrees of so-called intensivity or extensivity over their animals, sometimes keeping them gathered under tight control (intensive herding), at other times allowing them to disperse and mix at will over a wide region only to be brought together for such things as calf-marking, herd separation, or slaughter (extensive herding). A number of animals held together intensively will exert a different pressure on the grazing lands (both in terms of grazing and trampling) than the same number dispersed under an extensive herding regime. Nor is it an easy matter to relate intensive or extensive degree to grazing effect, for in the long run, extensivity (though *prima facie* less wearing on the environment) might result in erratic husbandry practices (for example, opportunistic slaughtering rather than slaughtering based on careful selection) and even unnecessary herd increase. I have previously termed "over extensivity" (Beach 1981) the situation whereby herding skills are lost and a downward spiral of decreasing profits and increasing expenses leads to less time available for herding and therefore further extensivity. Or, the same extensive spiral with its increased demands for the use of costly "high-tech" equipment in herding operations can force the herder who is determined to earn his main income from this livelihood to increase his herd size in order to increase his profits simply to maintain the same standard of living for his family.

The point I wish to emphasize is that a broad spectrum of relatively sustainable herd-management forms with different herd sizes or similar herd sizes, but with different intensive/extensive methods, is possible for the same area. Similarly, a herd held in a more or less sustainable relation with its grazing land under one management form might well be propelled into an inherently unstable relation which slowly depletes grazing resources by another management form despite uniform reindeer numbers. Quantifiable values of reindeer numbers and calories available on grazing areas, taken alone, are but hopelessly crude indicators of grazing pressure.

Average reindeer slaughter weight and individual reindeer health are prime indicators of grazing depletion. Overly high grazing pressure will make itself apparent in the condition of the deer. Such effects are indeed undeniable, as are the existence of other homeostatic mechanisms which take effect with grazing depletion, such as increased predation, and lower birth and calf survival rates (Ingold, 1976:30-32). However, we are once again confronted with multiple systems of sustainability. The same grazing

resource can host sustainably a maximal herd of well grown, fat animals, or maybe a herd of twice that number of more scrawny, stunted animals (with pastoral mediation as a further accommodating variable). Herders are forever discussing the current and historical sizes of the deer in different regions, sizes which have been known to vary considerably, just as we might note that the average European today is larger than his counterpart was in the Middle Ages.

Again, my point is simply that while extreme malnutrition can of course prove fatal to reindeer, there is a broad zone of healthy, acceptable (and hence economically and politically defined) reindeer physiognomies. What kind of deer comprises the standard for the TAQs? The period regulated by the principles of structure and production rationalization mentioned above based all considerations of herd size, herd age and sex composition as well as slaughter decisions (e.g., calf-slaughter, because calves yield more meat per grazing consumed than do full-grown deer) squarely on principles of maximum market profitability within sustainable ecological constraints. A large proportion of male calves especially were to be slaughtered prior to their consumption of scarce winter lichens and when, as with all reindeer, growth abates with the approach of winter. The herders were given incentives by way of subsidies to follow what was then seen as the course of maximal market profitability. For example, in the early 1970s a set subsidy was established for payment to the herder for each deer slaughtered regardless of size. In this way the pay per kilogram brought in through slaughter of a calf was enhanced in comparison to that brought in through slaughter of an older, heavier deer with the same subsidy. Since the institution of this subsidy, the realities of the market have altered drastically, whereas the subsidy form has not. Reindeer meat is now classed by quality, and the slaughterhouses have an intricate differential price scale according to class and export potential. Calf meat, which cannot meet the proportion of meat to bone favored by restaurants, is now classed way down. Subsidies and rationalization programs, however, still try to steer herders in the direction of calf slaughter. I can only imagine that the policy continues on the grounds that despite the reduced appreciation of calf meat, it is thought that herders might still make more money from maximal winter herds predominately composed of pregnant, calf-producing females than from winter herds containing, for example, also many mature bucks and castrates.

