Full citation: Karjalainen, Timo Pauli, and Joachim Otto Habeck. "When 'The Environment' Comes to Visit: Local Environmental Knowledge in the Far North of Russia." *Environmental Values* 13, no. 2, (2004): 167-186.
http://www.environmentandsociety.org/node/5904

When 'The Environment' Comes to Visit: Local Environmental Knowledge in the Far North of Russia

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ABSTRACT

Based on field research in villages and towns in the Komi Republic (northeastern European Russia), this article compares the perception of the environment with environmental knowledge, and examines their interrelations in local contexts. An individual's perception of the environment is embedded in his/her everyday engagement with the surroundings ('the environment' as seen from within). Environmental knowledge is of more cognitive character: it originates mainly from outside the context of everyday life and is imparted via various forms of communication ('The Environment' as seen from the outside). From the interplay of these two levels arises what we call *local environmental knowledge*, a kind of knowledge which has its own moral and symbolic dimension within the social, cultural and political setting. Similarly, the concept of environmentalism is increasingly recognised as a wide diversity of 'green' views and actions rather than as a single project of a globally consistent normative character; thus there is a need to examine the contextuality of environmental concern. Our findings explain the failure of the 'information deficit' model, according to which the dissemination of scientific knowledge about environmental problems should result in local inhabitants changing their attitudes towards 'The Environment'. Instead, our findings support the insight that, rather than accepting environmental knowledge from external sources as a factual given, individuals restate it in terms of their everyday life contexts and local discourses about socio-political issues.

Environmental Values **13** (2004): 167–86

KEYWORDS

Perception, knowledge, environmental concern, the Komi Republic (Russia)

INTRODUCTION

On the basis of field research in the Komi Republic (North Russia), we discuss the interrelations of environmental perception and environmental knowledge. From this interplay arises local environmental knowledge, a term that we specify and characterise towards the end of this paper. Thereby we wish to contribute to the debate about the role of local knowledge in environmental policies.

The need to address the multiple ways of perceiving environmental change in different sectors of society is very topical in arenas of environmental policy-making (Bickerstaff and Walker 2001). It is also argued that a diversity of knowledge – including local knowledge and expertise – is necessary for the regulation of environmental risks (Fischer 2000: 200). Some scholars, however, have stated that scientists and policy-makers often fail to acknowledge local forms of knowledge as meaningful sources of information (Kroll-Smith et al. 1997) or do not 'hear' certain aspects of what is being said by local people. While they are interested in local knowledge for its possible factual content, they do not always realise that such knowledge 'includes statements that are not simply descriptive, but moral and performative. They inform and direct those with whom the knowledge is shared to act on that information' (Feit 2001: 34).

The initial point of our argument is the distinction between environmental perception and environmental knowledge. Environmental perception refers to the environment as 'that which surrounds'; in this sense, environmental changes are perceived in a framework of everyday action, and through direct experience of other people and the non-human world (Ingold 2000). In contrast, environmental knowledge is part of environmental concern (Dunlap and Jones 2002) or environmentalism, and stems mainly from media, science, education and other forms of communication. If perception situates the individual *within* the environment (environment with lower-case 'e'), viewing it as a life-world; environmentalism often applies the environment in the global sense ('from the street corner to the stratosphere', Cooper 1992: 167) and as if from *outside* ('The Environment' with upper-case 'E'), as if the viewer were detached from it (Ingold 2000: 209–210, 218). In a local context, these two interrelate and intermingle.

More detailed empirical research on the interrelation between environmental perception and environmental knowledge may help to fill practical lacunae such as failings in the 'information deficit' model (Irwin et al. 1996) of environmental policies. This model can be found in the background of many global change projects and national environmental policies, and in this science-centred view of 'the environment', environmental issues are seen as rather static in their na-

ture and meaning, even when a specific issue is compared in different national, cultural and social contexts.

Global surveys (e.g. Dunlap 1998; DeBardeleben and Heuckroth 2001) indicate that levels of expressed environmental concern are high in Russia but that levels of knowledge are comparatively low. We argue that low levels of abstract and cognitive knowledge found in survey studies do not entirely embrace the whole issue of the knowledge base of environmental concern, especially in the Russian context where environmentalism ('The Environment' as an interpretative category) has had a different history and political significance than in Western countries (see Pickvance 1998; Weiner 1999). Thus, context-dependent knowledge needs to be examined, and our intention here is to provide a close-up picture of 'the environment' in a relatively unstudied regional context: the Komi Republic in the northeastern part of European Russia. We shall examine how local people perceive and experience their surroundings and environmental changes, and how their knowledge of environmental issues is formed.

