Snowchange Experts and Scientists

Reindeer and Snow

Timo Helle, Special Researcher, The Finnish Forest Research Institute, Finland, prepared for the Snowchange Project at Tampere Polytechnic, Finland

The semi-domesticated reindeer and its wild ancestors and close relatives live in an environment in which snow covers the ground at least seven months a year. Among northern ungulates reindeer is best adapted to the snowy environment. That applies both to behaviour and morphology.

Most preferred winter food is reindeer lichen. Reindeer detects lichen beneath snow by smelling. Reindeer removes snow off by digging with legs. In order to avoid excessive deep or hard snow wild reindeer are prepared for long migrations. For semi-domesticated reindeer migrations are shorter due to state borders and fences constructed between local herding units and territories.

The decisive role of the snow appears in a rich Saami snow terminology. That is illustrated by the reindeerherders of the olden times who investigated lichen availability through the snow with a little shovel at the other end of the ski stick. If snow was too deep or hard reindeer were moved to a better site. It is an old practice that the herders have for exceptional snow winters reserve areas. These areas would be outside of the normal use. However, it was not uncommon that herders had to open the feeding crater for reindeer with a shovel. After that reindeer could widen the feeding hole themselves.

Both wild and semi-domesticated reindeer populations show great annual fluctuations, which are a result of variation in reproduction and mortality. In most cases low reproduction and high mortality are related to difficult snow conditions preventing access to forage. Furthermore recent research reveals that local winter weather conditions are influenced by large scale air mass movements over Atlantic and Arctic Oceans.

The best know air mass movement is NAO (the North Atlantic Oscillation). A low pressure near Iceland and a high pressure near the Azores produce warm and moist westerly winds in Europe in the wintertime. Winters are rich in snow. In extreme cases this is detrimental for reindeer. High pressure near Iceland is connected with easterly winds and more "Siberian"-like winter climate.

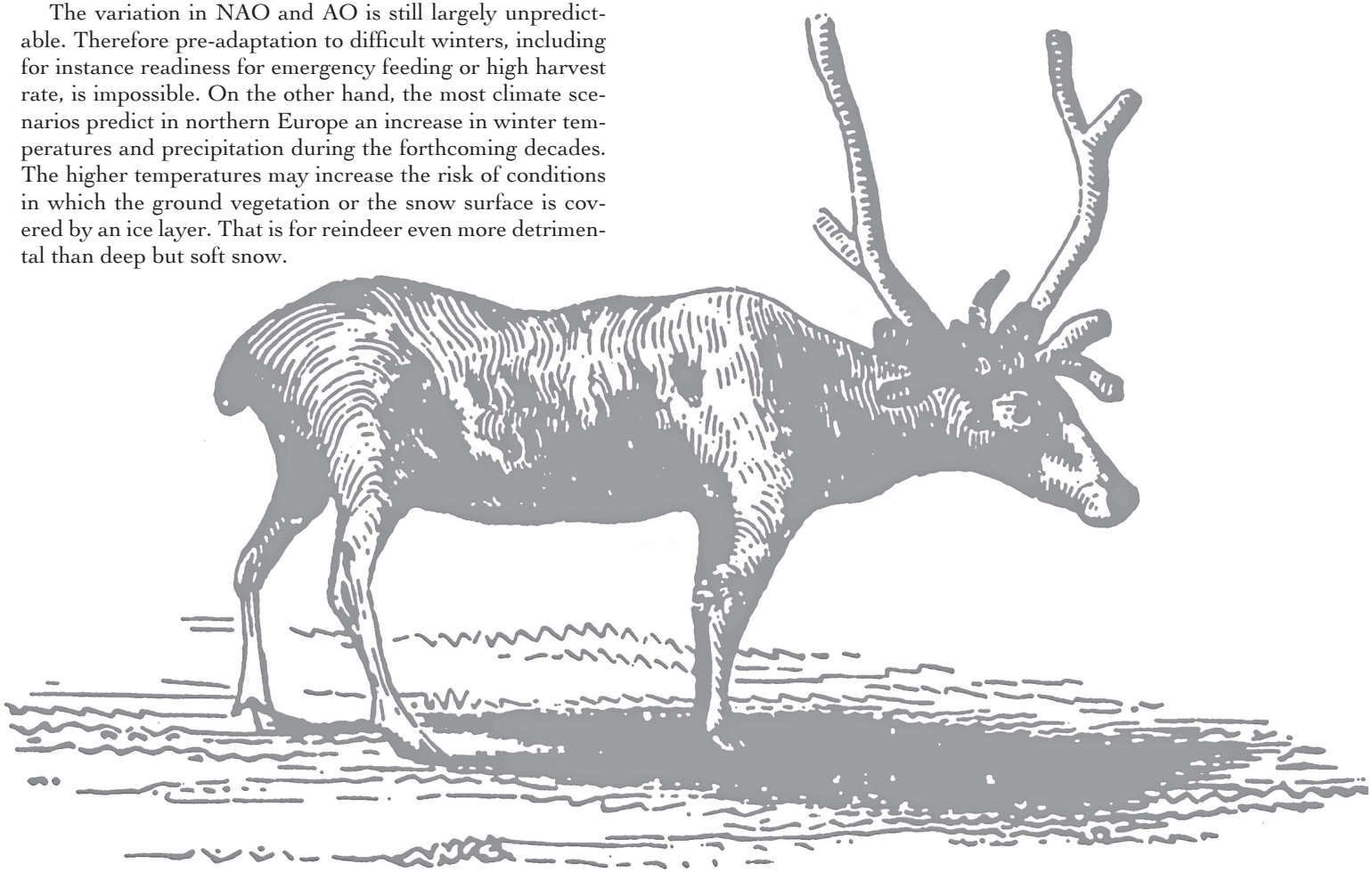
One condition prevails for a decade or more, and then the system switches to the other one. The phase and intensity of NAO is expressed by an index, which is based on the difference in air pressure between Iceland and the Azores (or Lissabon).

Indices dating back 150 years were exceptionally high between 1975 and the early 1990s. During that period NAO explains about 75 % from the variation of winter or spring time temperatures in western Europe, so NAO has an important contribution to the observed temperature increase in Europe. Arctic Oscillation describes the air mass movement around Arctic Ocean, but it correlates rather well with NAO.

In Finland, Sweden and Norway the number of semi-domesticated reindeer correlated in 1960-2000 with AO and in the most areas with NAO also. Reindeer populations started to increase in the middle of 1970s and that continued to the end of the 1980s. After that they collapsed as result of ex-

treme deep snow associated with high AO or NAO indices. There is evidence also that summer weather is influenced by largescale air mass movements affecting the growth of animals.

The variation in NAO and AO is still largely unpredictable. Therefore pre-adaptation to difficult winters, including for instance readiness for emergency feeding or high harvest rate, is impossible. On the other hand, the most climate scenarios predict in northern Europe an increase in winter temperatures and precipitation during the forthcoming decades. The higher temperatures may increase the risk of conditions in which the ground vegetation or the snow surface is covered by an ice layer. That is for reindeer even more detrimental than deep but soft snow.



Human Rights of Indigenous Peoples in Light of Global Climate Change

Leena Heinämäki, paper from Snowchange 2002 Conference
Researcher, University of Lapland, Northern Institute for Environmental and Minority Law

During the past decades, conflicts involving economic development, environmental protection and the protection of human rights have alarmingly increased throughout the world. The initiatives for environmental conservation are often perceived as harmful to economic development. At times, environmental protection has also been accused of ignoring basic human rights, especially the interests of indigenous peoples and other local communities who are directly dependent on their environment.

Until recently, human rights instruments have not placed much attention to the environment. The three primary international human rights instruments, International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, and the Universal Declaration of Human Rights, barely mention the relationship between protection of the environment and human rights. The first instrument to address this issue was the 1972 UN Conference on the Human Environment, which declared that 'Man has the fundamental right to freedom, equality and adequate conditions of life in an environment of a quality that permits a life of dignity and well-being'. Disappointingly, the 1992 Rio Declaration on Environment and Development did not maintain the emphasis on a human rights perspective to environment, providing only that humans are 'entitled to a healthy and productive life in harmony with nature'. Neither does the Vienna Declaration on the Right to Development 1993 recognize an explicit human right to environmental protection, although it does link the environment to the realization of the right to development. No global human rights instrument to date include a 'right to environment'.

There are two regional instruments, however, that are worth mentioning here. The African Charter on Human and Peoples' Rights and the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights (Protocol of San Salvador) both include a human right to environment.

The Rio Declaration constitutes at present the most significant universally endorsed statement of general rights and obligations of states pertaining to the environment. The Rio Declaration, together with the 1987 Brundtlandt Report, have been perceived by many to have changed the focus from international environmental law to the law of sustainable development.

Even though the human rights approach is not that visible in the Rio Declaration, the Rio Conference of 1992 itself was very important for the indigenous peoples. Indeed, the concept of sustainable development might in effect guarantee better human rights protection of indigenous peoples by strengthening their possibilities to influence the management of the environment. All the other instruments except the Cli-

mate Change Convention concluded at Rio include references to indigenous peoples. The close and traditional dependence of indigenous and local communities to nature and biological resources is recognized in many ways in these instruments.

The Rio approach is not so much the abstract protection of the rights of indigenous peoples to their culture and traditional livelihoods. The approach rather highlights the importance of traditional ecological knowledge of indigenous peoples. In other words, the Rio Conference did not offer so many substantial rights for the protection of the human rights of indigenous peoples but produced something that might be even more effective, namely recognized the indigenous peoples' right to participate in environmental management. Indigenous peoples are not protected from outside but are entitled, at least to some rate, to participate in environmental management and thus influence the decision-making processes by sharing their own ideas about environmental conservation. Although the right of participation is limited in the system of international law, it is of utmost importance for the indigenous peoples to be able to maintain and develop their culture by preserving their own ideas and methods also in global environmental management.

The special human right to environment, however, is not necessarily needed for the protection of the rights of indigenous peoples in environmental context. In the field of international environmental law, one example of an instrument that refers to a right to traditional food is the latest Stockholm Convention on Persistent Organic Pollutants (POPs) 2001. The convention takes into account the Arctic indigenous peoples by acknowledging that the Arctic indigenous communities are particularly at risk because of the contamination of their traditional food. On the other hand, the convention does not contain references to participatory rights. However, indigenous peoples were active in POPs negotiations and had a significant role in influencing the making of the the convention, either through national delegations of states or via their own forums.

Paradoxically, it seems that international human rights law, rather than international environmental law, provides direct mechanisms for the protection of the rights of indigenous peoples in the context of climate change. As of yet, we are not aware of all the consequences that climate change is and will be causing to the Arctic ecosystems and people. But as we learned at the Snowchange Conference on February 2002 in Tampere, Arctic indigenous peoples are already witnessing dramatic changes in their homelands. Indigenous observations seem to confirm the results of scientific climate research, a research done, for instance, by Intergovernmental Panel on Climate Change (IPCC) and Arctic Climate Impact Assessment (ACIA) -programme.

The indigenous observations as well as scientific research on climate change point to the same, worrisome, direction. Climate change is predicted to have major impacts on the culture and traditional livelihoods of indigenous peoples. Not only cultural rights, but also various other rights are at risk in being violated as a result of the climate change, such as rights to natural resources, the right to health and healthy life, the right to safe working conditions, the right to adequate standard of living and the right to development. All of the abovementioned rights are guaranteed to indigenous peoples by a host of instruments of international human rights law. Within United Nations, the basic instruments in this context are Universal Declaration on Human Rights 1948, International Covenant on Civil and Political Rights 1966, International Covenant on Economic, Social and Cultural Rights 1966, International Convention on the Elimination of All Forms of Racial Discrimination 1965, Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities 1992, Vienna Declaration on the Right to Development 1993, UN Draft Declaration on the Rights

of Indigenous Peoples 1994 and ILO Convention No.169 Concerning Indigenous and Tribal Peoples in Independent Countries 1989.

There are also few regional instruments that have relevance in the context of the rights of some of the Arctic indigenous peoples. The Convention for the Protection of Human Rights and Fundamental Freedoms 1950 and the Framework Convention for the Protection of National Minorities 1995 have been concluded under the auspices of the Council of Europe. Furthermore, within the Organization of American States, some rights of indigenous peoples could be protected by the American Convention on Human Rights 1969 and Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights (Protocol of San Salvador) of 1988.

In principle, the human rights of Arctic indigenous peoples are recognized by states that have committed themselves to these instruments. Of the sources of international law, treaties and conventions bind only states parties to them whereas general principles of international law and customary law bind all states of the world. Declarations, resolutions etc. form the so called soft law instruments, i.e., instruments that are not legally binding, but can be considered posing moral or political obligations on states. It has to be still remembered that even if a state is bound by international law to protect a set of human rights, an effective implementation of those rights requires constant supervision by the subjects of those rights.

As mentioned above, the participatory rights of indigenous peoples are rather limited in international law. The still governing principle of international law, sovereignty of states, hinders the development of the right of participation and the right of self-determination of indigenous peoples, but it also poses problems for global environmental management. Various autonomy arrangements and self-governing models of indigenous peoples seem to be insufficient in dealing with issues as large as global environmental challenges. The autonomy arrangements guarantee people in question limited powers, but only in internal matters, not entitling indigenous peoples to partake in international negotiations. Yet, the culture should not be seen as an internal matter anymore since it is threatened by global forces.

The sovereignty of states seems to place many obstacles for a truly international solution of global environmental problems. According to this doctrine, states exercise supreme political authority within their territories and in relation to their citizens. Related to the notion of the sovereignty of states is the duty on the part of states to refrain from intervention in the internal affairs of other states. The states are primary subjects of international law, which means that it is states that are capable of possessing international rights and duties, complemented by the capacity to defend those rights by bringing international claims. States conclude treaties with other states or accept declarations prepared by international organizations.