Note that this argument might be valid in a Sameby operating at its maximal TAQ—not counting those calves slaughtered as they do not live to burden the most common situation of winter lichen bottleneck—but not at all necessarily valid for a Sameby with total herd size well below that. A Sameby which operates below its TAQ, and which need not economize with its grazing, will likely profit more by letting its calves live on through the

winters and grow to maturity before slaughter. Their greater weight will bring more profit, and their meat quality will bring a better price per kilogram probably regardless of the calves' subsidy enhancement. Grazing conservation in this instance is not a problem, and the growth intensity of calves no longer a factor to consider (Beach 1981). In short, the reindeer is not a God-given standard unit, but one which to great extent is composed and promoted not only by environmental conditions, climate, and the mediation of the pastoralists, but also through market fluctuations, pricing schemes and subsidy policies. This is a situation common for traditional livestock, many of which have been bred and fed into extreme human creations. Although not so exaggerated, similar considerations are still at work with reindeer, even if they roam freely much of their lives, and even if the policies which control their physiognomy are quite variable in the degree to which their consequences match their conscious intent.

Gradually, but with increasing momentum, the reindeer is being transformed into a farm-like animal. Road networks penetrating far west into the mountains, along with the development of mobile slaughter trucks, have revolutionized slaughter procedure and castration policy. Now, to accommodate the market, this is followed by the increased use of artificial fodder, not only as a catastrophe measure in the face of bad winters, but also as a regularly scheduled pre-slaughter fattening measure.

Regular use of artificial winter fodder is also seen by the promoters of rational production as a means to widen the winter grazing bottleneck caused by limited lichen availability to match the greater grazing capacity of other seasons and thereby to make significant gains in TAQs. Not only does the use of fodder tend to eliminate the homeostatic effects of bad winters on herd size, but with a possible rise of winter herd size, it will increase the dangers of overgrazing dramatically should foddering for some reason be discontinued or impossible to realize. Fodder not only makes larger herds possible, it also requires increased production—more reindeer—to pay for it.

Although reindeer herding in Sweden has long been directed toward and dependent upon a market economy (while still preserving elements of the subsistence livelihood with regard to the herding family's own food production), the degree to which the reindeer as biological individual is impacted by market demands has been minimized by herder traditions and the costs involved in exerting the necessary control over at best only semi-domesticated livestock well able to thrive in wilderness regions with little or no human contact. Market-induced changes have been far more readily observable in matters such as age/sex composition of the total herd. A well-functioning system of rational calf slaughter implies a winter herd of maximally explosive reproduction in the spring, one that is dominated by calf-bearing females with only sufficient mature males to ensure their

impregnation. Naturally, removal of the older males from the herd affects both the needs of the herd but also its fund of experiential knowledge. This in turn will have considerable bearing upon the performance of management, and all of these factors will impact the energy demands of the herd—labor and financial demands on the herders but also demands on the grazing resource. Herds deprived of the experience of older male reindeer might well lose more in cost-efficiency than they gain by conserving the grazing they would otherwise have eaten for growth-intensive calves. In short, the grazing pressure of reindeer on the land will vary depending upon management form, physiognomy of individual animals, and composition of the herd. In establishing TAQs and promoting herding rationalization standards for management within such limits, one cannot avoid setting reference values for these variables and hence setting what is to be considered the reference value for the natural state of the grazing lands, for these are formed by (not simply reduced or conserved by) such policies.

In an article commenting upon that of Margareta Ihse, Anders Sirén states:

> Mountains without reindeer are equally unnatural as mountains with too many reindeer. The Fulu Mountain's thick lichen carpet hinders seeds from other plants from growing and is a product of the extermination of the wild reindeer, a key component of the ecosystem, through hunting. (Sirén, in *Samefolket* 1995:16)

Infuriated by what they regard as an attack on their livelihood and a threat to their ethnic minority rights, Saami have countered on a number of points the assumption that the Axhög Mountain earthslide was occasioned by reindeer overgrazing. They point out that similar earthslides have occurred previously in many places where no reindeer graze at all (Andersson, in *Samefolket* 1995:13), and that even if reindeer have grazed in the area, there are other factors, for example extreme weather conditions with exceptional spring flooding, of far greater significance in causing the earthslide (Andersson, in *Samefolket* 1995:12). Others, such as the Saami herder Johansson (quoted by Andersson, in *Samefolket* 1995:12f) and the non-Saami researcher in ecology and environmental protection Sirén (in *Samefolket* 1995) both admit that erosion caused by the trampling and overgrazing of reindeer certainly does occur where the reindeer are confined in large numbers at particular sites during corrallings. However, they both object to the gross generalization of attributing these limited, local problems to the Swedish mountains as a whole. Most interesting in this context, however, is another point made by the herder Johansson:

> Yes, of course, lichens disappear in the summer mountain grazing areas where the reindeer are, he admits. But this here is not something which is an evil for

> reindeer herding. The lichens are replaced by green plants which the reindeer eat during the summer time and are of course much better. The comparisons made between the mountain regions of Norway and Sweden are like comparing a cow pen with an uncut meadow. (Johansson cited by Andersson, in *Samefolket* 1995:12)

Johansson's point is that at least some degree of trampling and grazing of lichens does not necessarily induce erosion in the summer lands; in fact the green plant replacements have a much more developed root system which binds the earth better than lichens. Moreover, green-plant replacement may be more advantageous for the total grazing system of the Sameby should this rather than lichens be the bottleneck factor. Of course where lichens are trampled and/or overgrazed so might green plants be. Johansson does not shy away from admitting the problem in principle. He questions whether it has been given the proper emphasis.

With regard to the point raised here, Johansson's comment is illuminating, for it recognizes that the reindeer not only consume nature, they form it. If, as has been noted, thick lichen cover in summer mountain pastures hinders other vegetation from taking hold, then obviously "overgrazing" of these lichens might mean exposed surfaces and erosion, at first. But other green vegetation might thereby have the opportunity to seed and in time create a more erosion-resistant cover. Yet it would be wrong to characterize the environmentalist block as being innocent of the concept of a quasi-domesticated nature (i.e. one that is conditioned by humans as well as the animals in their service). The Swedish Environmental Protection Committee's report fully recognizes not only that the reindeer contribute to the formation of the natural landscape, but also that this formation is not necessarily one of reducing its riches by eating it or trampling it:

> it is probable that there is to a certain degree a positive correlation between grazing pressure and biological diversity, that is to say, a completely ungrazed area contains fewer species than a moderately grazed area, while a further increase in grazing pressure leads to a reduction of diversity. (SOU 1995:100, p. 13)

The Saami journalist Andersson sums up the obvious rejoinder:

> Certainly one must admit that the reindeer leaves its mark on nature, but this it must be permitted to do if one is to be able to carry on with reindeer herding. Then one can ask oneself what a natural condition can be. Given an area which has been utilized for reindeer grazing for many hundreds of years then surely it must be considered a natural state. (Andersson, in Samefolket 1995:13)

Nor would it be correct to characterize the environmentalist block as not accepting the principle that a quasi-domesticated nature can be worthy of

protection. In her article debating the overgrazing issue, Margareta Ihse states:

> The preservation of the nature of the mountains is not just a question concerning the Saami. The Swedish mountain regions are important and unique in a European perspective. Now, during the European nature preservation year, Sweden will receive international recognition for her nature-preserving actions in protecting and caring for meadows and enclosed pastures in the agricultural landscape. (Ihse, in *Samefolket* 1995:15)

Again the matter reverts to negotiated emphasis—not simply concerning how much human-oriented purposive behavior is to be allowed to steer nature, but also as to when such determinism is still to be accepted and preserved as part of the natural norm. A considerably larger degree of human determinism is likely to be protected within the framework of natural preservation in the so-called agricultural landscape than would be tolerated as creating the natural norm in the mountains.

Herding for Biological Diversity

According to a memorandum from the Board of Agriculture addressing the matter of regulating reindeer numbers, some effort, if vague, has been made in a government bill (Prop. 1994/95:100 Bil. 10) to define what should be considered the natural norm. The issue is at least acknowledged (even if one comes hardly closer to a specification of what should be the natural norm by referring to that which is "representative" and should be preserved to "sufficient" extent).