This study is part of the interdisciplinary research project TUNDRA[1], which set out to examine environmental pollution and climate change in the catchment area of the Usa River, a tributary of the Pechora in the Komi Republic. We are concerned with both scientific knowledge about regional environmental problems and the (re-)interpretations of this knowledge among local inhabitants. Some of the environmental concerns of local people are not corroborated by any scientific studies, but nonetheless people feel highly worried about them. If local knowledge is more closely related to the experience of the environment that surrounds the individual, science appears to yield a knowledge about that environment that is at once more abstract and more authoritative. The relation between local and science-based knowledge becomes particularly apparent and salient in cases of major environmental disasters. This relation may be further highlighted through the visits of environmental activists, as happened in one of the areas of our case study. Here we examine the reasons behind the congruencies and the incompatibilities between the two kinds of environmental knowledge.

ENVIRONMENTAL PERCEPTION, KNOWLEDGE AND CONCERN

It is often claimed that nowadays science and scientific research are the source from which people receive their environmental knowledge. In the background of many global change research projects and national environmental policies stands a science-centred 'information deficit' model (see e.g. Blake 1999). This model presumes that in order to promote environmentally benign behaviour and action, individuals and local communities have to be given more scientific facts. Environmental policy makers should have more appropriate methods of social engineering (the domain of social scientists) in order to contribute to a change of attitudes via scientific knowledge (the domain of natural scientists).

Many findings indicate, however, that in the formation of environmental concern, scientific knowledge and discourse do not necessarily play a major role (Irwin et al. 1996; Brand 1997). When people receive scientific knowledge about environmental problems, they restate it in their everyday life contexts. Thus even 'global concepts of the environment and environmental change are always localised in particular socio-political and cultural contexts' (Burningham and O'Brien 1994: 914).

Similarly, some recent studies of the public understanding of environmental issues stress the importance of everyday direct experience and the local context in the formation of environmental concern (e.g. Blake 1999; Bickerstaff and Walker 2001). Bush et al. (2002: 130) claim 'direct sensory perception and commonsense understandings continue to be important in framing environmental understandings and concerns'. The local socio-economic and cultural context strongly influences the way concerns are expressed about the global as well as the local environment (Darier and Schüle 1999). Environmental changes and issues are not separated from other changes and issues in the society–environment milieu, such as crime and economic insecurity. Consequently, environmental policy should be 'sensitive to the everyday contexts in which individual intentions and actions are constrained by socio-economic and political institutions' (Blake 1999: 274).

We argue, as Tim Ingold (2000) does, that the individual discovers the meanings of his/her environment in action and interaction and through direct experience of other people and the non-human world. Ingold takes much of his theoretical framework from Gibsonian ecological psychology, stating that

> [I]f perception is a mode of action, then what we perceive must be a direct function of how we act. Depending on the kind of activity in which we are engaged, we will be attuned to picking up particular kinds of information. The knowledge obtained through direct perception is thus *practical*, it is knowledge about what an environment offers for the pursuance of the action in which the perceiver is currently engaged. In other words, to perceive an object or event is to perceive what it *affords*. (…) [O]ne learns to perceive in the manner appropriate to a culture, not by acquiring programmes or conceptual schemata for organising sensory data into higher-order representations, but by 'hands-on' training in everyday tasks… (Ingold 2000: 166–167, original emphasis)

Perception is the key to local expertise, which is often non-verbal and bounded with context and practice. It refers to the way one obtains knowledge within one's environment. If this direct perception applies to the individual's engagement with the surrounding 'home' environment, knowledge is then grounded in experience in a particular local context. We want to stress that this is not only the case with hunting and gathering societies but also with town-dwellers.

In a recent article, Dunlap and Jones (2002: 485) define environmental concern as 'the degree to which people are aware of problems regarding the

environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solution'. In attitude theory studies, environmental concern is taken to be equivalent to 'environmental attitude', comprising cognitive, affective and conative dimensions. Cognitive expressions of environmental concern usually have to do with the individual's knowledge and beliefs about the nature of an environmental problem, its causes and possible solutions. For Dunlap and Jones (2002: 490) the cognitive dimension is 'a multidimensional construct (environmental cognition) that can be inferred from people's expressed knowledge and beliefs about environmental issues'.

Surveys examine mostly the latter, i.e. quite abstract knowledge (environmental cognition) and concern about environmental issues, and can hardly grasp the actual commitment for 'The Environment' embedded in a local context. This deficiency is usually discussed as a gap between environmental awareness and behaviour. We consider that the role of perceptual knowledge grounded in everyday life is essential in the formation of environmental concern, and that relationships between forms of perceptual and cognitive knowledge need to be better understood.

Specific levels of environmental knowledge do not predict environmental action or behaviour. As Karl-Werner Brand (1997: 204) notes, '(a) pronounced environmental consciousness in one field of behaviour combines with an astonishing indifference in others'. The common survey setting does not acquire local or cultural meaning of the environment and environmental issues, and this is why global survey data 'have to be interpreted with caution. Results are highly dependent on the wordings of questions and the cultural context of interviewees' (Brand 1997: 205).