According to the doctrine of freedom of contracting, there is no way to force a sovereign state to participate in the making of a treaty; a telling and worrying example was the United States refusal to accept the Kyoto Protocol. The concept of state sovereignty excludes more or less other actors of international law from decision-making. Unless the states invite other actors, such as indigenous peoples, to be part of the decision-making process (as it is the case in the Arctic Council), those groups are not able to fully participate. The state sovereignty does not only pose problems for the rights of indigenous peoples, but seems to obstruct efficient global environmental protection. What one state does, in and to its own environment, affects not only territories of other states and common areas but the global environment shared by all. In order to protect the environment, international environmen-

tal law should be transformed from its traditional emphasis on the protection of individual interests and sovereign rights of states to the protection of collective interests.

The United Nations Framework Convention on Climate Change (UNFCCC) of 1992 and the Kyoto Protocol of 1997 do not include any references to indigenous peoples or their rights. Indigenous peoples have only had a NGO -status in this process and have thus been able to participate only as observers. Yet, indigenous peoples have made demands of a more effective participation on the basis of their special relationship with nature and the rights already guaranteed to them in international law. The Forum or Caucus of indigenous peoples and local communities have made declarations at Lyon, at the Hague, at Bonn and at Marrakesh. The message of these declarations is clear: The territories and natural resources of indigenous peoples and local communities are fundamental basis for their physical and cultural existence. Indigenous peoples inhabit the most fragile ecosystems of the world and live directly from the nature. They possess special knowledge of nature as well knowledge of environmental management that should be taken into account in combatting the climate change.

Indigenous peoples expressed their concern about sink projects used within the clean development mechanism. This mechanism allows industrialized countries to run projects such as plantation projects in the socalled developing countries; by executing these projects, the industrialized countries obtain credits counted as reductions of their share of amounts of greenhouse gases. Very often these plantations are set into the lands of indigenous peoples and local communities, and can therefore be seen as a new method of assimilation. Indigenous peoples and local communities claim the recognition of the particularity and specificity of indigenous and tribal peoples in relation to climate change and have demanded this special status in the Kyoto process.

Indigenous peoples and local communities demand that an ad hoc open-ended inter sessional working-group be established. The objectives of this working-group would be to study and propose solutions to urgent situations faced by indigenous and local peoples in dealing with the problem of climate change. This working-group would provide an adequate mechanism for the imperative full and effective participation of indigenous peoples and local communities in the discussions, debates and programmes of the UNFCCC; it would also be an apt space for channelling the contributions of indigenous peoples and communities to climate change mitigation, and for exchanging viewpoints and experiences with the parties of the convention. Indigenous peoples and local communities claim furthermore that UNFCCC report for the World Summit on Sustainable Development in Johannesburg 2002 should include an assessment of the situation of indigenous peoples and local communities as a priority criteria for the evaluation of the achievement of sustainable development. In addition, the Conference of parties (COP) should include in its agenda and in the agendas of subsidiary body meetings the issues of indigenous peoples and local communities. In Marrakech, at COP 7, the Finnish Minister of the Environment raised up the issue of vulnerability of the Arctic indigenous peoples due to the impacts of climate change. And, importantly, the Caucus of indigenous peoples and local communities were allowed to speak for the first time at the high-level ministerial session.

Even though the Framework Convention and the Kyoto Protocol do not recognize the rights of indigenous peoples, they include the principle of sustainable development. It can convincingly be argued that this general principle of international law is in the process of becoming a norm international customary law, a norm that binding on all states in international law. An effective implementation of this norm might require a wider participation, including the participation of

indigenous peoples. Furthermore, there are two other relevant principles in the regulation of climate change, namely the precautionary principle and the principle of intergenerational equity. Acting now, when the most threatening consequences of climate change have not yet appeared, is the only way to protect our planet and its diverse ecosystems and cultures. In rhetorical level this is many times acknowledged, but in reality the egoistic interests of sovereign states have obstructed this approach.

What are the possibilities of indigenous peoples to enforce the violations of their rights? Not very promising. In cases of global environmental problems, such as the climate change, the concept of state responsibility for environmental harm is very problematic. According to the principle of due diligence, states are responsible to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction (common areas). It is debated whether the global atmosphere could also be qualified as a common area, but as yet it is normally identified as part of the state's air space. Even if it was so qualified, the atmospheric environment is probably not protected unless a state can identify a harm to its sovereign territory and environment. Furthermore, it is very difficult to identify one or few states who could be held liable when almost the whole international community is causing the problem. It seems that the problem of climate change is difficult to be combated against through the use of the doctrine of state responsibility for environmental harm. Prue Taylor has proposed a new global liability regime for the protection of global commons, including the global atmosphere, based on the concept of common heritage of mankind. As a consequence of this type of regime, states would partly retain sovereignty over air space and atmosphere but would be obliged to exercise sovereignty in a manner consistent with the common interests of all humanity (Taylor, 1998).

In the case of climate change, we cannot expect states to bring actions against each other before the International Court of Justice (ICJ). It does not seem realistic even in future because the phenomenon of climate change does not fit in with the rigid regulation of state responsibility for environmental harm. Indigenous peoples cannot use the ICJ for addressing their claims, simply because it is available for states only. Other possibilities seem more promising for indigenous peoples, for instance, to try to enforce the violations of their human rights in cases when states have not been able to implement them. The Optional Protocol to the Covenant on Civil and Political Rights establishes a Human Rights Committee where also individual complaints can be treated. Complaints can also be pointed to European Court of Human Rights in cases that fall under the provisions of the European Human Rights Convention. The International Convention on the Elimination of All Forms of Racial Discrimination (CERD) has also a complaint mechanism of its own. Furthermore, communications can also be directed to the Commission on Human Rights, to one of its sub-commissions and to the UN Working Group on Indigenous Populations.

As mentioned above, in the case of a global environmental problem, it may be extremely difficult to show that a state has failed to implement or has neglected to fulfil its obligations to protect certain human rights. In an ideal situation, states would apply strictly the precautionary approach, namely recognize the human rights dimension and guarantee participatory rights for indigenous peoples and other relevant groups. Human rights dimension is very important in the context of rights of participation of indigenous peoples. As a result of development in international law in connection with the protection of individuals, the defence of domestic jurisdiction does not apply to questions concerning the promotion and protection of human rights. Article 55 and 56 of the UN Charter affirm that human rights are a legitimate issue for

consideration at the international level. More recently, the World Conference on Human Rights, held in Vienna, 1993, asserted that the promotion and protection of human rights is a legitimate concern of the whole international community. State sovereignty does not allow a state to ignore the protection of human rights. Furthermore, in the case of climate change, the Arctic states have committed themselves to the protection of the rights of indigenous peoples living in their territories; in order to fulfil this protection, they can be demanded to protect the atmosphere by reducing greenhouse gases in an effective manner.

In some occasions, states have invited indigenous peoples to participate in environmental protection efforts. This has been done when primarely because the states have perceived their participation as beneficial to their own interests or at least not hostile to them. A good example is the Arctic Council in which Arctic indigenous peoples as permanent participants have been given a larger role than in any other international law arrangement. Even though the indigenous peoples do not possess any formal decision-making power, they are entitled to participate to discussions on equal footing with states and thus can influence the environmental management more than in general. The Arctic Council could be a forum, that it partly already is, through which the indigenous peoples might affect the global environmental management, such as climate change. In fact, plans exist that the Arctic Council takes a more active role in the global level, especially in the Johannesburg Summit on Sustainable Development which takes place in the Fall of 2002. This vast Rio +10 conference could be the great opportunity for the Arctic indigenous peoples to have their voices heard about the issues such as human rights, sustainable development and global environmental protection.

Further reading:

Alan Boyle and Michael Anderson: Human rights approaches to environmental protection, Oxford 1996
Alan Boyle and David Freestone: International Law and Sustainable Development, past achievements and future challenges, Oxford 1999
Greg Maggio & Owen J. Lynch: Human Rights, Environment, and Development: Existing and Emerging Standards in International Law and Global Society, 1997 (http://www.ciel.org)
Sarah Pritchard: Indigenous Peoples, the United Nations and Human Rights, Zed Books Ltd & Federation Press, 1998
Prue Taylor: An ecological approach to international law, responding to challenges of climate change, Routledge 1998

Education for Environmental Awareness and Sustainable Living

YOUTH, ENVIRONMENTAL EDUCATION AND CLIMATE CHANGE 24.2.2002

PhD Taina Kaivola, University of Helsinki, Faculty of Arts

It seems to be difficult to define what is included in environmental education (EE) and what is not. First of all, EE includes at least learning about environment, in or through environment, and for environment. Secondly EE was created as a response to emerging environmental problems, mainly in 1960s and 1970s. And last but definitely not least, EE is a cross curriculum theme promoting environmental awareness, sustainable living and active citizenship, which should be included in all education especially of young people. There is big variation in conceptions of what are real environmental problems and what are exaggerated fears. E.g. some teachers and teacher educators think that climate change is a serious environmental problem. For those who think from geological perspective, it is not a real environmental problem. Environmental pollution is always a serious environmental problem. However the complexity of these issues is not always included in school curricula or in teacher education programs.

Knowledge and creating knowledge have become ever more important in modern knowledge societies. Environmental problems are complex and alleviating and solving of them requires many kinds of expertise and co-operation. In this presentation two international EE projects aiming to meet these demands are highlighted and gained experiences of implementation are evaluated.

The GLOBE Program (www.globe.gov) is an international effort to bring together teachers, students and environmental scientists from around the world. Students, teachers and scientists from over hundred countries are collecting, sharing and analysing data about the Earth as a part of Global Learning and Observations to Benefit the Environment (GLOBE), an international environmental science research and education program. Students in GLOBE schools make observations and measurements at study sites near their schools and report data to the GLOBE Data Archive via the Internet. Students can use the web to view visualization based on the large spatial GLOBE student database. They can interact with the scientists who use their data in conducting research and communicate as well as participate in joint research with other students from different countries. The most recent initiative in GLOBE is an artic group, a sub network of participants from Alaska, Siberia and Nordic countries.

ENO Environment Online - A Global Virtual School for Environmental Awareness (www.enoschool.org) is an international web-based EE project coordinated from Eno, Finland. ENO Environment Online is an independent application of the international GLOBE Program with a stronger emphasis on collaborative interaction in a virtual learning

environment. The curriculum of one ENO studying year is divided into four periods, during which certain themes are dealt in classrooms and virtual lessons. Regular themes are based on four ideas: 1) The Place we live in (physical and social environment), 2) This is our Life Style (cultural environment), 3) This is our Earth (physical environment and global education) and 4) The way we lead our lives (education for sustainability).

In each theme virtual lessons are arranged in the form of chats, questionnaires and quizzes. Pre and after lessons activities are involving students to share ideas, monitor their own environment, collect different kinds of data and reflect on what has learnt. During each theme period, there is an action week engaging students to do scientific and cultural research in their own surroundings, to explore different ways of sustainable living and implement the use of learning diaries and other kinds of student centred activities in ordinary classes too.

From The Inspector: Cyber Snowchange and Medicine Wheel

Years Behind the Control Panel of Snowchange by Marko Kulmala

Marko Kulmala is a Finn. He works as a teacher and a webmaster in Tampere Polytechnic. His speciality is research of information society and information politics, including information warfare.

It was a day in Autumn 2001 when I got involved in the Snowchange Project. For person who was just couple of months ago hired to Tampere Polytechnic as webmaster (and teacher of Computer Science) it sounded fascinating opportunity to create something new. Web sites differs of course from books and other products of intellectual and creative thinking, but they are also similar because they tend to reflect views and ideas of the author what comes to visualization, interface design and technical implementation. The possibility to build up something starting from the point zero is both a positive challenge and an expression of trust. Now, in May 2004, looking back through all these three years, I have to say that being involved with the Snowchange Project it has been maybe experience-richest time in my adult life. And by saying this I don't mean the code and computers. I'd like to use this opportunity firstly to gather up and share my experiences and emotions I have had in the Snowchange Project and secondly to analyze and suggest in brief, what Internet can/could provide for indigenous people and communities to make their voices to be better heard. Those ideas has arisen from my experiences which I have acquired while working as the webmaster for the Snowchange Project.

My Participation in Sharing Voices

My participation in realization of the project begun with planning and building the web site. The project was new to me, so were also it's objectives. The first version of the web site (www.snowchange.org) was built quite quick. It was a simple presentation of the project and the forthcoming Snowchange 2002 Conference in Tampere, Finland. Visualization and user interface was kept simple, white background dominating the screen and shades of blue providing the navigation structure, headings and title objects. Only one picture was used in visualization, Curtis Rattray, a Tahltan, sitting on the top of snowy hill near Dease Lake B.C., Canada. This picture of Curtis looking forwards to the horizon and a snowshoe resting against a rock, became soon to symbolize the Project itself. I utilized it also in Snowchange 2002 Conference posters, name badges and other conference materials.