> When the highest allowed reindeer number is decided, the point of departure shall be what nature can sustainably bear so that the *biological variety can be preserved* and a persistent utilization of the grazing resource not be forfeited...so that the vegetation is not impoverished and so that *representative types of nature are preserved to sufficient extent.* (Constenius & Danell, 1995:1, my italics)

We might term the herd size recommended above, that exerting moderate grazing pressure and conducive to biological diversity of pasturage, as the "diversifying herd size."

Previously, I noted that the Ministry of Environmental Protection's report (SOU 1995:100, p. 13) credited moderate reindeer grazing with increasing biological diversity of the pastures, while further grazing pressure reduces such diversity. In fact, the Ministry's report and its ensuing proposition to Parliament call for an alteration in the current Reindeer Herding Act's sixty-fifth paragraph so that the environmental goals of sustainability and biological diversity are to be combined with good

profitability—as if the flexibility existed to make this a painless or even possible marriage. An important question therefore arises if TAQs are to be set according to the diversifying herd size as suggested: How does the diversifying herd size compare to the rational herd size? It is highly probable that the diversifying herd size, exerting moderate grazing pressure and conducive to biological variety, is considerably lower than the rational herd size, that which would supposedly secure for herders the best income. In introducing the principle, it is not my intention necessarily to recommend it as the optimal criterion for herd sizing, but simply to identify it as one of the implicit factors which drive the negotiations on "preserving nature."

The difficult task of trying to assess an actual rational herd size for any Sameby, involving as it does negotiation of all the variables we have so far considered (of course within their somatic bounds) becomes all the more problematic when forms of exploitation external to the regular herding system, such as logging practices, and other changes in the landscape are considered. While the practically defined TAQ is not identical to the conceptual rational herd size, it is generally set at a level quite sufficient to protect the grazing resource from over exploitation. Most importantly, it is the TAQ which by decree of the herding authorities is to regulate actual reindeer numbers.

The reindeer statistics from the herding authorities indicate that, at least since 1920, total reindeer numbers for Sweden as a whole first came to exceed its TAQ total of 280,000 head in 1986. The most recently available figures (from the 1993/94 count) show that the high reindeer numbers relative to TAQs can be localized mainly to the Västerbotten county's mountain Samebys and the Jämtland county's southern Samebys. According to the Board of Agriculture's reindeer herding section, successful measures had already been taken to bring most of the effected Samebys in line with their TAQs before the overgrazing debate gained momentum. (Of course deterioration of pastures, should there have been any, can take many years to overcome.)

Sticks and (Poisoned) Carrots

Centralized authority, resource users encompassed by higher-order unity and regulation, provides the means to implement negative feedback. In fact, it is the acceptance of such regulation by its constituent parts that brings a higher-order systemic entity into being or to certain extent defines it. The goal of higher-order controls and leveling mechanisms is to prevent individualized skill or maximization efforts (in excess, greed) from producing uncontrolled individual gain and consumption. Such measures strive to eliminate the aspect of the dilemma involved in commons depletion,

whereby the combined effect of many individual consumers (even if each exists at a near minimal subsistence level) will destroy the resource, and whereby any individual self-restraint exercised by one consumer will only play into the hands of another without ecological benefit.

Even if the benefits to individuals of maximizing their herds cannot be entirely removed, herd reduction might be made individually meaningful by measures such as herding fees or grazing fees exacted per reindeer. The imposition of a total ceiling limit, while it might save the commons, does not eliminate competition among members of the commons which can be expressed in subtle forms and constitute the aspects of the commons dilemma in a broad sense.[8] Similarly, if one fails to impose maximal quotas for individuals before a total ceiling limit has been reached, one does not eliminate competition among commons members and dilemma until that ceiling is reached and stabilized *with all commons members at their component maximal quota levels*. If, for example, the Sameby's reindeer limit is exceeded and some herders are far above their individual limits while others are far below, once those who have too many decrease their stock to bring the Sameby total under its collective limit, there will be a scramble among the other herders to fill any available room with their *own* deer. In fact, should the smaller herders continue to increase their holdings toward their individual limits and thereby push the Sameby total over the top again, it is not they who will be forced to cut back, but those who are still at that time over their individual limits. In short, those under their individual limits have no reason to cut back even with the total Sameby reindeer population at or over its limit.[9]

In a pastoral system, it is only when individual quotas are enforced—*whether or not the total ceiling limit which encompasses their sum has been attained*—that competition among commons members with regard to grazing is avoided. Note, however, that such a system can be distinctly at odds with rationalization policies and the stated goals of "sustainable development" which seek to utilize available resources sustainably *yet fully*. Should an industrious herder reach his individual quota long before the Sameby's total ceiling TAQ is achieved, restraint of his herd growth appears wasteful.