Nature conservation has a long history in Russia, but in the Soviet Union discussions about it were at times suppressed and in any case tolerated only in a scientific and non-ideological form. Consequently, environmental discourse has been different from that in the West. It has arisen from the nature protection debate in the decades before 1960 (e.g. the protection of Lake Baikal) and became heated by the end of Perestroyka, when environmental critique was an essential part of the critique directed against the Soviet regime (Mirovitskaja 1998; Weiner 1999). In comparison to the Perestroyka period and the subsequent years, nowadays in Russia environmental concern is of much less political relevance. The public debate about environmental issues and official environmental policies had faded away by the time of Putin's presidency (Peterson and Bielke 2001). Nevertheless, the majority of citizens of the Russian Federation do feel concerned about the state of their immediate environment and surroundings. Studies show, in particular, that local sources of pollution (mainly from industry and transportation) are seen as health threats by the citizens in many towns and cities of Russia (Karjalainen et al., submitted). However, according to survey results, citizens of Russia appear to be less concerned about global environmental issues than do those of Western countries (Dunlap 1998). In

'the all-encompassing risk society of Russia', as Oleg Yanitsky (2000) depicts present-day society in Russia, citizens' environmental concerns are pronounced as personal concerns about health and well-being.

It is clear that a given political and socio-economic context influences public discourses, agenda setting, the strategies of environmental organisations and environmentalism in all its shapes and forms (Brosius 1999). Klaus Eder (1996: 163) contends that 'rather than an evolution of environmentalism toward some kind of universal ethics, there is an evolution of different worlds of environmentalism which are cultural responses to specific social conditions. The project of environmentalism is a series of 'green particularisms' rather than a collective project.' As we are interested in these green particularisms in different cultural and social contexts, there is a need to know the role of perception in the formation of environmental concern. Hence the question: What is the meaning of the 'The Environment' in the milieu-specific life-worlds of the local people in the Komi Republic?

EMPIRICAL SETTING

Here we shall briefly introduce the fieldwork region: the Usa Basin in the north-east of European Russia. In terms of landscape, the region is characterised by forests and tundra. In administrative terms, most of the territory belongs to the Komi Republic, the name of which is derived from the predominant indigenous group living in this area: the Komi. Russians have lived in adjacent regions for many centuries, but it was only after 1930 that large numbers of Russians and representatives of other ethnic groups (Ukrainians, Tatars, Germans etc.) settled in the northern part of the Komi Republic. First they came there as a consequence of deportations and forced labour, but later many more arrived voluntarily. The question of how, why and when newcomers arrived in the northern towns has significant implications for the perception of the environment, local discourses and the formulation of environmental concerns, as shall be discussed below. Nowadays the so-called newcomers (*priezzhie*) outnumber the indigenous (*korennye*) inhabitants in this as well as most other parts of the Komi Republic.

However, it is not possible to make a clear-cut distinction between these two groups, nor would this distinction coincide with the one between rural and urban communities (Komi do not live only in villages, nor do newcomers only live in towns). We rather want to emphasise differences in livelihoods and land-use strategies characteristic of the various communities. In the villages of the research region, inhabitants live by fishing, small-scale agriculture, berry-picking, hunting and partly reindeer herding. The towns in the north of the Komi Republic can be defined as *resource communities*, which were built to operate coal mines or oil and gas fields, and in which the main industry constitutes the unifying social bond that sustains the community. But although the two towns

under study in this article, Usinsk and Vorkuta, have much in common, they have divergent histories, are located in different landscapes and vegetation zones, and have contrasting industrial functions. These functions give their inhabitants different resources, leading to distinct 'local logics' concerning environmental, but also other socio-political, issues.

In comparison to Vorkuta (and most other towns of Russia), Usinsk is an affluent place because the oil industry brings in revenues. The sense of a local urban identity is weaker in Usinsk (founded c. 1970) than in Vorkuta (founded in the 1930s), where a considerable proportion of the inhabitants were born, grew up and have always lived, thus acquiring a kind of 'home-town' feeling. The Usinskians feel more like newcomers than the Vorkutinians. The fact that Vorkuta has existed for a longer time also means that nowadays there are only a few indigenous inhabitants who can remember how things were before the town existed, so Vorkuta is already embedded in its environment to a greater extent than Usinsk.

Despite the fact that the Komi Republic has coped fairly well economically, by Russian standards, during the crises of the 1990s, economic development within the Komi Republic has been unequal in the various districts and fields of production. The adjustment of the coal mining industry to the new market conditions has been rather difficult. The lack of processing, the low level of technology and the rise of transportation charges have made many of Vorkuta's coal mines unprofitable[2]. During the 1990s, the city-dwellers of Vorkuta underwent a crisis that affected the local economy as well as self-identification[3].