The Snowchange 2002 Conference in February was just a beginning for something which was about to open my eyes and expand my mind about issues essential to the Snowchange. A bulk of things happened of course during all these months and years and because I was sharing the same office room with Tero Mustonen in Tampere Polytechnic the information flow about what was happening with Snowchange was guaranteed. At this point I have to say, that my academic background is in International Relations even though my work is with web sites and computers. In August I was travelling in the United States and because of the fact that a group our Environmental Management students were coming to Canada for a study excursion, I joined the group at Vancouver Airport for the forthcoming two weeks. Our

trip went through Whitehorse (Yukon), Skagway (Alaska), Dease Lake (British Columbia) to Victoria (B.C.), Abbotsford (B.C.) Vancouver (B.C.) and Reykjavik (Iceland). All the places mentioned above has their own memories which I was happy to share with our students, but two of them were special. It felt something like a circle has closed when we overnight in Dease Lake in tents and made hikings to surrounding nature, and especially when we entered one day in the very same location where Curtis Rattray (who was in fact with us on this trip in Dease Lake, too) was looking to the horizon in the picture used in Snowchange visualizations. There I was, with students, looking to the horizon, from the very same place. My mind got filled with ideas and Snowchange was about to happen in my mind, too. Away from computers, middle in the wilderness, I was eye-witnessing the beauty of almost intact nature. The scenery I have been editing on my computer screen with Photoshop over and over for different purposes was now burning to my own retinae within all three dimensions. The fresh air filled my lungs and aired my head replacing the bytes with reality. But the most impressing part of the trip was yet to come. One very hot and dry day in Abbotsford B.C. our plan was to meet Kwak Wak Wakala First Nation –lady Theresa Neel. Theresa's Kwakiutl-name is Nerkega (Coppers Piles So High Not Even Her
Enemies Can Step On Them). Theresa was about to tell us about herself and about First Nations in Canada. However we got a sudden and unexpected chance to participate in Sto:lo First Nation (River People) Medicine Wheel. We were supposed to watch the Spirituality and Healing gathering, The Medicine Wheel, but the First Nation Elder Skemcis (Grizzly Bear) came to us with drummers and we were invited to join The Medicine Wheel. I, like most of us, experienced something spiritual which is impossible to try to say with words. We got the connection with the spirit of the nature. The experience was so crushing and explosive, that words didn't come, only salty tears which the hot sun dried as soon as they dropped.

Soon after arriving back to Finnish lands our new excursion headed to the North, to meet with a Finnish Sámi reindeer herder, Pentti Nikodemus and from there, to Russian North. Later on in November WWF Finland chose Snowchange as the "Best Ecological Project Of the Year" to receive the prestigious "Panda Prize". I had an honour to participate the prize giving ceremony and to see Tero Mustonen and Pentti Nikodemus getting praise of their hard and important work in Snowchange. Also, during Autumn 2002 Snowchange web site was totally renewed due to traffic growth and rising interest on the web site. Some old elements were recycled to the new design while the colour scheme was kept original. Re-design was also preparational work for Snowchange 2003 Conference in Murmansk, Russia.

In the end of 2002 and in the beginning of 2003 I made a design for new Conference poster, postcards, name badges, conference programs and other accessories. Also, the custom made salmon-artwork for Snowchange Project was published and taken in use. The Snowchange logo made by Ab Morrison-Hayward is also in use in this book's artwork.

All these events during these years have been recorded also to the web site. I have had an honour to do that byte by byte, pixel by pixel.

Cyber Snowchange

While listening voices from communities, voices from people, or reading and learning about them, I have acquired new approach to my personal ideology on what is Cyberspace, what can be done in the net, how Internet technology can help those voices to be heard. I believe that much can be done. I hope that much will be done! If we think about issues like land, environment, traditional knowledge, folklore, language,

community and collectivity, communications, learning… the list could be almost endless, Cyberspace is a new dimension to conquer and utilize. Power of word is maybe more powerful than ever before and the new power is accessible for everyone at low or no cost. If that power is utilized in the right an effective way, the voices will be heard and words will be listened.

Isolated (geographically or by mass culture, mass communications or dominating society or ethnic group) communities and groups can expand their territory to Cyberspace. The spacein Cyberspace is unlimited. It is open for both explorers and warriors. It is waiting to be conquered. Cyberspace is for warriors to be the doers and the takers. For explorers to find and notice your existence, read about your issues, listen up your messages and finally, to see and understand the world from a bit broader context than one's own backyard. For communities, Cyberspace offers a tool for real-time communication and rapid coordination of activities. For non-governmental and grass-roots organizations Cyberspace offers media space for specific issues in time when mass media is controlled by governments or by economy and in time when economical or political benefits are filtering what issues will be published and from which viewpoint.

For indigenous people Cyberspace offers also both the space and the tool for recording and telling about their culture and views to broad range of issues. Cyberspace can be used also to transmit cultural heritage to coming generations and to other people. Sound files, video files, pictures, interactive user interfaces and texts can be used for teaching and learning. One good sample of transmitting traditional knowledge can be seen in Snowchange web site. With permission of Leah Aksaajuq Otak, Tampere Polytechnic prepared and published material about inuit caribou skinning process in Igloolik, Nunavut, Canada. Plans about story-telling web site also exists.

Medicine Wheel

It was early December in 2003 when I made a phone call to my friend and we discussed about quite personal and heavy issues about life. I was laying in my bed. Suddenly strong affections gripped my heart and mind. I couldn't hold the tears and I couldn't say a word. On my mind I was transferred back to that hot day in late-August, 2002, seeing the eyes of the First Nation Elder Skemcis (Grizzly Bear) and hearing her wise words. I was feeling the heat of that day, seeing the eagles circle in the sky right top of us. My friend was listening me crying and when I finally got some strength to say some words, I tried to explain her what I was feeling and that I was very confused about why I at that very moment remembered everything about The Medicine Wheel. Why? Why I forgot The Medicine Wheel for over one whole year, and now when I was passing through strong emotions and difficult issues, the first thing which came up to my mind was The Medicine Wheel and Elder Skemics.

During these Snowchange years I have found a lot of new friends. I have learned a lot about issues which might have not been learned otherwise. I have experienced things which I have no words to describe. I have learned a lot about Life.

How Joy and Happiness Came to the Sámi

This is what happened.

Akanidi, the Sun Daughter, was flying through the heavens, looking across earth. Her rays warmed everything below- the grazing reindeer, the animals of the wood, the fish in lakes and oceans.

Akanidi understood the animals, but she did not know humans. Sometimes, to her, humans seemed happy. But often, Beaivváš' daughter saw men and women wrinkling their noses, looking unsatisfied. And sometimes, humans were very mean to one another. Akanidi wondered. What are their laws? What makes them happy?

So the Sun Daughter watched the humans and saw that they were of many kinds. Some people lived pleasantly, eating well. But others wore rags, and they did not have enough food to eat.

When Beaivváš, the sun, came home in the evening to rest, Akanidi said to him, "Grant me leave, to go to earth. I wish to dwell with humans!"

"Do you not have enough space here, child? What is to be seen below?"

Akanidi answered, saying she was becoming weary of her life in the sky-heights, and wished to live with humans.

"But you have clouds to play with, and sun rays to dance with. And you are allowed to sing beautiful songs with the wind."

Akanidi's mind was set, though, and when morning came, she found herself on earth, in the goahti of an old man and women, who had no children of their own. She asked the ancient couple if she could stay there, with them. Beaivváš had sent his daughter to a barren island. There were only the old man and woman, and their simple goahti, to be seen. The other humans lived somewhere else.

Time passed quickly, and Akanidi grew older. Soon, she was a young maiden. The old couple dressed her in beautiful garments, and when she saw herself in the mirror, she sang happily. The Sun Daughter danced and shone with great joy. The old man and woman listened to her song with great love in their hearts. The voices of small birds, the sigh of the wind, and the whisper of leaves were sounding, there in Akanidi's song.

Akanidi's white-haired parents said:

"The time has come, oh daughter, for you to visit other people. May your heart be loving and friendly, to soften the hearts of others."

So the old man journeyed with Akanidi to the nearest siida, leaving her at the first goahti they chanced upon. Akanidi entered the goahti, and was immediately noticed- everyone inside was drawn to her. People greeted her, touching the Sun Daughter, and the children begged to play with her. And Akanidi asked all to come to the riverbank, where she danced and sang for them.

Beaivváš drove his sled in the sky, and so the days passed. Akanidi taught people how to embroider cloth with beads and beautiful colors. First, the Sun Daughter showed them many patterns- stars, circles, birds' tracks, and the

glitter of beautiful stones shining in the Sun. Akanidi asked those she taught to embroider their clothes with magnificent patterns and colors. In the beginning, she would help people, until they learned to fashion the beautiful things themselves.

In this way, Akanidi moved from goahti to goahti, telling stories, and singing. She taught the hunting-joiks, the sea-songs, and the sun-melodies. And wherever the Sun-daughter stayed, people would learn how to create, using patterns and beautiful colors.

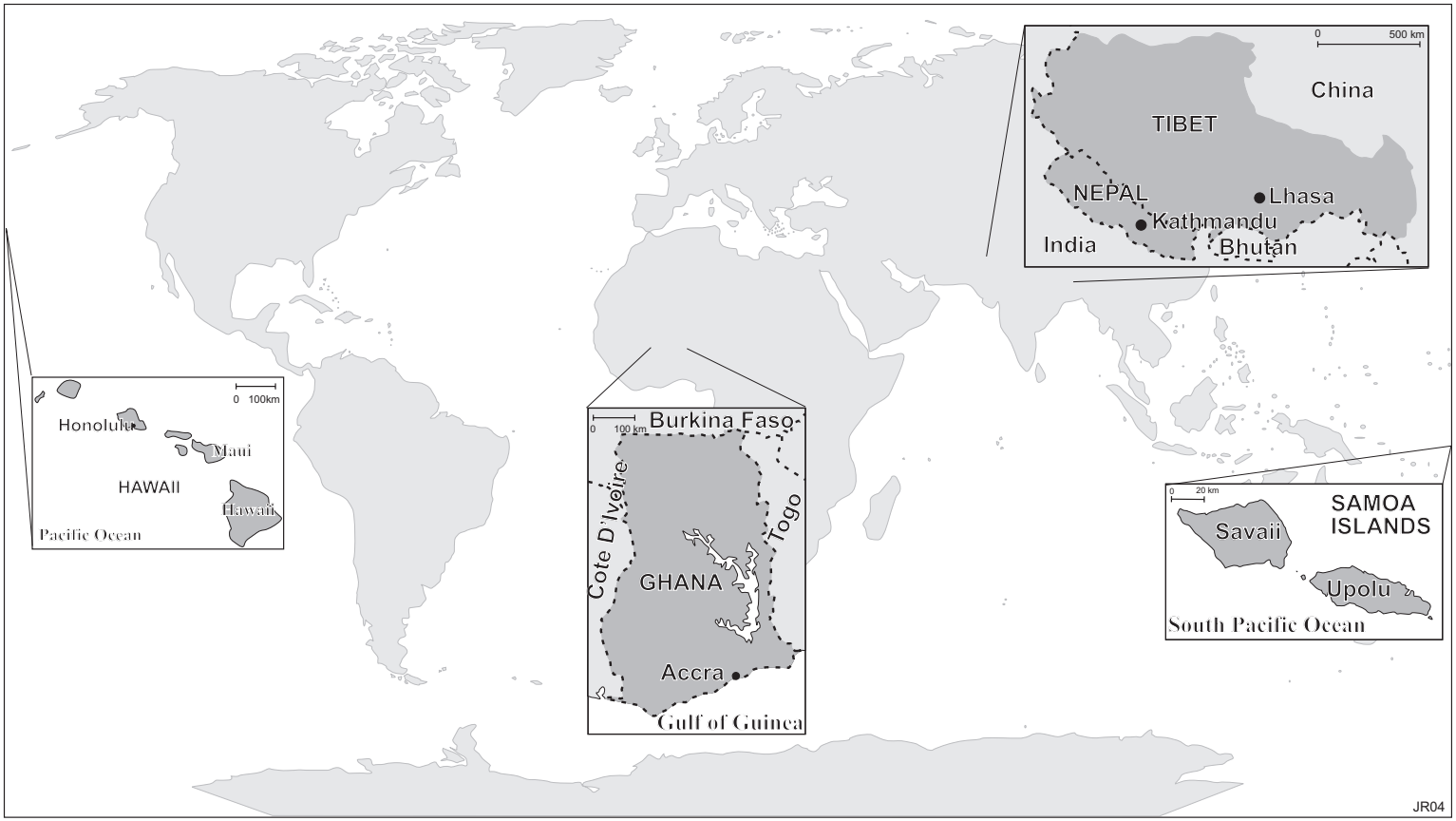
But there was envy. Jealous ones. Some people did not like joy and happiness, and how it spread among people. So they tried to get rid of the Sun Daughter. But Beaivváš was ever watchful, and protected his girl. She was safe. Some elders, though, remembered that a big stone would work…

Akanidi was sitting in a goahti, teaching children how to make buttons from mussel shells. The jealous ones came, throwing a stone upon her. The Sun Daughter sighed, and sang her final song. Her joik pulsed in the air inside the goahti, like the rhythms on a noaidi´s largest drum. The people sitting with Akanidi were grateful for the good-hearted Sun Daughter. When Akanidi finished joiking, she disappeared, flying to the skies, in the smoke of the goahti's fire.

Beaivváš' daughter never returned to earth. But her songs, dances, and beautiful patterns and pictures remain. People have taught Akanidi´s ways to their own children, whose eyes and ears are open. In doing so, their hearts become warm, and happiness finds them.

This story is true. It happened long ago, when Sámi men and women first met Akanidi, the Sun Daughter, Beaivváš' girl.