One might well argue that in the modern world, where reindeer herding is so strongly dependent upon the market economy and the consumption of reindeer meat by non-Saami, where other land-using industries compete with the reindeer, and where local environments have become global issues, traditional Saami pastoral mediation and ecological regulation is no longer sufficient, not even for successful herding or for the best interests of the Saami. While a strong case can be made for the necessity of centralized authority on one level or another, it is important to note that this need not

imply Swedish authority. There is the cooperation and sharing of traditional Saami herding groups; there is the Sameby unit (even if it is largely a Swedish construct as it is organized today); there is also now, since 1993, the Saami Parliament (Sameting). The difficult decisions regarding resource access and utilization levels among the Saami would not disappear just by being transferred from state to Saami authority. The essential point, however, is that they should be Saami decisions. Only then can Saami skills maintain continuity while keeping pace with new developments.

This is not to say that the content of regulatory mechanisms would necessarily be the same or that the vital point is simply that the same mechanisms should be proclaimed and implemented by the Saami rather than by the state. Admittedly, the source of the authority is important in itself, but this can have implications as well for the specific approach implemented in those decisions. Faced with the same regulatory problems, the Saami may give quite different regulatory responses. Should the Saami refrain from instituting a centralized Sameby herding authority or individual herd limits, this would not be a condition of no regulation, but rather regulation left to other devices such as inter-Saami competition.

Saami herders are not in the least opposed to modernization, if with Paine (1994:141) one understands this term to cover pastoral life changes which have occurred without being "part of the concerted state program" (this being rationalization), and much of pastoral adjustment and improvement stems from herder competition within a system of freely taken risks. However, state impositions are geared toward suppression of herder competition (once the small herders have been removed and the "proper" components of the state model established). Regulation of the commons dilemma has been approached precisely by establishing mechanisms designed to prevent individual efforts or skills from producing unlimited individual gains. But how can one withdraw the benefit of individual skill without in time severely diminishing skills?[10]

With reference to the fact that some Swedish farmers are subsidized to keep the livestock necessary to preserve meadows and enclosed pastures by their grazing, Margareta Ihse suggests in her debate article that the "herding Saami [should] also obtain an economic acknowledgment for their formation and protection of our unique natural and cultural heritage in the mountains" (in *Samefolket* 1995:15). This appears to be a diplomatic way of suggesting that the Swedish state should pay Saami herders for their contributions to the care and maintenance of the mountain regions. If such a policy were put in place, then possibly those Saami who might otherwise be economically ruined by the reindeer cut-backs necessary to avoid destruction of the mountain environment could continue their herding livelihood with moderate grazing pressure. This could be good for vegetative diversity as

well as for the "natural norm" in the mountains considered desirable by the Swedish (and maybe even international) public. Another, more threatening method of linking subsidies to environmental goals, and that suggested by the Ministry of Environmental Protection (SOU 1995:100, p. 40), is that already existing subsidies be withheld from herders in Samebys that exceed their TAQs in order to achieve herd reductions. According to this vision, the Saami herding livelihood, along with the culture and traditional skills it maintains, can best be integrated with environmentalist demands by government subsidies.