Against the backcloth of a comparatively pristine natural environment, the oil production zone of Usinsk and the coal mining area around Vorkuta stand out, both in scientific observations – by the peaks in emissions of methane, carbon oxides and sulphur oxides – and in the visual perception of local people – by the oil derricks, pit-heads and smoke stacks. Around Vorkuta as well as around Usinsk, indications of environmental pollution can be seen with the naked eye: layers of soot in the accumulated snow, dead forest around old oil wells, the bus that brings workers to the oil spill sites that still need cleaning.

It was the oil spill in autumn 1994 close to the River Kolva, north of Usinsk, which caused 'The Environment' to visit Usinsk and the adjacent villages. This event caught the attention of the international media, although it was neither unique nor the largest oil spill that has ever taken place in the north of Russia. After a number of smaller leakages in the regional trunk pipeline, in autumn 1994 the situation culminated in its temporary closure, while an estimated 110,000 tonnes of oil poured out into the bogs of the forest tundra (Sagers 1994; Poklad 1995; Vil'chek and Tishkov 1997; Lodewijkx and Hirsch 2000). Some of the oil reached the River Kolva during the same autumn, but the main charge came down the river after the snow melt in spring 1995, at a time when the clean-up was still in its initial stage. The lower course of the Kolva, the mouth of the Usa and therefrom the Pechora underwent heavy pollution. The 1994 oil

spill is vividly recollected by all our informants in Usinsk and surroundings. It has led to very prominent manifestations of environmental concern, which is markedly different from the concerns we found prevalent in the other fieldwork region, Vorkuta.

METHODS

Our case study is based on a combination of fieldwork among rural (mainly indigenous) and urban (mainly newcomer) inhabitants. In the sociological component of the research, environmental perception and knowledge were examined among town-dwellers in Usinsk and Vorkuta. This study was carried out from August to October 1998 by means of face-to-face thematic interviews. Semi-structured, open-ended questions focused on the interviewee's life-history, hobbies and views of the surrounding environment, perceptions and acuteness of socio-economic problems and changes in the state of environment; and likewise knowledge of, responsibilities for and solutions to environmental issues. Interviews ranged in duration from 25 to 105 minutes. All interviews were recorded and transcribed. For analysing and evaluating this material, we used a 'grounded theory' approach based on the constant comparison of emergent themes and an exploration of deviant cases (Glaser and Strauss 1967).

The interviews among town-dwellers focused on three occupational groups: 114 industrial workers, 30 teachers, and 33 managers and administrators. The data set comprises 89 interviews in Usinsk and 86 in Vorkuta[4]. The occupational groups studied were chosen because of their 'strategically important' position. The administration, particularly in Russia, has great influence in environmental decisions (see Yanitsky 2000); teachers are largely responsible for environmental education; and industrial workers, as a large and organised group, have shown their ability to gain public attention all over Russia through their protests for better living conditions (Burawoy and Krotov 1994).

In the anthropological component of the research, fieldwork was conducted in six villages[5] and in reindeer herders' camps in the adjacent forest-tundra and tundra areas from July 1998 to July 1999. Semi-structured questionnaires with open-ended questions, initially designed for interviewing, did not prove useful as interviewees generally found this way of communicating too formalised. Instead, a couple of initial questions could help to start open discussions whereby both the interviewer and the interviewees had opportunities to elaborate on subjects that were deemed most topical in the given situation. Part of the data was acquired in 'informal talks', which proved to be valuable for gaining a detailed understanding of the local inhabitants' main concerns and attitudes. Participant observation, predominantly in reindeer husbandry, constituted another key element of the anthropological research. Migrating with Komi reindeer herders and their families for three months provided a better grasp of how they

perceive their environment, and helped to assess the question of whether their perceptions differ from those of oil workers. In particular, encounters between reindeer herders and oil workers in the tundra shed light on this question. Altogether, the anthropological field notes record conversations with approximately 180 different individuals, ranging from occasional ten-minute talks to repeated encounters and long-term company with some 30 key informants.

LIVELIHOODS AND THE PERCEPTION OF 'NATURE'

The local identity of Vorkuta and Usinsk as *resource communities* becomes apparent in their officially promoted heroic image. Travellers who come by train to Vorkuta are greeted by a large inscription on the platform: 'Vorkuta – the outpost for the opening-up of the North' (*Vorkuta – forpost osvoyeniya Severa*). Vorkuta is a true frontier town, it seems, where man struggles against a harsh and hostile natural environment in order to secure coal for the sake of the national economy. A similarly zealous inscription in Usinsk encourages its inhabitants to produce 'more oil from Usinsk for the motherland' (*Bol'she Usinskoy nefti rodine*). The local museum in Usinsk shows a photograph of pioneers who had come in tank-like vehicles to build a whole town amidst bogs and forests. Such imagery of the two towns and their inhabitants is in stark contrast with the officially promoted traditionalist image of the indigenous population, and newcomers as well as indigenous inhabitants appear to buy into this discourse and tend to see each other along these lines (Habeck 2003). For example, many newcomers speak about Komi reindeer herders as 'children of nature', allegedly too honest and naïve for living in urban places, but feeling 'at home' in the tundra[6].