Snowchange International


0 500 km
China
TIBET
NEPAL
Lhasa
Kathmandu
India
Bhutan
0 100km
Honolulu
Maui
HAWAII
Hawaii
Pacific Ocean
0 100 km
Burkina Faso
Cote D'Ivoire
Togo
GHANA
Accra
Gulf of Guinea
0 20 km
SAMOA
ISLANDS
Savaii
Upolu
South Pacific Ocean
JR04

Quechuas and Aymaras of Bolivia

Ville Peltovuori, Tampere Polytechnic

Introduction

According to the legend, eight hundred years ago a man called Manco Capac rose from the stormy waters of lake Titicaca. He arrived to a mountainous land, then unheard of to the Europeans, to form a chosen race. A race that would conquer that harsh world and turn it into one of the greatest empires in the history of mankind. Manco Capac and his followers became known as the Incas.

But even before Incas the Andean mountains were inhabited by many advanced cultures. In fact the period of Incas is just a short period in the history of the region. Many of those cultures have perished in history, but some have survived even the arrival of the Europeans.

In the Bolivian Andes the ancient Andean cultures still influence the people. Two significant cultures have survived the test of time. The Quechuas as the descendants of the Inca culture and Aymaras of the kingdoms preceding the Incas.

Bolivia as well as the whole South-America can be roughly divided into two areas. The Andean mountain range on the western part of the continent and the lowlands to the east. This geographical separation has lead to cultural differences between these two regions. The Quechua and Aymara peoples occupy a large portion of the Andes.

They have a world vision of their own. They might try to explain the laws of modern physics by the engravings in the ruins of Tiahuanaco or plan the society according to the Andean cross, Chakana.

However their world has been heavily affected by the arrival of the Europeans. Ancient knowledge of the Andes has been – perhaps forever – forgotten. Not much is known of their ancestors, especially of those before the Incas, and many mysteries remain. Throughout the Andes many mystical sites have been found – and are still to be found – that little are known of.

The Andean world was shattered by the arrival of the Spaniards and thereafter it has struggled for survival. The cultural identity has to be rebuilt as so much has been lost with the passage of time.

Bolivia has been standing in the middle of this development and as a country isolated between the Andes and the Amazon is still very indigenous and somewhat a frontier for the Europeans. The Quechuas and Aymaras form together a cultural world, the Andean world of Bolivia.

A Brief History of the Quechua Aymaras

Humans aren't original inhabitants of the Americas, but have instead arrived through migration. According to current theories they arrived from two directions. After the last ice-age people arrived to North America from Asia via the Strait of Bering. The other route to Americas was from the direction of the Pacific Ocean particularly Polynesia. (Gisbert 2001)

The people spread throughout South America and emerged into numerous different cultures. Somewhere between 800 and 300 BC a culture called Tiahuanaco formed near Lake Titicaca in the Bolivian Andes (Gisbert 2001). This culture slowly started to expand throughout the region and by 500 AD it influenced in almost all of present day Bolivia, southern Peru, northern Chile and northwest Argentina (Murphy

2000). The culture of Tiahuanaco is considered to have been very sophisticated. However the empire collapsed sometime between 1250 and 1310 AD (Gisbert 2001)

In the days of Tiahuanaco people of the Lake Titicaca region spoke Aymara. After Tiahuanaco's collapse the region was divided into several Aymara Kingdoms, which were constantly in war with each other. They were based on powerful collective and military models. (Murphy 2000)

The Aymara Kingdoms cultivated potatoes and cereal crops. They kept llamas and alpacas for meat, milk and wood. The wealth of the kingdoms was measured in the number of llamas and alpacas. However they needed connections to the pacific coast and the eastern lowlands trading their goods for fruit, vegetables, maize and coca. (Murphy 2000)

At that time in Cusco another culture sharing a common language of Quechua was building up as the empire of the Incas. They started rapidly expanding throughout the whole Andes and were planning to conquer the warring Aymara Kingdoms. The divided Aymaras managed to resist the Incas until latter part of the 15th century when they were finally made a part of the Inca empire (Murphy 2000).

The Inca empire was born around 1200 AD and lasted for three hundred years becoming the largest empire ever in the Americas. One feature of the empire was to assimilate the skills of the conquered enemies into their own political systems. (Murphy 2000)

The Incas respected the cultures and languages that they conquered, forcing only their religion. However some quechuanisation still occured. The Aymara culture succeeded to survive the Inca invasion almost intact, but other cultures of the area were mostly destroyed. (Murphy 2000)

Not long after the Aymara Kingdoms became part of the Inca empire two very distant cultures collided.

The period of Inca Empire in Bolivia was relatively short lasting only about a hundred years as they were conquered

by the Spanish during the 16th century (Gisbert 2001). In the year 1533 the Spanish arrived in the capital of Cusco and by 1538 the empire was totally conquered (Nurminen ed. 1976).

The Spanish established extensive silver mining in the region. They adopted the same system of compulsive labour as the Incas had used but more forcefully. Also in other areas the Spanish left the social and economic structures quite untouched. However within time the Spanish rule became more aggressive and the extraction of the regions natural wealth intensified. (Murphy 2000)

In the 17th and 18th century there were many mutinies against the Spanish rule by the Incas (Haggett 1997). Plans to re-establish the Inca rule were unsuccessful (de Mesa & Gisbert 2001).

One of the rebellions was lead by Túpac Amaru. Originally named as José Gabriel Condorcanqui he changed his name after his ancestor Túpac Amaru who had suffered a martyr death in 1572. He lead the biggest indigenous rebellion in America from 1780 until 1781, when the Spaniards conquered the rebellion and executed him. (Eskola & Nurminen eds. 1984)

When the wave of independence arrived to South America - Peru and Bolivia stayed loyal to Spain longer than other regions, as if the indigenous people had predicted that by independence things would only get worse. The declaration of independence of Bolivia finally came in 1825. (Nurminen ed. 1976)

The commercial elite of Bolivia rebelled and lead by Simón Bolívar took arms against the Spanish gaining independence for the country. Although there were plans of making a single state from Peru and Bolivia, Antonio José de Sucre, Bolívar´s general had his will and Bolivia was formed. He became the first president of the land named after Simón Bolívar. (Murphy 2000)

Although a law for dividing lands was imposed, the rich European landowners grabbed even more land than they had under Spanish rule. The indigenous people of Bolivia became more or less slaves for them. (Nurminen ed. 1976)

After it's independence Bolivia was politically very unstable as different factions fought for power. Between 1825 and 1982 Bolivia faced no less than 188 coups d'état (Murphy 2000).

General Andrés de Santa Cruz took the rule in 1829. After getting the indigenous peoples on his side he conquered Bolivia, Alto-Peru and Lima (1835), uniting Peru and Bolivia. However Argentina and Chile – the white nations of South America – became concerned of a new Indian empire and intervened disbanding Santa Cruz´s rule. (Nurminen ed. 1976)

Bolivia faced several wars in which the nation lost vast areas. One of the wars was Chaco War with Paraguay (1932-35) that brought the whole nation into a state of despair. Augusto Céspedes in his classic book Sangre de Mestizos (Blood of the Mestizos), in 1936, wrote how for the first time whites and indigenous people fought alongside each other and shared the bitter disappointment after losing the war. (Murphy, 2000)

After the Chaco War revolutionary consciousness spread in which the exploitation of the indigenous people and the conditions in the tin mines where they worked were criticised (Murphy, 2000). This lead to the only revolution among many that really helped the indigenous people of Bolivia in 1952 (Mäkelä ed. 1989). It lead to a land reform and gave the indigenous people somewhat more freedom (Mäkelä ed. 1989). From this year on the Aymara campesinos (persons from rural areas) owned the land on which they lived (Myrphy 2000).

A new land reform took place in 1996. For the first time the indigenous communities, traditional organisations and territories of eastern Bolivia were acknowledged. (Mesa Gisbert

2001)

Cultural Appearance Today

A tiny village called Wallatani is situated at the altitude of over 4000 m in the Bolivian Andes. It is a Quechua speaking community with a population of not more than 20 people. In the rural Bolivia very little has changed from the days before the Spanish. Llamas and alpacas with the addition of lambs are herded. The main diet of the people is potatoes, meat and milk from the domestic animals. A radio and some western clothing are the only signs of present day. The villagers mostly wear home made traditional clothing. They all live in small adobe huts with thatched roofs.

The villagers all speak Quechua, but some also Aymara. Spanish is best spoken by the men. The women are less skilled in Spanish, but usually understand it. The children hardly speak it at all. Interestingly numbers are said in Spanish.

In the village the people always use Quechua. When travelling to the markets of cities they might still manage with Quechua, but many things there require the use of Spanish. The radio which keeps the people updated with news is only in Spanish.

A small school house is built in the village to teach the children, the head of the village acting as the teacher. In Wallatani the education honours the traditional culture teaching the children to read and write in Quechua. There is very little studying material. A small primer of the Quechua language is made by the villagers themselves with the help of friends in the nearest city. Also posters displaying syllables of the language are covering the walls teaching the children to read.

The children have made a few maps and models of the village. They have also assembled a sundial according to their Inca ancestors.

The life in this cold and dry highland is harsh. The daily activities of the people include herding, cultivating potatoes and preparing them into chuños (a potato which is frozen in a certain manner to increase longevity), cooking and weaving. Weaving is an important part of the culture and traditional tools are still used in it. Some of the weavings together with surplus potatoes are sold in the markets of the cities.

There is a small road next to the village with the occasional truck passing by. The trucks leave the mountains before the weekend and arrive after it, transporting goods for the markets as well as passengers heading for the cities.

More than ten hours along the difficult road and over the mountains is a fruitful valley, which agricultural potential was once sought after by the Incas. At the bottom of the valley is the third largest city of Bolivia, Cochabamba. Although the Incas arrived here only a few decades before the Spanish conquest (Murphy 2000) the region around the city is strongly Quechua.

The modern urban centre is well apart from the rural areas, built by the Spanish and run in a western way. Still a large part of its population is indigenous. Many Quechuas and Aymaras have moved to the cities in the course of Bolivia's colourful history. Now their descendants have adapted to the lifestyle of the cities and speak Spanish as their mother tongue. However some still know a few words of the language of their ancestors.

Although the language most often used is Spanish, especially many older people in the cities speak also Quechua. Traditional clothing and habits are by no means rare. In fact in some parts of the cities such as market districts Quechua seems to be the dominant culture.

Different Cultures in Bolivia

Bolivia is culturally a very diverse country. There are numerous different indigenous groups, especially in the lowlands.

Officially there are 36 different cultural nationalities (Ranta 2001). Although the Bolivian Andes comprise mostly of Quechua and Aymaras cultural differences exist even among them. Nowadays it seems as different cities and departments have a culture of their own. Clothing, food and fiestas vary between the cities.

Perhaps the most distinct cultural feature are the hats worn by the indigenous women. It is possible to distinguish whether a person is from La Paz, Cochabamba or Potosí by looking at her hat.

In Bolivia indigenous people are the majority. About 60 % of the population is purely indigenous (Murphy 2000). Over 50 % are Quechua Aymaras, about 27 % mestizos and 14 % white people (see table 2)(Mesa Gisbert 2001).

Three "common languages" of the Andes were recognised in early colonial times. In addition to Quechua and Aymara the now extinct Puquina was considered as one of them. The Jesuit missionaries working in the area were expected to learn them all. Many present day Bolivians are trilingual as they speak Aymara, Quechua and Spanish. (Dalby 1998)

The number of people speaking Spanish or Castellano as the Bolivians prefer to say, has been increasing all the time. In the 1950s about 36 % of the population spoke Spanish. In 1992 the amount had grown to almost 90 %. The Quechua and Aymara languages haven't faced dramatic drops as might be expected (see table 1). They are still present as widely spoken languages. (Mesa Gisbert 2001)

The Andean World

When the Spanish and Portuguese explorers arrived to Bolivia, they noticed one special thing. There was a clear distinction between the Andean people and the people of the lowlands (Haggett 1997). This is still the case and derives from the history.

Language	**1950**	**1976**	**1992**
Spanish	35,9	78,8	87,4
Quechua	36,5	39,7	34,3
Aymara	24,5	28,8	23,5
Guarani			1,0
Other native languages	2,5		0,6
Foreign languages	0,4		3,1

Table 1. Language distribution within Bolivia in percents of the total population. Source: Adapted from Mesa Gisbert, 2001.

The indigenous people of the Andes have an identity of their own. Whether they are Quechuas or Aymaras the source of their identity comes mostly from the Inca culture. Everything the Incas created is considered as ours and respected deeply within those honouring their roots.

Community and reciprocity are the basic principles of the Andean world vision. The community means integrity of relatives and social care. As it's main characteristics spiritual, social and physical factors are uniform and inseparable in the Andean world vision. (Ranta 2001)

Ethnic group	**1845**	**1900**	**1950**	**1976**
Quechua Aymaras	51,06	56,63	62,99	51,99
Mestizos		30,85		26,99
Europeans	46,91 *1 *2	11,83 *3	37,01 *4	13,99
Group of the east				1,87
Afro-Americans	2,03	0,33		0,02
Others	0,00	0,00		4,92

Table 2. Distribution of ethnic groups in Bolivia in percents of the total population. *1 Mestizos and Europeans were not separated *2 The government calculation simply stated more than 750 000 indigenous people *3 Quechua Aymaras and ethnic groups of eastern Bolivia were not separated *4 The population was only calculated as indigenous or non-indigenous. Source: Adapted from Mesa Gisbert, 2001 and Instituto Nacional de Estadísticas.

The Aymaras

The Aymaras live around Lake Titicaca and in the Altiplano region (A high Andean plane between two mountain ranges) in the areas where the Tiahuanaco and Aymara kingdoms once influenced (see figure 1). Their own language remained although the area once was part of the Quechua speaking Inca empire. The total number of Aymara speakers is about 2 million and it is spoken in Peru and Bolivia (Dalby 1998).