Anders Sirén, however, rejects Ihse's suggested subsidy:

> Reindeer herding has the strength to survive in one form or another, and any kind of special subsidy for "formation and protection" of "natural and cultural heritage" is unnecessary and unjustified. Clear and appropriate playing-rules are all that reindeer herding needs. It would also help if one could solve separately the question of the status of Saami in Sweden so as to be spared from the constant confusion between the Saami as a people and reindeer herding as an industry. (Sirén, in *Samefolket* 1995:16)

Sirén has asserted that the reindeer livelihood has the strength to survive without special financial compensation for environmental stewardship according to the Swedish "natural norm." Those who consider reindeer herding to be viable economically, socially and culturally (as do I) do not like to see new government crutches provided for its maintenance should they then open the livelihood to attack by the majority as being a costly, economically pointless hobby for a few "culture-carriers" at general expense. Yet this is a battle which can hardly be avoided with or without the creation of an environmental protection subsidy. Reindeer herding already enjoys a number of government subsidies and funds for protection against disaster. In any case, the degree of monetary support must be deemed insufficient for one to reach a meaningful evaluation.

Reindeer meat competes with other meat products. The reindeer industry competes for scarce resources with other land-based industries, and the number of people employed by the reindeer industry is continually ranked against the number of people employed by non-herding and competing land-based industries when it comes to counting social benefit. Reindeer herding is indeed subsidized, but so are other competing forms of employment and meat products. There can be no meaningful evaluation of the independent strength or weakness of the herding industry, its ability to do without subsidies or its need for them, for such matters can only be considered in relative terms, that is, in comparison with the subsidies and special benefits, legal as well as economic, accruing to the competition.

The government's own accountants for 1994/95 report fully thirty-five different forms of support and compensation to the herding industry (Riksdagens Revisorer, Rapport 1995/96:8). In fact the same report asserts that the reindeer-herding industry receives in subsidies eighty percent of the value of its final production (Riksdagens Revisorer, Rapport 1995/96:8, p. 72). Should forms of compensation payments, for example, payments for reindeer losses occasioned by protected predator species, be added to the subsidies, the accountants calculate the degree of support to be 178 percent of production value. However, other industries also receive much by way of support. (Here one must also count tariff protection and tax breaks.) Of course, one can question the manner in which certain funds have been counted. If the state decrees that certain reindeer predators are protect by law, prohibiting the hunting of them and preferring instead to pay herders for the reindeer losses these predators occasion, should such funds be counted against herding profits? If rangelands are destroyed by the construction of a huge hydroelectric power dam and the Samebys impacted are compensated in a one-time monetary payment for their loss of grazing, is this to be counted as government *support* to the herding industry? The accountants acknowledge such arguments, but conclude that however one counts, "the reindeer industry enjoys support which is not insignificant in relation to its production value" (Riksdagens Revisorer, Rapport 1995/96:8, p. 72).

In the past all reports decrying the economic situation of the reindeer industry have led without fail to the conclusion that herd management must be further rationalized. Since the meat production of the reindeer industry is so insignificant on a national scale—now counted at a few tenths of a percent of all the meat produced in Sweden (Riksdagens Revisorer, Rapport 1995/96:8, p. 73)—the essential reason for advocating such rationalization has been to improve the income and living standards of the herding families (welfare ideology). The report of the government accountants, however, departs from a sole concern with welfare ideology and instead swings toward the new environmentalist perspective.

> The reindeer industry has values of entirely different nature for Sweden than the pure socio-economical. With this insight as a foundation, it should be possible to steer away from thoughts of strict rationalization and effectivization which anyway have small chances of success and which can besides come into conflict with other goals of a superior type, for example, environmental goals. One must not forget in this context that a highly mechanized reindeer herding means stress on a nature which all wish to protect and increases the risk for conflict with other users of the Saami settlement area. (Riksdagens Revisorer, Rapport 1995/96:8, p. 73)

This is not to say that the report of the government accountants recants any desire to maintain decent living standards for herding families because of superior environmental goals, only that it lays environmental, rather than just welfare, concerns as a justification for the not-insignificant aid. From the government perspective, old crutches can be given new names or repackaged. Even further funding might be called for in order to support herding under the new environmental banner, and certainly one must expect that the government will demand linkage between the payment of such aid and the ability of the Samebys to realize newly legislated environmental goals. Herders are naturally wary that the realization of Sameby environmental goals might also become linked to even other subsidy forms. Linkage of this sort, considering the current magnitude of subsidies, would undoubtedly far outweigh the incentive provided by the threat of fines for Samebys to maintain their TAQs.