However, such ethnic stereotypes do not help to elucidate the question of whether there are differences in the perception of the environment between various groups. Differences of this kind cannot be explained simply by ethnicity but rather by different livelihoods and everyday activities, as we shall illustrate in what follows. The Komi reindeer herders – to return to the above example – do not see themselves as 'children of nature', but rather as people who 'know the tundra' (compare Anderson 2000) with sufficient experience and endurance to make a living there. It is in this sense that practical environmental knowledge and skills provide for a livelihood in the tundra and forest.

Many of the villagers work in, or at least depend on, fishing, reindeer husbandry and, to a smaller extent, hunting. Like the townspeople, specific occupational groups of the rural population have distinct spatial spheres of activity. A reindeer herder cannot pursue his work without having a thorough knowledge of his environment. Migrating between summer and winter pastures, herders travel up to 1,000 km in the course of one year, the whole way on reindeer-drawn sledges. Fishermen have a smaller radius of activity but some may travel more than 100 km to get to their preferred places. The biographies of fishermen, hunters and

herders are closely connected with specific places; many place names testify to the deeds of their ancestors. For the villagers, it is beyond any doubt that humans are capable of staying in this region for a lifetime.

Most of the urban informants regard the northern 'natural' environments – forests, bogs, the tundra etc. – mainly as settings for leisure activity. Mushrooming and berry-picking, fishing, hunting and hiking are forms of relaxation and give the opportunity 'to breathe fresh air'. These environments are held to be important for health and well-being, as a counterbalance to industrial or other work and town life. At the same time, these activities also have significance for subsistence economy and urban inhabitants make use of them to various degrees. Several townspeople spend their holidays fishing in a way similar to the activities of rural fishermen: they travel to a river or lake in the tundra and stay there for a couple of weeks. While townspeople use the tundra for leisure and subsistence, villagers use the residency of their children or relatives in town to buy cheaper products. Hence, both townspeople and villagers have some degree of experience of each other's everyday environments; but these are not, as we would say with Brand (1997), their milieu-specific life-worlds, within which environmental perception is constituted.

Overall, newcomers to the North consider living conditions to be very harsh. This harshness derives partly from the uncertain 'transitional' circumstances. Yet what is more, there is a *narrative of the North* – a kind of frontier discourse (Keskitalo 2002: 59), which depicts northern nature as very austere. The narrative of the North used to be part of the rhetoric needed to justify the special status of these towns with regard to subsidies and benefits within the Soviet economy, and remains significant within the Russian economy which is still dependent on the export of natural resources (Karjalainen 2001). This narrative is particularly discernible in Vorkuta, and it seems to confirm the presupposition that newcomers tend to see nature as an alien domain whose appropriation involves struggle, suffering and conquest. However, it is their environment as a whole that involves suffering, rather than the encounter with a 'nature' that is separated from the human world. Urban newcomers feel confronted with the adversities of the natural environment as well as those of the built surroundings and the social milieu (notably institutions of the official sphere). Our urban interviewees usually discussed 'the environment' without separating the natural from the social[7]. Similarly, for rural informants changes in the natural environment are closely connected to the socio-economic sphere (compare Berglund 1998: 54).

To sum up this section, both townspeople and villagers make no clear distinction between the natural and the social environment. We also argue that for individuals in both groups the temporal and spatial range of everyday life activities are constituent for their perception of the environment. Not the individual's ethnic identity but his/her engagement and interaction with the surroundings give rise to environmental perception. This finding can also account for the specific differences in environmental perception between the inhabitants of

Vorkuta and Usinsk, the two towns under study. In the next section, we shall explore in more detail how environmental perception interrelates with sudden environmental changes as well as local discourse and mediated knowledge about 'The Environment'.

PERCEPTION AND KNOWLEDGE OF POLLUTION

In general, environmental issues hold a low profile compared with other social problems among townspeople of Usinsk and Vorkuta. Under current circumstances income level and employment are clearly more important to people than environmental issues. However, interviewees from the town of Usinsk were far more oriented towards environmental problems than people in Vorkuta (Karjalainen 2000).

Environmental concern strongly increases following any major disaster (compare Berkes 2002: 337). It was not only the obvious changes in the environment that leapt to the eyes of the Usinskians, but also the presence of correspondents from abroad, the feeling that all of a sudden their concerns were receiving attention in many other parts of the world. The whole topic of environmental pollution and the protection of the environment was more open to public debate in Usinsk, and the public became more alert to related questions, than in Vorkuta. In the Usinskians' experiences of the major oil spill in 1994, its wide media profile and the visits of environmentalists created a special discursive space for environmental affairs. This generated a greater eagerness to discuss environmental issues, thereby also laying the grounds for environmental concern. In this way, 'The Environment' – environmental concern from outside the local context – came to visit Usinsk and merged with the inhabitants' environmental perception. In Usinsk almost all discussions about the environment derive from the major oil spill in 1994.