Today Aymara is written in Latin alphabet. The orthography, which follows Spanish practice was introduced in 1983 (Dalby 1998). Both the Quechua and Aymara languages are today written in a way to be pronounced like Spanish. Aymara books and magazines are regularly published, notably by the Evangelical and Catholic churches (Dalby, 1998).

The Quechuas

Approximately 1200 AD Manco Capac and his sister rose from Lake Titicaca as divine founders of the chosen race (Murphy 2000). This is the myth of the beginning of the Incas and the Quechua people. Actually until the Incas themselves came to power, the rulers of their people had been speaking Chimú, a language now extinct (Dalby 1998).

The areas of the Andes outside the Aymara region are generally Quechua speaking (see figure 1). This means areas west of Lake Titicaca, around Cusco in Peru and east of the Altiplano on the eastern edges of the Bolivia Andes. The Quechuas reach from northern Chile and north-west Argentina to Ecuador and to the border of Colombia (Dalby 1998).

The Incas never conquered the Bolivian lowlands (Nurminen ed. 1976) and therefore the Quechua culture roughly ends where the mountains end. There are currently estimated to be about 9 million Quechua-speaking people in the world (Dalby 1998). However regional differences in the language

Figure 1. The Quechua and Aymara speakers in South America. Source: Redrawn from Dalby, 1998.

exist.

One of the reasons the ancient Inca culture is not so well known is because they didn't have writing. The Incas used a system called quipus to help memorise things. Even today the Quechua language appears rather little as print and media (Dalby 1998).

Inca mythology and rituals are written in the "Traditions of Huarochirí". It was written in Quechua for a Spanish missionary Francisco de Avila by a person called "Tomás". He wrote: *"If the Ancients of the people called Indians had known writing, then all the traditions of their former life, now doomed to fade away, would have been preserved. They would have shared the fortune of the Spaniards whose traditions and past prowess are on record."* (Dalby 1998)

A strange thing about the text is that Viracocha, which is the Inca god of creation is translated as the Spaniards.

Linguistic Mixtures

The Aymara language has many similarities with Quechua. Therefore some have presented that both languages would have the same origin. However it is more likely that they have grown together during shared cultural development. (Dalby, 1998)

Due to the influence of the Inca empire and the Spaniards, there are many mixtures between Spanish, Quechua and Ayamara. E.g. the language of Llapui has Quechua suffixes, but Spanish words. (Dalby 1998)

Colonial Influence

The Spanish culture has influenced the region in a strong manner. Although some indigenous communities away from the cities have lived quite isolated life in a traditional way the cities – where most people today live – were all built by the Spanish. Even the Inca capital city of Cusco was rebuilt by the Spanish leaving the historical city under the constructions of colonial style architecture.

Due to its history Bolivia still has special cultural and political relations to Spain, although United States has taken over as the main political influence. The indigenous peoples of Bolivia are bitter about what the conquistadors half a millennium ago did to their world. Among some of the people there is an atmosphere of hatred towards the Spanish. Things originating from Spain are considered unwanted. Although within time attitudes have changed, in 500 years the people have not forgotten.

In some Latin American countries the colonial cultural politics are still practised, denying the potential and diversity of existing cultures. The elimination of cultural, historical and political identity of the indigenous peoples is sought after. (Bautista)

Many have adopted European lifestyles and do not consider the history of their ancestors important, but factions exists that think otherwise. Some groups and organisations work towards reviving the ancient cultures and building the society to grow away from the heritage of Spain.

Developments in South America

Peru has been somewhat considered as the foregoing nation in relations with the Quechua people. Quechua is today acknowledged as an official language of the nation. It was first declared as a joint official language with Spanish in 1975, but lost the status in the constitution of 1979 (Dalby 1998).

The former capital of the Inca empire, Cusco has been a centre of this development. The street names in Cusco are in Quechua and it is possible to study the language in the local university. There are numerous museums and Inca built sites around the city which are made into massive tourist at-

tractions. Cusco and the nearby Macchu Picchu are a huge source of tourism money for the Peruvian government. This may be a partial reason for the status of Quechua culture in Cusco and Peru.

In reality the modern Cusco resembles very much European cities. More than other cities of the region. The amount of different nationalities visiting the city gives it a very cosmopolitan feeling. Someone might even call it the second capital of Peru.

Peru and Bolivia are the only countries in South America with three official languages: Aymara, Quechua and Spanish. In the lowlands of South America the obligatory Spanish and Portuguese has just a while ago been abandoned and moved towards indigenous languages. (Haggett 1997)

Despite the improvements in the legislative position of the indigenous languages a lot remains to be done. The education doesn't respond to the necessities of the indigenous people (Bautista). In addition the indigenous languages are still very little applied in education. One reason is the lack of qualified teachers (López 2001).

There are some new university programs to find students devoted to teach in the rural areas (López 2001). But also various indigenous peoples have started bilingual and intercultural education programs of their own (Bautista). These are based on the ancestral languages with Spanish used for intercultural communication (Bautista).

The music played with indigenous flutes and drums is gaining a larger audience. This is because the people of South America are searching for a counterbalance to the western culture from indigenous forms of expression which they consider pure. (Haggett 1997)

Political Conflicts

In Bolivia there has always been conflicts between the indigenous people and the government. Riots have raged during the past years between campesinos and the government. Especially in the early 2000 the situation was bad with intense riots against the capitalisation programs of the government. In Cochabamba privatisation of the city water network has caused conflicts. Now the conflicts between the campesinos and the government have centred on the issue of coca cultivation, which is a strong part of the indigenous cultures.

Such conflicts take place in other Andean countries as well. In Peru the conflicts between the indigenous people and the government have been very intense in the past years. Shining Way terrorist organisation presents the rural Quechua against European cities. They protest against the Spanish speaking Catholic supremacy of Lima. Another such organisation is Túpac Amaru. They were responsible for the long hostage situation in the Japanese embassy of Lima in 1997. (Haggett 1997)

Ecuador experienced a massive indigenous uprising in January, 2000. There had been such uprisings before in the preceding years and in this one approximately between 8000 and 15000 indigenous people, most of them Quechua, marched into the capital city Quito. (Córdova)

The nation was in economic crises and the indigenous movement was objecting the government policies such as raising the price of petrol and household gas and allocating 41% of the state budget for foreign debt repayment. Finally the situation resulted in a joint revolution by the military and the indigenous people as they occupied the government facilities one after another. (Córdova)

The influence of United States in other countries' internal affairs became once again clear. During the events of January, 2000 they threatened with international isolation if the so-called democracy wouldn't be restored. Finally the army betrayed the indigenous movement by giving the power to the vice-president of the overthrown government, Gustavo

Noboa. (Córdova)

The rights of the indigenous peoples are not recognised by the Latin American states. Instead those in power have been isolating, dispersing and dividing the indigenous populations. (Bautista)

The relations between the indigenous people of the Andes and the Europeans in the lowlands are constantly tense (Haggett 1997). The European view of indigenous people as savages, who are uncivilised, pagans and an obstacle for financial development comes up in these conflicts between cultures where the indigenous peoples always lose (Haggett 1997). It will be very difficult to find solutions for these internal conflicts.

One peculiar thing, especially in Peru, is the origin of the presidents. The former president of Peru was Alberto Fujimori whose parents were Japanese. He was replaced by Alejandro Toledo who is the first president of indigenous origin in Peru.

However an indigenous president does not instantly mean improvements as the Quechua people had hoped for. Some Peruvians already say that he is no better than the others while some still want to wait and see what happens.

Bolivia has had an indigenous vice-president Víctor Hugo Cárdenas. He is an Aymara and became the nations first indigenous vice-president during Gonzalo Sánchez de Lozadas first presidency (1993-1997). (Mesa Gisbert 2001)

In general the opinion about politicians in Bolivia is bad. They are said to be corrupted and evil persons who just play for their own best. The lack of indigenous figures in national politics is somewhat surprising. Although the system is democratic and every adult has the right to vote, the descendants of Europeans have mostly been in power. Even though the indigenous people are the majority.

The system of presidential elections might have contributed to this. The president is actually elected by the parliament after the parliament has been first elected by the public. In the elections 1997, the ex-military dictator Hugo Banzer was elected as the president with 22,3 % of the votes, which is the lowest winning number of votes ever in the history of Bolivia (Mesa Gisbert 2001). Juan Carlos Durán was second with 18,2 % and Remedios Loza third with 17,2 % (Mesa Gisbert 2001).

Hugo Panzer didn't enjoy the support of the people and was blamed to support only the rich people and the big businesses. A phrase "Banzer burns in hell" in a wall in Cochabamba tells it all. In 2001 he resigned because of cancer leaving the office to his vice-president Jorge Quiroga.

Populism is also a major problem among political parties of South-America. This is due to the growing social differences, especially in the cities. Politicians try to imitate the mystical language of popular religions, presenting themselves as the saviours of the people. (Haggett 1997)

However, recently there have been signs of change in political power on the whole continent. This has been at least partly due to the severe economic crises of South-America. People are getting tired of letting others control their own countries. They want change.

In Brazil leftist Luis Inácio Lula da Silva won the presidential elections. In Ecuador Lucio Gutierrez, known for his anti corruption attitude became the new president, ahead of a rightwing candidate. Foreign investors have been alerted by these developments.

During the year 2002 Bolivia also had a new president after parliamentary and presidential elections. It was a real surprise when the radical defender of coca cultivation Evo Morales and his party MAS (Leftist Socialist Movement) almost won the elections with 20,9 percent of the votes. Also Felipe Quispe of the MIP (Indigenous Movement Pachacuti) party gained about 5,0 % of the votes. Gonzalo Sánchez de Lozada took the office of the president for the second time after his

party MNR (National Revolutionary Movement) had received 22,5 percent of the votes. It will be very interesting to see what kind of effects these changes will have.

The Coca Conflict

The leaves of coca play a significant role in the Andean cultures. The leaves have a strong historical background dating back to the days of the Incas. They are chewed and made into tee. They are also believed to be healthy for the body and to reduce e.g. the effects of high altitudes and feeling of hunger. For the Quechua Aymaras there isn't a day without coca.

However, to the majority of people in industrialised countries coca means cocaine and nothing else.

Coca and Cocaine production are said to have overtaken tin as Bolivia's biggest export product. Peru is the biggest producer of coca in the world, but Bolivia comes second. In cocaine production Bolivia is second only to Colombia. The whole business is estimated to generate about 650-700 million euros a year. (Murphy 2000)

This explains why the anti-cocaine campaigns are not carried out very efficiently. Some internal cocaine checks are located near the cultivation areas, where vehicles are checked by the military and police. But at least during the past years the inspections weren't very thorough and efficient.

A lot of coca is nowadays cultivated in a region called Chaparé near the city of Cochabamba. For a small peasant farmer it provides much bigger incomes than any other crop. It doesn't exhaust the soil as fast as other crops and can be cultivated even 15 years on the same spot. It also provides four harvests a year. (Murphy 2000)

Foreign pressure, especially from the United States is demanding the eradication of coca cultivation. Some alternative development programs have been set in Chaparé in order for the farmers to shift from coca cultivation to other crops.

Some estimations say that 10 % of the working population of Bolivia is dependant on coca cultivation (Murphy 2000). Therefore it is understandable why the peasants are reluctant to switch to other crops.

On July 23rd, 2001 the campesinos had a protest march along the main streets of Cochabamba. Finally they ended up in a meeting in the main square carrying plaques like "coca is life". As the situation developed the campesinos started to block the streets and were ultimately disbanded by the riot police using tear gas.

This was just a small incident of the conflict and not at all an uncommon event in Bolivia. The conflict intensified during the last months of 2001 and the beginning of 2002. After several violent encounters in the Chaparé region the government and coca farmers lead by Evo Morales started negotiations in order to find a solution. The closeness of the parliamentary and presidential elections brought a temporary peace over the subject. Especially when Evo Morales and his MAS party became candidates. Violence turned into a fight for votes.

The conflict showed signs of a peaceful solution, but along with coca many problems remain in Bolivia and the situation can change any day. The case of coca is another example of the influence of United States in the Latin American countries' internal affairs.

Environment and the Quechua Aymaras

The people of the Bolivian Altiplano hold ecology as a fundamental part of their culture. Pachamama, the Mother Earth is in a very important role in the indigenous cultures of the Andes. She is the source of life. (Murphy 2000)

According to the Aymara man was created from the land. Therefore he is bound to all living beings that share the earth. All of human society is organised by the understanding that the Earth is our mother. (Murphy 2000)

Private land ownership is believed by the Aymaras to be a social sin, because the land is for everyone. It should be shared and not used for the benefit of a few. Vicenta Mamani Bernabé of the Andean Regional Superior Institute of Theological Studies critisises the modern use of natural resources: *"No one can replace the earth, she is not meant to be exploited, or to be converted into merchandise. Our duty is to respect and care for the earth. This is what white people today are just beginning to realise, and it is called ecology."* (Murphy 2000)

The respect for Pachamama can be seen in the cities in the form of kwas. It is a ritual where small icons of gypsum, coca leaves and alcohol are placed together and burned. The ritual is conducted in many various ways, depending on by whom and where it is done. Many kwas are traditionally held in the beginning of August, when you can see fires all over the cities. *"Respect for the Pachamama is respect for ourselves as she is life. Today, she is threatened with death and must be liberated for the sake of her children's liberation",* Vicenta Mamani Bernabé continues (Murphy 2000).

Although the Aymaras and the Quechuas respect the earth it does not mean that they can necessarily cope with the modern day problems brought by population growth and industrialisation. In traditional ways of living they have respect for the earth and do not overexploit it. But once the population increases and moves into cities the loading on the earth increases. Although they might still respect the earth and the Pachamama they do not see the consequences of their actions.