Minority Rights and the Herding "Industry"

I shall refrain here from delving into the importance of reindeer herding for the Saami culture. I have discussed it elsewhere as have numerous others (Beach 1981; Ruong 1982). It should be noted however, that Saami hunting and fishing have been legally defined by Swedish law as appendices to the herding practice only, and no longer characterize in themselves a unique Saami culture or way of life. The Saami language has been classed among those found to be in an advanced process of language change-over—to the languages spoken by the majority in each of the four nations hosting an indigenous Saami population (SOU 1990:84 p. 161). Lack of employment opportunities in the north has forced many Saami to relocate to urban centers in the south. Reindeer herding both as current practice and as historical heritage supplies both herding and non-herding Saami with one of their most powerful markers of ethnic identity.

What I wish to highlight in this context is the flip side of herding/culture symbiosis: the importance of Saami culture and special Saami minority rights for the herding industry. Sirén states the belief that the herding industry would be helped if questions related to the status of the Saami in Sweden were not constantly confused with matters concerning reindeer herding as an industry. I believe this separability to be a dubious proposition. If ever attained, I believe, contrary to Sirén, that the separation of herding from Saami indigenous affairs would prove disastrous for herding not only as a livelihood supporting a considerable, though small, number of people (regardless of ethnicity), but also disastrous for herding as an industry with meat production only at heart.

In contemporary Swedish law, it is Saami rights considerations alone which reserve herding as a livelihood only for Saami. Certainly there are other indigenous issues which might conflict with the principles of "rational reindeer management," but this formulation is meaningless unless one considers for whom it is intended to be rational. What is rational for the market may not be rational for the Saami as a people. Conversely, it is true that what is best from the aspect of Saami rights and ethnic mobilization might not always make the most sense for the economic profitability of herding for those Saami engaged in herding. Be this as it may, however, the two mutually support each other. Should the Saami monopoly on reindeer herding be revoked, its moral justification would become leveled to that of any other industry making use of land resources in the north. This tendency is already clearly visible even within the context of Saami monopolization as herding becomes pushed toward a full ranching system. The more herding comes to resemble other Swedish animal farming, the more it loses in the eyes of the majority its moral justification in claiming special resource rights (according to the Swedish paradigm of privilege based on cultural preservation).

It might be argued that herding would do well, maybe even better in financial terms, were it to compete on an equal basis with other forms of land utilization, if by so doing it would be free to follow the dictates of Swedish rationalization policy and environmental ideals. But one need only glance at the historical record to realize that herding has time after time been curbed to permit the expansion of other interests—indigenous rights not withstanding. Evaluated merely in terms of how much money it brings and how many people it employs, and comparing these numbers to how much land area it needs free from forms of heavy extractive exploitation, the herding industry can hardly maintain a strong position with respect to other industries competing for land utilization. Those regional planning authorities concerned with the holistic rationalization of all forms of livelihood together—not to mention the majority of non-herding voters—cannot fail but to continue supporting other forms of utilization at the expense of herding. Herding will be tolerated to the extent that it can survive within a pattern of land utilization which holds itself to areas unattractive to its competition. That which can and should bolster the herding position is precisely its status as a Saami livelihood, invoking the moral obligation to support indigenous peoples and cultures as recognized in international conventions.

Conclusion

The day may come when the environmentalist block is so powerful in Sweden that the protection it can offer and actually secure for the herding livelihood is enough for the Saami to find benefits greater than costs in allying themselves with Swedish environmentalist ideals and regulatory enforcement. Or, should Saami livelihoods be regulated by state policies to the brink of extinction and offer no real conflict with Swedish environmental goals and exploitation, we might come to see half-mythical and overly noble Saami figures trotted forth by the Green lobby as symbols for the environmentalist movement on national television in a manner similar to that which has occurred with Native peoples in America. Currently, however, this is far from the case, and Saami see fit to fight for their own environmental empowerment and the ability to attain skills according to their own interaction with the land and their own goals. Being the masters of a landscape with a continuity rooted in their heritage is to them more meaningful than being state-subsidized employees working a Swedish model of grazing units for maximal yield.