Question: 'Do you have any problems with the state of the environment in the area where you live?'

> 'Yes, they are connected to the oil production. I don't think that everything is fixed up after the oil spill in 1994. (…) People start to think about the environment only when something extreme happens, like the disaster in Chernobyl or the oil spill in 1994. (…) After the oil spill there was a lot of discussion, but whether or not something was done, I don't know.' [Ut11, teacher, 20s, female, Russian]

> 'Yes, we have. But only in recent times have people started to pay attention to them, although they have existed all the time.' [Uw53, oil worker, 40s, male, Russian]

Air pollution is environmental threat number one for the city-dwellers of Vorkuta. The sources are two heating plants, the district heating centre for water, coal mines, the cement factory and (less significantly) automobiles. Some estimates claim that people in Vorkuta 'eat 1.4 tonnes of dust' per year (Vt07). The lay public evaluates air pollution by direct observations and experiences, such as cleanness of clothes ('a shirt is clean for a day', Vw06; Va10) and snow ('around Vorkuta, in a circle of about 5 km, snow is black because of coal dust', Vw37), and also by breathing difficulties. Scientific knowledge plays only a minor role here, although we noticed that administrators speak about levels and effects of pollution in more technical and scientific terms.

Although Vorkuta is classified as the most polluted region in the Komi Republic (Taskayev 1999: 117), environmental issues are not really hot topics of discussion in the city. Based on his study of the suburbs of Manchester, Irwin wrote that '[e]nvironmental pollution is one important characteristic of life…, but it is not the *sole* characteristic' (Irwin 1995: 94). The same can be said about Vorkuta. Moreover, in Vorkuta, public discourse often refers implicitly to the economic and historical role of the city. Official and informal talks are frequently connected to subsidies from the central government, income levels and privileges. This is due to the fact that Vorkuta was 'a true Soviet city' with coal mines and miners ('élite workers' in one of the key industries), and received major subsidies from the central government. On the other hand, it has anticommunist, radical political traditions of underground activity, which have remained from its former role in the GULAG (the system of forced-labour camps in the Stalin era), although the political radicalism of the miners derives primarily from the fact that their economic conditions have persistently been much worse than those of miners elsewhere (Burawoy and Krotov 1994).

The effects of water pollution are assessed quite similarly in both towns. Townspeople are worried about health risks connected to the quality of their drinking water, and their recreational activities related to the diminishing fishing potentials and swimming possibilities. The town-dwellers of Usinsk have responded to water pollution by boiling water and purchasing filters, and some buy their drinking water in bottles. The poor quality and quantity of fish are very evident results of water pollution in Usinsk (and also in Vorkuta in connection with the Vorkuta River). According to Usinskians, fish have an oily smell and taste. 'Previously there were plenty of salmon in the Usa River, but now there are only few left and those smell oily' (Ut09). The impacts of water pollution are 'real' for the town-dwellers, even if they are already accustomed to the situation.

For the inhabitants of the villages around Usinsk, the impacts of the 1994 oil spill are even more salient. Previously they used to drink water from the rivers Pechora and Usa, but nowadays they deem it too risky. They too say that the quality of the fish has deteriorated and the quantity has diminished[8]. More than the town-dwellers, the rural inhabitants rely on fish as a staple diet because their

monetary income is very low. What is more, the river meadows, which are used for making hay, were all polluted by oil during the subsequent spring flooding. It was reported that in 1995 cattle died by the hundreds in this region and that since then the milk yield of the surviving cows has almost halved. The reduced milk output might stem from the lack of artificial feed but the interviewees see it also as being connected with the oil spills.

We saw that in some situations the local inhabitants are not willing or able to reconcile their personal experiences with scientifically established knowledge. Once an ecological disaster has occurred and environmental change becomes visible within a short period of time, the local inhabitants seem not only more interested in receiving information about the state of the environment, but also more critical of its validity. The example of the Usinsk oil spill illustrates this. Experts from both the Ministry of Agriculture of the Komi Republic and a Moscow-based consulting company, independently of each other, conducted studies of the extent and the results of oil pollution in the area. The studies concluded that, although large-scale pollution had happened, human diseases and the illness or death of animals could not be directly connected with the oil spills. Such conclusions disappoint the rural inhabitants, for they feel that the causal connection is all too obvious and even acknowledged by oil companies themselves. Many people do not trust these environmental reports and call for additional studies, hoping that these would prove their point.