It seems that for almost every Bolivian, indigenous or not, the earth is a landfill, where everything is dropped without care. The people living in the distant villages do not have such western influences as plastic bottles, paper mugs or toxic chemicals and most of all they don't have high populations. Therefore the nature can manage with them. But the situation in more populated areas is different.

Travelling a highway on the Peruvian Altiplano makes one wonder whether the respect for the nature has been totally forgotten by the people. The roadsides are in terrible condition and the ditches are filled with waste. I would argue that the average Finn has a certain kind of respect for the earth which the people of the region totally lack. One reason for this is that they do not have the knowledge of how a western lifestyle can damage the environment and themselves.

The article 78 of the Bolivian Environmental Law from the year 1992 states that the state has to create mechanisms and procedures that guarantee the participation of traditional communities and indigenous villages to sustainable development and rational use of natural resources. Their social, economic and cultural particularities must be considered in a way that develops their activities. It further states that with the direct participation of the traditional communities and indigenous villages, the knowledge of use and management of natural resources has to be recovered, distributed and utilised.

The law is very general and doesn't give precise codes of action, but instead general guidelines. The nature of article 78 is such that it doesn't obligate anyone. In principle it obligates the government to built such procedures but what it really means in practice can be defined in many ways.

Conclusion

In the recent years there has been improvement in the conditions of the indigenous people of the Andes. Or at least there has been some indications of willingness by the governments to improve the situation. The few decisions and legislation have not yet reached the people as they should have.

The trend is that the indigenous movements are gaining ground and that their cultural world is being revived. Features of the ancient cultures in the region are studied and

strengthened. Many of those features have changed since the Inca empire, reshaping the Quechua and Aymara cultures. Therefore they have to be rebuilt to reflect the situation of the modern day.

"We can already proclaim that the resurrection of our original God, the sun, has begun, and there is no turning back in the search for our cultural identity", says Raúl Córdova pointing to the recent events in Ecuador and elsewhere in the Andes. He continues: *"Far from dividing us, it will instead unite us closely with rays of life, just as it was to be from the very beginning".*

Sometime during the independence movements of South-America there were plans of an Andean nation. Even today some dreams exist of uniting Bolivia, Peru, Ecuador and Colombia to form an Andean state. It would unify the Aymara and especially the Quechua speaking people under one flag.

The indigenous peoples of Bolivia have suffered enough. Perhaps they are finally getting the recognition they deserve. The road for them has been long and remains to be seen whether it will still be. As the world seems to be heading for monoculturalism how can an ancient culture be revived and strengthened? Will the leading cultures ever learn to appreciate the others without selfish growth oriented thinking?

The majority of the population of culturally diverse Bolivia is indigenous. Therefore it has a strong potential to build a society in which that diversity is appreciated. However history has shown that such cultural differences can also lead to conflicts within a nation.

In Bolivia the colonial history has paved a way within the indigenous peoples for understanding the acceptance of smaller cultures. The indigenous cultures are more or less united against the leading Spanish heritage that controls the nation.

But are the Quechua people indigenous in Bolivia? The truth is that they are descendants of the imperialistic Inca empire. In fact the Incas conquered the people of the region just like the Spaniards did. The really peculiar point is the length of the Inca rule – in some parts of Bolivia it lasted only a few decades! Still, after 500 years of ruling based on the Spanish ways, the people of the region consider the Quechua culture as their culture.

In my opinion, unlike the Aymara, the Quechua culture of the region really isn't any more indigenous than the Spanish one. The Spaniards were a totally different race and more severe towards the indigenous people. Perhaps the people of the Andes united against the common enemy under the Quechua language and culture. And perhaps the Inca nation still existed and expanded under the Spanish rule.

Although the leaders of the Inca empire were overthrown there was no way the Spaniards could have controlled the whole region. A good example of this is Macchu Picchu. Although abandoned earlier it was not discovered until the 20th century. There must have been areas where the new Quechua and Inca culture was still enforced without Spanish intervention. After all it was "the chosen race" that had been just united.

Who are the indigenous people anyway? Human populations have moved and conquered each other throughout the history and therefore the term indigenous cannot be very precise. If the Americas would one day be conquered by some great non-European culture, would the Europeans of those areas then be called indigenous?

The Quechua and Ayamara cultures seem to be rising up now stronger than ever before. But what will it mean to be a Quechua or Aymara in Bolivia after ten, hundred or thousand years, remains to be seen. Nevertheless it will be unlikely that their cultures will be lost in the near future as they have not been in 500 years.

References

BAUTISTA, EFRÁIN. The Concept of Reciprocity for the Indigenous Peoples. In Huovinen, Outi (ed.). *Tinku.* Vantaa: Suomen Tinku Ry.

CÓRDOVA, RAÚL. Resurrection of the Sun. In Huovinen, Outi (ed.). *Tinku.* Vantaa: Suomen Tinku Ry.

DALBY, ANDREW. *Dictionary of Languages.* London: Bloomsbury Publishing, 1998. ISBN 07475 3117 X.

DE MESA, JOSÉ; GISBERT, TERESA; MESA GISBERT, CARLOS D.. *Historia de Bolivia.* La Paz: Editorial Gisbert y Cía S.A., 2001. ISBN 99905-800-2-2.

ESKOLA, MATTI; NURMINEN, MATTI (eds.). Nyky Tieto. Keuruu: Kustannusosakeyhtiö Otava, 1984. ISBN 951-9079-18-1.

HAGGETT, PETER. *Maailma Tänään: Etelä-Amerikka.* Copenhagen: Bonniers Specialmagasiner A/S, 1997. ISBN 87-427-0798-6.

Leyes Medio Ambiente y Forestal. La Paz: UPS – Editorial, 2000.

LÒPEZ, LUIS ENRIQUE. *Intercultural Bilingual Education in Latin America and its Importance for Educational Reforms and Social Change in Some Countries.* Helsinki 3.10.2001. Lectured in University of Helsinki, 2001.

MURPHY, ALAN. *Bolivia Handbook.* 2nd ed. Bath: Footprint Handbooks Ltd, 2000. ISBN 1900949 49 0.

MÄKELÄ, PEKKA (ed.). *Suuri Maailmantieto.* Helsinki: Oy Valitut Palat – Reader's Digest Ab, 1989. ISBN 951-9079-92-0.

NURMINEN, MATTI (ed.). *Otavan Suuri Ensyklopedia.* Keuruu: Kustannusosakeyhtiö Otava, 1976. ISBN 951-1-02232-6.

RANTA, EIJA. *Kawsay – Centro de Culturas Originarias (Runakunajjta Yachay Wasin).* Helsinki: 2001.

Wisdom Of the Grandfathers, Speaking With Mountains

- "Our grandfathers watched more at stars. We look at watch"

Author: Kaisa Emilia Keski-Nisula with the community members of Moyapampa, Chari, Sagwani

Local Voices Of The Kallawaya, Bolivia

High up in the Bolivian Andes close to the Peruvian border to the north of Lake Titicaca live people called Kallawaya. Kallawyas are healers. They know the diseases and the medicinal plants for healing these ailments. A "pure" Kallawaya is a traveling doctor who wanders from one home to another offering his help. He is wearing a colorful poncho, a black or brown hat and he is carrying *alforja* (a certain type of bag) which is filled with medicinal herbs. Typical for a female Kallawaya is a woven headband. The Kallawaya makes national and international journeys in other Andean countries, always accompanied by his apprentice.

During the trip he teaches his apprentice about the plants and quantities for curing a certain disease and the rituals of healing. Not anybody can be a Kallawaya. In the past the knowledge of healing was a secret art which was passed from father to son. Nowadays it is possible to take another person than your son as an apprentice.

There are two different types of Kallawayas - the wandering doctors and those who identify themselves as Kallawayas mainly on the basis of the region where they are living in or where their origins are. The region of Kallawaya lie in the northern Bolivia in the mountains of Apolobamba. The villages of the professional Kallawayas are Chari, Chajaya, Curva and Inkaroka but in other villages aswell the people identify themselves as Kallawayas. Their identity is primarily Kallawaya and secondary Bolivian. They speak Quechua and Aymara, the two most spoken indigenous languages of Bolivia, Kallawaya and Spanish. Quetchua, Aymara and Kallawaya they learn at home and Spanish at school. Generally spoken Kallawaya is a person who is originally from the mountains of Apolobamba and knows about medicinal herbs.

Kallawayas live in very close relationship with nature. In addition to the medicinal plants their most important source of livelihood is agriculture and the products of alpaca and llama. The most cultivated plants are different types of potato, *quinua* (Chenopodium quinua), *oca* (Oxalis oca), wheat and maize.

According to the Andean cosmology for a Kallawaya everything has life, the mountains, the stones, the plants and the animals, all of them equally. Nothing is lifeless. They have given names for every mountain and have conversations, dialogues, with them. The mountains tell the future for Kallawayas.

The Kallawayas are relatively certain about the changes in local climate and weather. According to the local observations, the sun does not shine like before. Sunshine is very strong and as a consequence the climate is getting warmer.

Prevailing situation was even compared with the climate in nearby tropical area of Yungas. It has been noticed that

because of the higher temperatures it is possible to cultivate potatoes in higher altitudes than before and the cultivations have been moved upwards the mountain slopes.

New cultivated plants have appeared which did not survive in climatic conditions of the region before. For example in the past in the village of Moyapampa it was only possible to cultivate potato, but nowadays even some vegetables like lettuce and onion grows in the high altitudes.

A daily observation of a climate getting much warmer is the drying of the laundry. Before it took three days to dry but nowadays washed clothes dry sometimes even in three hours. Other observation of stronger sunshine is that people no longer stay outside for longer periods without protecting themselves with clothes.

Increasing heat has had an effect on snow-capped mountains. The snow that covers the mountain tops is melting. In some peaks it has completely disappeared. Such an example is in the mountain Iscani close to village of Moyapampa.

According to an old belief if there is a lot of snow there will be a good harvest. Now people believe that it is going to be a bad year for crops. Although there is less snow than before when the snow falls it falls in great volumes. Snowfall can continue uninterrupted for several days and cause severe damage. For instance in the beginning of 1990s there were serious blizzards in the region of Charazani. Snow fell uninterrupted three days and three nights and in the end the snow cover was 3-4 meters thick. It took a month for melt. The snow caused damage in cultivated plants and trees and a lot of llamas and alpacas died in cold and lack of food. Other animals like birds, rabbits and foxes died as well because of the heavy snowfalls.

Another observations made by Kallawayas regarding climatic change are great changes in the volume of rain. There might be long dry periods which have an effect on food production because there is no system of irrigation. In 1985-1986 there was a severe drought in the area and as a consequence people ran out of potatoes. There was not enough food for people or animals and this caused *ambruna* (a situation of crisis) in the area. In addition to frosts occurred which caused even more damage in the cultivations.

In other periods there has been too much rain. Before the rainy season started on December and ended on March. Nowadays the rains start later but when they start the volume of the rain is stronger than before. Sometimes it might rain weeks without a break. With the rain often hailstones fall as well which cause damage to the cultivations.

According to the most of the Kallawayas interviewed the cause of the climate change is the changes in the ozone layer. The burning of the forests and contamination of the nature by rubbish, pollution of factories and chemicals was mentioned as well. Before the Kallawayas used urine to wash their clothes but today the soap is used more often resulting in more damage to nature.

One explanation of why the climate is becoming warmer is that the sun is getting closer to the Earth. The thought of sun approaching the Earth comes originally from the evangelists who have worked in the area. According to them at the end of the world the sun will fall out of the sky. One reason mentioned for prevailing situation was that the Earth, the Sun and the Moon are sick and that is the reason why climate is changing.

The effects of the climate change upon the daily life of the Kallawayas have been various. The most worrying changes have been changes in the products of agriculture and animals. When the climate is unstable there is a greater risk to lose seeds and entire species of plants.

For example frosts have been occurring more often than before in the months of January and February destroying the harvests almost completely in some villages. The frosts in the pasture cause sicknesses like diarrhea to the animals and it

is said that the llamas and alpacas have been sick more than before.

Droughts and heavy rains cause erosion and destroy cultivated plants and pastures. In addition different types of diseases in plants cause that today it is difficult to cultivate without using repellents. Before the agricultural products were higher quality and naturally cultivated.

The changes in the production have effects on nutrition but as well on the economical situation, because there are less products to sell and they are of poorer quality. Some of the Kallawayas are worried about the willingness of the people in their communities to cultivate in the future. If the losses of harvests continue the people might start thinking "why bother if I will lose my yield anyway?"

When climate is unstable people get sick more often because they are not used to the sudden changes and different weather conditions. At the same time people are using less their traditional clothes of sheep wool which protects better their health. Also because of instability in climate and weather conditions the *wata purichiq* (prophet, fortune-teller) of the communities have problems in predicting. In the prevailing circumstances they cannot predict well the future of the community.

For the Kallawayas interviewed the solution for the problems caused by climate change are rituals. When there are too little rain people arrange a festival for the *Pachamama* (Mother Earth) where they sacrifice and ask for more rains.

When there is too much rain people arrange a different kind of ritual where they put skeletons on the top of the stones. In this way they can drive away the rain.

It seems that climate change has had various effects on the daily life of Kallawayas, both to their sources of livelihood as to their culture. Also they seem to be relatively well aware of the changes and the facts that cause the changes, that is to say the facts that are concerned in occidental science, though no one mentioned the greenhouse effect or carbon dioxides. They were more worried about ozone layer.

It might be that they have a feeling that these changes in the ozone layer are something very threatening but they are not quite sure what is the connection between ozone layer and the climate.