As Ingold has clarified, persons and environments are engaged in mutual constitution (1992:40). Hence, to place the Saami herding environment within a Swedish ecological framework of regulation is to put the essence of what it is to be Saami in Swedish hands.

> Enfolded within persons are the histories of their environmental relations; enfolded within the environment are the histories of the activities of persons. Thus, to sever the links that bind any people to their environment is to cut them off from the historical past that has made them who they are. Yet this is precisely what orthodox culture theory has done, in giving recognition to the historical quality of human works only by attributing them to projects of cultural construction opposed to, and merely superimposed upon, an ahistorical nature. (Ingold, 1992:51)

While the Saami might claim superior environmental knowledge or argue that the proposed state regulatory models have essential flaws which cause them to be less effective than their own, these objections (even if true) are formulated so as to fit Swedish terms of debate. In my opinion, such flaws cannot alone account for the vehemence with which the Saami reject the Swedish program for the "environmental adaptation of reindeer herding." Intuitively, the Saami see this program as a threat to their persons as Saami, to the heritage of their ancestors, and to the future of Saami society.

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[1] For an interesting comparative case from the Scottish Highlands, see Toogood, 1995.

[2] The thought that development, which to many is predicated upon various forms of exploitation, be it of the environment, of southern nations, or of a working class, should be sustained at all evokes a flurry of ethical conundrums. Are we speaking of development for a given, limited population, or development for one that is exponentially increasing without restraint? And even if by development we try to restrict ourselves to the attainment of basic, minimal humanitarian goals, like decent health and living standard for all, how can one possibly prevent these, when coupled to an unrestricted growth of beneficiaries, from generating an unsustainable situation exploitive of limited resources? Given these considerations, (unless it addresses the issue of human population control) the thought that indigenous knowledge—or for that matter any knowledge directed toward resource utilization—might promote sustainable development can be credited only under a term so short as to mock the concept of sustainability or in a systemically closed context hardly experienced in modern times.

[3] One can also speak of the goal ranges for the reindeer within a more inclusive system encompassing the reindeer, grazing and herders, "goal herding ranges." Human mediation makes a difference in the number of reindeer which can be accommodated sustainably on the same pasturage. Obviously it might make a major difference should this be Saami herding mediation (protected by special indigenous legislation and rooted in a continuity of Saami traditional skills) or non-Saami mediation. Recognition of this wider system and negotiation of its parameters are, of course, the essential issues of this paper.

[4] Except for the four northernmost mountain Samebys, Könkemä, Lainiovuoma, Saarivuoma and Talma, which share one large TAQ in common.

[5] Elsewhere (Beach, 1997 forthcoming) and building upon the work of Gregory Bateson, I argue that the commons dilemma is a natural part of the evolutionary process which is also a process of mind. The challenge posed by the problem of the commons is essentially a learning challenge.

[6] Instead of "strategies" (which to some might carry a connotation of rigidity), it might be better to view them as initial orientations which are then tempered, reformulated or abandoned as practicalities demand.

[7] For example, aspects of commons dilemma can surface in the realm of labor committed for the common good. Elsewhere (Beach, 1997 forthcoming) I have addressed the issue of so-called "free-riding" among Sameby members, that is, when individual herders, relying upon the labor of other herders, shirk their collective Sameby work responsibilities to invest their time in individually more profitable channels (sometimes even while drawing a Sameby salary).

[8] Should this situation be accompanied by years of good growth for the reindeer population, it will naturally result in the leveling of all individual herd sizes to their prescribed limits, and this condition would continue until reindeer losses (by slaughter, predation or the catastrophic climatic blockage of grazing access) brought about a total

Sameby herd size well under its TAQ, whereupon individual herd sizes could again begin to diverge dramatically.

[9] It seems that the state model first promotes ruthless competition among herders so that small herders will be ousted and the "proper" rational number of herders and reindeer will be established. Then inter-herder competition is to cease so that the commons tragedy is avoided, but instead competition is to surface full force again at the market level as reindeer meat competes with other meats, and at the political level where the social worth of the herding livelihood (production and employment) competes against alternative forms of land use.

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