Some inhabitants have started to collect data themselves, for example statistics on diagnoses in the local hospital. This is where the validity of scientific knowledge comes into play. Although everybody in these villages is entirely sure about the causal connections, their local environmental knowledge, mainly based on personal experience, does not suffice to argue their case; instead, they have to tangle with a realm of knowledge which, albeit not alien to them, in its abstraction lacks the sensual perceptibility that their knowledge affords (Berglund 1998: 152–74; Grove-White 1993: 21–2).

In Brown's terms (1997), the response to the Usinsk oil spill exemplifies 'popular epidemiology', a form of citizen science in which people engage in 'lay' ways of collecting knowledge about environmental and technological hazards. Public-health officials and scientists work with abstractions, but their knowledge does not link up with local people's reality; it does not fit into practical 'lived' experience. All local concerns are expressed by referring to personal experiences and observations. The fact that interviewees are comparing how things were before and after the oil spills implies that not only their perception of the environment has changed, but also their environmental cognition; in other words, their concern about 'The Environment'. During our research, we noticed that local citizens have also begun to assess and compare the various oil companies operating in the region by their environmental standards, production methods and social commitment within the district (Habeck 2002; Karjalainen 2001).

For the newcomers, environmental threats are clearly connected with questions about the future of the local industry, employment, incomes and housing, and attached to anxiety over the whole 'disarray' in Russia. Perceived environmental changes are experienced as part of the unstable societal situation and social change processes. In many people's thinking, the deterioration of the environment reflects the prevailing 'disorder' of Russia: dirt, litter in the streets and other forms of pollution are seen as signs of disorder (for similar findings from St. Petersburg, see Simpura and Eremitcheva 1997: 468). The collapse of the old practical and symbolic world has caused a strong feeling of insecurity, especially in the heavily subsidised northern cities.

Question: Do you think that the state of the environment has changed during your living time in Usinsk/Vorkuta?

'Everything has changed, not only the environment. Nothing has changed for the better. In the year 1981, the gradual worsening started and the 1990s are very hard to understand.' (Uw51: electrician, 50s, male, Usinsk)

'Worsened. Some kind of abandonment of the North has happened. Previously we felt Vorkuta was needed… Now we feel no one needs us.' (Vt13: teacher, 40s, female, Vorkuta.)

CONCLUSIONS AND IMPLICATIONS

During the past three decades, several international survey studies (e.g. Dunlap et al. 1993) have revealed a substantial growth in public concern over environmental issues. Environmental awareness and concern are now seen as global phenomena (Dunlap 2002). However, some scholars have asked why the expression of concern is not translated into environmentally conscious behaviour in people's everyday life (Brand 1997). One attempt to explain this gap between concern and action is the 'information deficit' model, which claims that people do not have enough knowledge to act, or have misconceptions about environmental issues, and first need to be 'enlightened' through scientific knowledge. Dunlap (2002: 168) identifies this 'as the cognitive (or knowledge) fix, which assumes that information and persuasion will suffice to produce the necessary changes in behaviour'.

Yet the 'information deficit' model cannot fully explain the gap between environmental awareness and environmental action. Rather, as we have sought to show, we need to study local contexts of everyday life, and people's experiences of environmental issues *in their own environments*. Using the approach of Ingold (2000), we situate people in the context of an active engagement with the constituents of their environment. This means seeing the individual as placed *within* the environment, rather than in the position of having to reconstruct it from the *outside*. Thus, we see 'environment' as 'life-world'. To 'dispense' informa-

tion in local communities, or to 'harvest' so-called traditional environmental knowledge from them without taking into consideration the embeddedness of different kinds of knowledge in certain practices, would only create new gaps, between local people, scientists and policy-makers.

Our findings from the north of the Komi Republic support the view that the environmental problems reported by local inhabitants are by no means imaginary. They force themselves on people's attention through the constraints they place on practical activities of livelihood. For the people of Usinsk, Vorkuta and surroundings, air and water pollution are perceived first and foremost through their own senses and experiences in the context of everyday life. It is this direct perception of environmental changes that accounts for the 'highly localised nature of environmental concerns and interests' (Bush et al. 2002: 129), which has been discerned in many studies. Hence we also agree with Bickerstaff and Walker that '[t]he importance of primary experience is evident in the widespread public recognition of pollutants that could be distinguished through physical senses' (2001: 143). External sources of information play a minor role in this process.

In several respects, our research corroborates the results of qualitative case studies in Western countries. First, environmental issues are not separated from other issues and changes in a local context; and they are not accorded highest priority in the communities that we studied, for social and economic issues are at least as salient as environmental ones (Bickerstaff and Walker 2001; Bush et al. 2002; Irwin et al. 1996). Second, historical and economic peculiarities in the local discourse frame the way in which environmental concerns are balanced (Bush et al. 2002). This is evident in the differences between Usinsk and Vorkuta. Third, science and scientific knowledge have no major significance for the identification or formulation of environmental concerns in everyday life. Public discussion is not about the 'facts' of pollution or global environmental issues, but is based on qualitative relationships, experiences and people's own observations. And fourth, global environmental issues and concepts are 'contextualised in terms of the routines and everyday problems in which individuals are embroiled' (Burningham and O'Brien 1994: 917). We have to add that global environmental issues (e.g. global climate change) are less widely discussed in the north of the Komi Republic, and in Russia as a whole, than in Western countries (Darier and Schüle 1999; Dunlap 1998; Karjalainen et al., submitted).