It is presumable that they were giving this type of answers to me because I am white. For them I represent all the scientific words that they might have heard in the radio and for that reason they start to speak in my language.

Also South America has a long history of subordination of indigenous people by white man. That might cause that they do not attach great value to their own knowledge when talking with a person who represents the occidental western knowledge.

Presumably the answers would have been very different if the interviewer was a person from their own country let alone their own community. Neither did I have a possibility to interview the oldest men in the communities who still have the traditional knowledge strong in their minds.

As one of those interviewed said: *"Our grandfathers watched more at stars. We look at watch."*

This, like some other answers as well, reveal an alarming sign of the disappearance of traditional knowledge of nature and expresses an urgent need for gathering and preserving the observations and wisdom of the grandfathers.

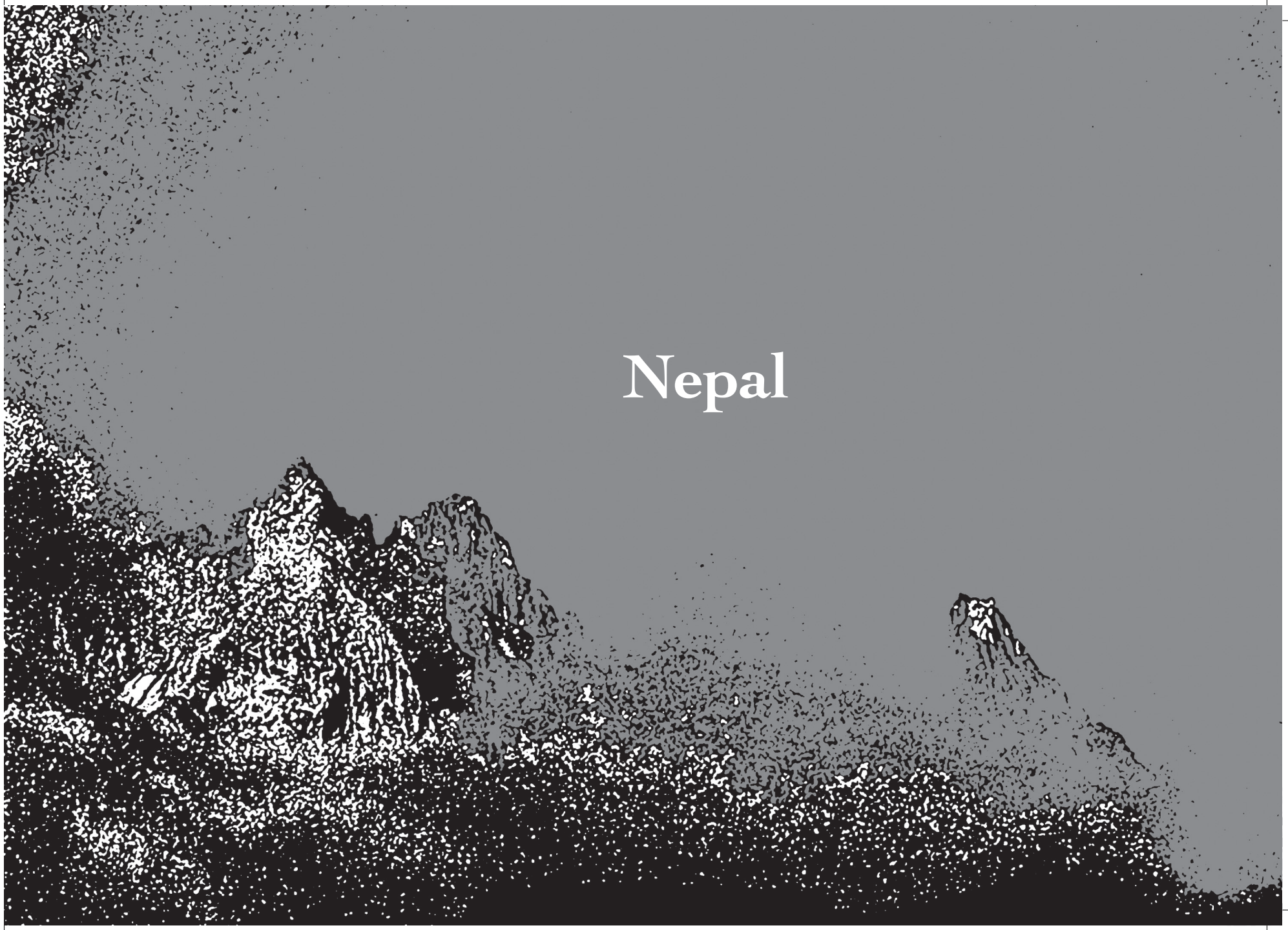
Notes:

All the information in the article is gathered by interviewing the following people from the villages of Moyapampa, Chari and Sagwani on 29.2.-2.3.2004.

People from the village of Moyapampa:
Andres Calle
Asencio Capajeique
Eulogia D. Capajeique
Petrona Flores
Simon Mamani

People from the village of Chari:
Baldemar Chura
Pablo Chura
Jaime Layme
Roberto Llanos
José Mendoza

People from the village of Sagwani:
Ceferino Tipula
Fausto Machaca


Nepal

Mountain Knowledge, Nepal

Samuli Teittinen and Mika Korkeakoski

Initiative for the research

Evidence of the climate change is present through out the Himalayan mountain region, especially in the forming of glacial melt water lakes. This has been notified increasingly in the later part of twentieth century. Formation of these lakes and their sudden outbursts, glacial lake outburst floods (GLOFs), have caused severe impacts on the local population and environment. These effects include loss of lives, buildings and property, destruction of roads, fields and pasture lands. (1)

Our prior aim was to find out how these climatic changes affect to the local people inhabiting the Solu and Khumbu districts of the Himalayan region. These two districts also face another kind of changes as the tourism to Nepal and especially to the mountainous regions grows continuously. One of the most desired trekking destinations, Sagarmatha national park (including Mt. Everest), attract more and more trekkers every year, which leaves its footprint to these pristine regions. Therefore as an addition we were able to collect also information of their (Sherpa people) every day life, which inevitably consisted the changes they see in their traditional lifestyle, environment, economy, culture and society.

Introduction

Mountain Knowledge is a research based on Sherpa peoples' views on the environmental, social, cultural and climatic changes in the villages of Solu and Khumbu districts in the highlands of Nepal.

The research was conducted by using semi-directed open-ended interview method (qualitative), with topics determined beforehand. Interview discussions handled following issues; changes in the environment and weather, flora and fauna, culture, economy and Traditional Ecological Knowledge (TEK). The interviews were conducted in the villages of Junbesi, Mulkharka, Namche Bazaar, Khumjung, Thame, Jorsale, Ghat and Bengkar with people aged around 40-75 years consisting both the sexes. The occupations of the people varied from farmers, lodge owners, mountain guides and yak herders to Buddhist Lamas. Altogether eight interviews were conducted and transcribed, by collecting the most important views considering the research. The interviews were conducted during June and July 2003 on site with the help of minidisk and our irreplaceable translator Mr. Phurba Sherpa.

Basis of this paper is interviews collected during our field trip in Nepal in summer 2003. Interview results are divided under several categories and answers are grouped under our general questions.

The following people were interviewed:

[1] Lama Ngawang Jimba, Head of the Himalayan Sherpa Buddhist School, Phungmochhe Monastery. 17.6.2003

[2] Pasang Norbu Sherpa, 60 years old, farmer at the village of Mulkharka.19.06.2003

[3] Lama Dorjee, 75 years old, Lama of the local monastery and owner of Lama Lodge, in the village of Ghat. 24.6.2003

[4] Phuti Sherpa, 50 years old, at the village of Jorselin. Buddha lodge & Restaurant 25.6.2003
[5] Ang Kami Sherpa, 64 years old, farmer at the village of Bengkar. 25.6.2003, Bengkar Guest house
[6] Ang Lhakpa Sherpa, 60 years, wife of a yak herder, lives in the village of Khumjung. 1.7.2003
[7] Ang Doma Sherpa, 39 years old, looks after the tree nursery in the village of Thame. 3.7.2003
[8] Ang Norbu Sherpa, 61 years old, ex-mountain guide and owner of Sagarmatha Lodge, in the village of Namche Bazar. 4.7.2003, Sagarmatha Lodge.

We like to give our (Samuli Teittinen & Mika Korkeakoski) warmest thanks to the following people who have been tremendous help for us during this project:

All the people we interviewed: Lama Ngawang Jimba, Pasang Norbu Sherpa, Lama Dorjee, Phuti Sherpa, Ang Kami Sherpa, Ang Lhakpa Sherpa, Ang Doma Sherpa, Ang Norbu Sherpa.

All the people helping us:
People at the ICIMOD (International Centre for Integrated Mountain Research); J. Gabriel Campbell (Director General), Binayak P. Bhadra (Director of Programmes) and everybody else. Mr. Tendy Sherpa and Mr. Phurba Sherpa of Iceland Trekking and Expedition. Mr. Mingma Norbu Sherpa of Nepal Tourism Board, Jyrki Terva. Special thanks to the village of Mulkharka. And everybody else we met during our project.
And last, but not least, Mr. Tero Mustonen of Tampere Polytechnic and Snowchange-project.

In the following chapters are the answers of interviewed people. The answers are collected and organized to reflect the main topics of our questions.

Rocks and glacial ice in the Mt. Everest base camp vicinity. (Samuli Teittinen)

Changes In the Environment

Weather, temperature, rains
How has the local weather been? Any big changes or unexpected weather phenomena?

Lama Ngawang Jimba comments: "More heavy rains in the recent years, two or three times very unexpected. No difference, the same (clouds). The wind is stronger now."

Pasang Norbu Sherpa tells that: "Five years earlier in this area a lot of winds and rains, but this year no winds and rains, and this spring very less wind here, and because always there is a very bad cloud here. More than twenty years the winds and the rains have been like this. Before in the spring there were big winds that take the roof, for 2-3 days, but not anymore. No, only this year the monsoon has been late. Only this year cloudy. Now the winds are not coming to this area. 1970 very big raining (snowstorm), 6-7 meters of snow, and many people died, and also animals. But not in the recent years, but just sometimes little bit more cold. This year heavy snow, otherwise light snow"

Glacial lake outburst erosion on a Bhote Koshi –river. (Samuli Teittinen)

Lama Dorjee reflects: "Three years before lot of more dry, not very good weather for fields and no good raining. Sometimes no rain for long times, all things die. This year more rain, good raining. This year, only this year good weather. The fields are very nice for potatoes, vegetables, nice. Three years more better. Now there are many changes in all area. People are also changing. Everyday environment, everything going more nice. Now more good idea for everything – now more plants, things. More nice. This year too hot, this year more hot. Before similar, also hot and cold."

Lama Dorjee continues: "Only this year no change (in raining). In last year, always changing. Sometimes nine months no raining, six months no raining. And sometimes always three to four months raining. And like that. Last year, this year not like that. It has been more dry in the past. This year the clouds, this year is less cloudy. Before is more, very thick clouds and sometimes there was big wind. But this year clouds also very nice. They say higher the clouds, more nice for all things. Winds also similar, also this year less wind. Sometimes big raining. Sometimes big wind, but this year no wind like that. But the wind, before there many changes. This years been very nice, wind also been very less and nice."

Phuti Sherpa has observed: "A little bit more raining. In 20 years more and more (temperature). 30 years ago a big landslide, a lot of damage, nowadays the water is higher. Winters coming very soft snow, and springs very heavy. 12 years ago heavy snow, a lot of animals and people died. Clouds are quite similar, in the springs more deeper mist. The winds come later and bigger in the spring."

Ang Lhakpa Sherpa replies "Before same temperature, but now very hot and very quickly cold, when the sun comes it is getting hot, I think of it often. Raining is about the same. This year a little bit more quick raining (in the beginning of monsoon)."

Ang Doma Sherpa comments: "Clouds are same as always. Temperature nowadays little bit more hot. Sometimes when sun is coming, sun is little bit hotter. Don't remember (for how long). Maybe this year little bit hot."

Ang Lhakpa Sherpa and grandchildren in their house in Khumjung. (Samuli Teittinen)

Ang Norbu Sherpa reflects: "The temperature little bit higher, sun is very hot. This year. Many people thinking like that.

Phurba Sherpa adds: "Because I think there are more people and something."

Ang Norbu Sherpa continues: "Here the temperature is not a problem, no effect on life. Sometimes it is little hot and dry. About winter temperatures, not scared for temperatures. Sometimes in winter is raining, snow. Sometimes in morning and night very cold. Sometimes it has been more heavy and sudden rains, but for very short time. But this year, no hard rain, no big rain. This year little bit too windy, too much wind. This year more wind. Wind is every year, but this time is very strong."

There is a lot of talking about glaciers melting, glacial lake outbursts. How the snow conditions been here? Have you experienced anything in this area? Avalanches etc.

Lama Ngawang Jimba comments: "For two years not that much snow, but earlier too much."

Lama Dorjee tells: "Twelve years between, two times this area big avalanche, because up in the mountain some lake broken. Big water and many things damaged. Now for three-four years no problems. Monsoon waters are higher but not problem. Some lakes, glaciers are very dangerous. Some day they might break, if they are broken then big problems."

Ang Lhakpa Sherpa replies: "My husband says that less ice and snow because of temperature is hot. This year there is more hot temperature, because less wind. Long time before there was a landslide (maybe because of a glacial lake)."

Ang Kami Sherpa reflects: "Sometimes snow is little bit changing. When temperature little bit hot, snow is coming very, little bit soft. When very cold in winter, snow is coming very small size, similar to rice, like powder. Before, 30 years behind, lot of snowing, lot of big rain. This year little bit more snow, but otherwise getting less."