Both groups, villagers and town-dwellers in the north of the Komi Republic, perceive pollution as a threat and have experienced some impacts of pollution on their daily lives and everyday surroundings. However, there are differences in the perception and experiences of environmental impacts among these groups. The rural individuals and communities experience biophysical impacts of environmental change (oil spills) more directly in their livelihoods, as fish are inedible and cattle cannot drink water from the rivers. Rural inhabitants are more directly dependent on the local ecosystems than newcomers working in

hydrocarbon extraction and other industries. Although the townspeople, too, engage to some extent in subsistence activities, they are less affected by the consequences of environmental pollution because their livelihood is based on a different combination of income sources.

A fair proportion of the newcomers had come to the north in order to earn money in hydrocarbon extraction and were planning to move back to the south after a couple of years. In this respect, not only the function but also the value of places and 'natural resources' (such as rivers and lakes) are quite different for newcomers from what they are for indigenous dwellers. Hence, we can say that social and occupational groups differ in their perception of environmental changes (e.g. with regard to 'reading signs' of changes in plant species valuable for them) because they engage in different tasks and use different skills; they have different functional relationships to the 'local space', and only in this respect one might say that indigenous inhabitants and newcomers inhabit different life-worlds.

To conclude, environmental changes are perceived in a framework of everyday life, whereas environmental knowledge originates mainly from outside the immediate context or 'real-life' experience and is imported along various forms of communication. *Local environmental knowledge* is the result of the transactions and interactions, within a local context, between environmental perception and environmental knowledge. Local environmental knowledge is knowledge through engagement at two levels. At the first level, the individual engages with his/her surroundings giving rise to environmental perception, and at the second level, environmental perception is engaged with externally derived cognition giving rise to local environmental knowledge. This knowledge cannot be treated solely as factual information since it has its own moral and symbolic dimension within a social, cultural and political context.

NOTES

We are grateful to Aleksander Maksimov for assistance in conducting the interviews. Prior drafts have been improved thanks to extensive comments by Riley E. Dunlap and Tim Ingold. We would also like to thank Timo Järvikoski, Kalle Reinikainen and the journal's reviewers for their comments. This research was supported by the Finnish Graduate School for Russian and East European Studies, the Kone Foundation, Finland and the Daimler Benz Foundation, Ladenburg, Germany.

[1] TUNDRA (Tundra Degradation in the Russian Arctic) is supported by the EC Environment and Climate Research Programme (contract nr. ENV4-CT97-0522, climate and natural hazards). For a general description of this project, see Kuhry and Holm (1999).

[2] The fact that the town is located in the treeless tundra with its harsh temperatures makes the plight of the city-dwellers of Vorkuta more severe; whereas Usinsk is located

in the northern forest zone, where small-scale food production at the cottage (*dacha*) is to some extent possible.

[3] On a practical level, the mines (their work) could no longer provide the same kind of social safety net they used to do. Savings were devastated by inflation and the government abandoned many privileges that were meant to compensate for the 'hard living conditions of the North'. On the symbolic level, Vorkuta and its workers lost their prestige and the dispensations they had enjoyed as 'élite workers' in one of the key Soviet industries.

[4] The number of interviews was limited by the 'saturation point' at which we found that further interviews added virtually nothing to what we had already been told. In this article, when referring to the urban interviews, we shall use the following abbreviations: U = Usinsk; V = Vorkuta; a = administration staff; t = teacher; w = worker.

[5] These six villages are: Mutnyy Materik, Novikbozh and Ust'-Usa (in the Usinsk District); Petrun' and Abez' (in the Inta District) and Kharuta (administratively belonging to the Nenets Autonomous Okrug, but geographically located on the territory of the Komi Republic, Inta District).

[6] While the forest is clearly a traditional habitat for the Komi, the tundra is not. Their arrival in the tundra zone was concomitant upon the adoption of reindeer-herding practices from their northern neighbours, the Nenets. In the process of learning these skills, the northern Komi have also adopted some Nenets concepts about plants and animals, but it is not clear how far this has influenced ideas and notions of the environment in general.

[7] The Russian term for 'environment' can comprise both the natural and the social environment. The colloquial term for 'environment' is *okruzhayushchaya sreda* (literally, 'surrounding milieu' or 'surrounding environment'). The more formal (scientific, juridical) term is *okruzhayushchaya prirodnaya sreda* (literally, 'surrounding natural environment').

[8] This affects the entire catchment area of the Pechora, because many of the most valuable fish species are migratory or semi-migratory.

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