Ang Kami Sherpa continues: "This area has more problems on riverbanks, erosion. Before it was more, but now little bit safes. Fewer landslides. Before sometimes broken a lake or pond, and then like that, from the glacier lakes. But now there is more trees and more something. It was in August and September. Not every year. Sometimes, very few times"

Ang Doma Sherpa remembers: "Yes, I remember little bit about glacial lake outburst. That time near the lake 6-7 houses damaged, but nobody dead. Dig Tsho lake. Before little bit less melting, now more melting and waters. Now not any effect on life, no problems. Before sometimes up there snow and ice but not anymore. Now it is easier to move. No idea for how long glaciers have been melting. Before sometimes when travelling from here to Tibet, that time always, this time also snow and ice in low parts. Now snow and ice only in high places. Before three years, there was every time landslides, but for 2-3 years gone, no big land slides and no broken.

Because they are covering the grounds, putting plants in the ground, maybe because that. Still the lake is not full. Not full, so not dangerous. No landslide like that. There is no controlling of the lake."

Ang Norbu Sherpa comments: "This year also raining, very big and heavy. Only for one day raining, one meter or something of snow. If two days is snowing, very dangerous. I think before also raining like that, only one big rainfall. But before was little bit less raining. This year only one day raining like that. Maybe if raining for 3-4 days, houses are damaged. The roofs break."

Ang Norbu Sherpa continues: "Before my father came, only one avalanche down of *Jonbuse* side. One house down, some people dead. Told by my father. It was maybe 50-60 years ago, but now there are no avalanches. Because there is lot of jungle. Now they are starting more tree planting."

Ang Norbu Sherpa concludes: "This area, because sun gives good light here, only two-three days after snowing, all snow is away. Other side is little bit in shadow, maybe two-three weeks of snow. The snow cover has been like that also before. Before there was lot of ice and it was too difficult to take yaks and other animals to the Everest base camp. Now there is more sand and more stone. Now the route is very easy. Ice is going away. Now the base camp going upside, all is plain. Before he base camp was very down, upside all ice. This time I went there with American group, now there is no ice, only glacier. Many camps this year, too many expedition also."

In some areas we saw some kind of mist, coming up from the valleys. Have you been experiencing this phenomenon here?

Ang Kami Sherpa has observed: "Before little bit less mist, but that time, this year more mist. Not for many years, only one two years more mist."

Ploughing the hillside field. (Samuli Teittinen)

Lama Ngawang Jimba recalls: "Here we also have this problem of this mist, before I haven't seen much of this mist in the area, but there is, it is like Kathmandu sometimes. This has been for 6-7 years."

Animals, plants, insects

Changes in temperature and environment can often be seen as changes in animals, insects and plants. New species or species that have disappeared, changes in amounts or in growth. Have you been experiencing this kind of things in your area? How about the Sagarmatha National Park, has it any effect on the flora and fauna?

Lama Ngawang Jimba reflects: "35 years ago, there were many jungle pigs. After that there was very big snow fall, and most of the animals died, and after that I have not seen them anymore. So that is a change in animals. Before there was no deer in the village but now there are more deer in the village. Also before there were many *ðanphe [Lophophorus impejanus]*, national birds in the area but now there is not many, because of the people killing them. Somewhere there are mosquitoes, before there were no mosquitoes. People bring them from Kathmandu in aeroplanes, or maybe the temperature is hot, and maybe because of the electricity."

Lama Ngawang Jimba continues: "There were many big trees, but now only small greens. Because people destroy the forest for building houses. There are little changes in flower blooming, because it is getting hotter. Flowers are blooming sooner. Now there are fewer animals than before in the jungle, because of the big snowfall of that time and the deforestation. I am not sure are there new plants in the area, but if people would want to grow corn, they could because of the temperature. People are not used to growing corn, so they do not grow it here, but they can if they want to. In Junbesi they grow corn."

Pasang Norbu Sherpa tells: "Now more deer and more tiger. Only one month ago tiger took a dog and one goat. Then next day they kill also one deer. Nowadays here is more tiger and deer. Deer do damage in the fields. 20 years ago here was a little bit tigers, now more and more deer. Also more birds now, earlier less, but now they come and do damage in the fields with barley and wheat. This area there are not many flies here, only the mountain mosquitoes. This area is good for fever medicine plants, this year there are no people who pick them up and sell in Kathmandu. No new animals, plants or birds in this area, and also none disappeared."

Lama Dorjee discusses: "In animals, there are many changes. Before, 10-12 years ago not many animals here, everybody, many people killing. Now with the National park, all people, army also, go looking for animals, now there are many animals this area. Now in the National park, there is so that, if somebody kills any small animals or birds. They put into jail maybe for ten years, or five years. If someone kills some big animals, they put in to jail for the whole life. Now there are more animals. Because, also there is coming more jungle, that's why also more animals. Now the animals are coming also very near the houses, destroying crops and causing damage. Now it is with the birds also the same, many birds in this area. Because of WWF project, with the help of Mingma Norbu for this area. Now this area has many, many birds growing more and more. And all is very nice."

Lama Dorjee continues: "No change for the plants, same kind of flowers. No new plants. There is no change in the insects. This year few, little more flies. In this area there are no mosquitoes. Very small mosquitoes, high mosquitoes, we cannot see them, this kind of mosquito. No new animals. Mountain goat, in this area they are coming every year, one hundred and more in groups. But this year no coming, there is many tigers. Maybe tigers are killing them. Now there are more tigers. And wild dogs, also there is more wild dogs. Wild dog

hunt deer, mountain goat and farm animals. I think here are more tigers now because there is not allowed to kill them, only Buddhist people. Government also gives only permit to kill them. Because there is no killing, they are growing more. Tigers are not so much a problem for man, only for other animals, killing and slaughtering. Bad. The deer and this kind of animals cause trouble in the fields, for the crops. There is more jungle, maybe more food inside. But this year, not many of them seen in this area. But tigers make more problem, killing cows and deer, baby yak maybe sometimes."

Lama Dorjee also mentions: "Plants are the same, no disappearing. No new medicine plants or other plants. Now they are growing maize and some more new vegetable. This is because they get good compost, which grows many things. Not like that before."

Phuti Sherpa relates: "Now here are less domestic animals (cow, sheep), because of trekking and lodge business. Coming more birds, mountain goat, deer. Some other come and eat all. Because more scared for the people, no killing, National park. Insects and animals are the similar as before, no new ones. Plants and trees are more nice."

Ang Kami Sherpa reflects: "More animals now, before very little animals. More mountain goats, and tigers also many. Before there was no national park, now with the park, about 20 years, more animals are coming. Before many people were killing all the deer, now with the National Park, killing is not allowed and more deer comes. No new or disappearing animals. Now also many birds, but no new or disappearing birds. It is same with insects. Amounts also similar. Winters cold, very few fly. In summer more insects, but no fly in winter."

Ang Kami Sherpa continues: "Now all plants are coming very nice. More plants, also medicine plants. Now not allowed to take the forest, from forest [refers most likely to the cutting of trees]. Sometimes flowers are coming in spring all the time, but sometimes coming also in winter. This has been only these five years. Actually no idea why it is so, but maybe temperature little bit hot.

Now we get from nursery, some new plants. But none are disappearing. Many people like now putting new ones into ground. Very happy about that, always needing forest. This tree program started ten years ago."

Ang Lhakpa Sherpa comments: "Now the mountain goat is many, this year there is no deer. Now the mountain goat also goes higher, like Gokyo. Amounts of insects are every year the same, but this year more mosquitoes. If there is good compost, the crops grow good. Plants are the same, but now they are better. This is because there is nobody killing the animals, because of the National park."

Ang Doma Sherpa discusses: "No changes in animals, no new ones or disappeared ones. Also insects are same. No mosquitoes here. Are you sure you saw a mosquito?"

Ang Doma Sherpa continues: "Animals are now going in higher places. September august animals are coming down, when it gets colder. Yak go same time higher, now is the monsoon and they are going to *yarsa,* higher place. In winter this area has many yaks, but not now. Now there are growing potato and other things, and little bit more hot. *Gunja* (lower camp) is the same height. Sometimes go more down, but otherwise always here.

Trees are growing good. Juniper is very small, good. Animals don't eat it. Pine trees young leaves always problem for animals. Trees are this time growing good, more than before. Maybe little bit more in a year than before. Before there were no trees, all was very empty. Now every people know they need trees, environment is in they trees. Medicine plants are same as before. Other plants same as before. **Norsidi??** is a new plant people are growing more."

Ang Norbu Sherpa reflects: "No new animals in this area. Yaks go only upside of Namche, never downside. They are

Mika Korkeakoski assessing the deforestation area. (Samuli Teittinen)

dead if they go downside. They drink the water and then die. Only to high Tibetan side and mountains. Before it was the same. Only *ðzopkyo* is going down to Lukla and Solu-area. And going to base camp side. *Dzopkyo* very busy; it's going to high place and low place. Father is yak and mother is cow. Now the yaks are going upside of Thame, just higher. Going higher than before."

Ang Norbu Sherpa continues: "Not many fly and no mosquitoes here. No leeches and no other insects either. Because this is little bit colder, in night it is raining very cold. Some new plant growing good here. Medicine plants are same as before. Three plants are now growing more and more. Thick forest. Pine trees and others grow only this high, from Tengpoche to 3500 meters. Juniper is growing up to 5500 meters or 5000 meters. No change in the tree line. The rhododendron also, red rhododendron is only growing down from Namche. White rhododendron is growing higher. Three is the same, different flower. No change. Flowers are coming in May - June. When the flowers come, then potato ready to come, but now not looking anymore."

Changes in the traditional Sherpa culture

Sherpa people have been living in middle of large cultural and economic changes, as the number of the tourist visiting in the area has been high for couple of decades, especially the last one. How much this has affected in the everyday life of the people, and in which way? How do you feel about tourism and changes in the traditional lifestyle?

Lama Ngawang Jimba tells: "People are going more into vegetables than before, like cauliflower, cabbage, garlic and corn. People use Sherpa language here in the house and in the community and everywhere, but now many people who pass (Hindu people) they speak Nepali. They go to school and learn Nepali and speak Nepali. Sherpa language is spoken little less than before. The village people speak Sherpa, but the town people are forgetting."

Pasang Norbu Sherpa comments: "In this area no changes in traditional lifestyle. In this area not many change with the children, they like to stay here and continue farming. Also the language stays because every body speaks Sherpa. No words disappeared, because older people teach the children."

Lama Dorjee reflects: "There is not any change in the lifestyle. Before a little bit hard life, now easier. Because little bit developed. Before it was for many people very difficult for food. Many had no money, no things. Because now many tourists are coming this area, every people is getting money. Tourists coming is very good. Every people have good life, very nice. Now the young boys going little bit for the Sherpa tradition and culture, little bit going to forget. Now there are many people, young boys, they are looking European way, looking only for the business. Like learning to count the money and have stores. No interest in Sherpa culture."

Lama Dorjee continues: "Sherpa language is disappearing also. Now many young children are talking only Nepali language. If talking Sherpa language, then they don't listen. It's bad. This is because more European people, more English and others. There are going more things in this area. There is also that, they are not joining lama-schools. Also disappearing."

Phuti Sherpa relates: "Only old people have the same tradition as before, but there are coming young people with different taste and talking, trekking business. The young people go to Nepal and English languages, more interesting than Sherpa language. It worries sometimes. We teach sometimes our children about Sherpa."

Phuti Sherpa adds: "Tourism is very good for Sherpa people, every one is waiting for tourists, they get money and jobs. Also the farmers get money for the vegetable, otherwise only enough to eat. Many people choose tourist side because it is

easier, lodges and trekking"

Ang Kami Sherpa discusses: "Weather is same every year. But more changes in people. No more interest in farming, they are little bit going for the foreign system, good food, good clothing and things like that. Men is little bit changing, weather is similar. There are many changes in the Sherpa tradition. Now many young, only more interest in Nepali, English, Europeans like. Only the old people are still doing same things. Also is same change with the language. Sherpa language is maybe disappearing. This area also changing, many people making new."

Ang Kami Sherpa points out: "I am worried about that, yes. But."

Ang Kami Sherpa continues: "Food coming from this area is not enough, bringing more from outside. This area people have very small farms, not enough food. Food brought from Jiri and Kathmandu. Life is quite expensive, much more expensive. Because food is carried by people. This area is very expensive. It's good idea, all food imported and people living from tourism. There are lot of young people with no interest in farming."

Ang Kami Sherpa adds: "Sometimes talking with other farmers, people. Then Sherpa language also little bit of changing. Before, only five houses in this area, now over thirty houses and many kind of people. Tourism is very nice, very good thing for Sherpa. Little bit a problem of losing culture but better to have tourists."

Ang Lhakpa Sherpa recalls: "It is very hard life with yaks, but without yaks it is harder. Because if no yaks, it is hard to make fire because there is no yak shit. In the winter there is no shit, so there is no fire and warming. From yaks we get only milk, and they carry the baggage. A lot of raining, then we get a lot of milk. I make carpets from yak wool, but it takes a long time. Now here are only five families with yaks, before there were many people with yaks. But nowadays the young, the other child and young, say it is a bad thing to go with the yak. The young people don't like the yaks, it is bad because then there is no butter or milk or yak shit."

Ang Lhakpa Sherpa continues: "Now after the winter when the grass is dead, then the yaks come down. Female yaks come down to *gunja* (lower camp) here and stay here for eight months and other 4 months in the *yarsa* (high camp). Male yak is little bit higher, likes higher, because the insects go into the fir. The male yaks stay 6 months in *yarsa*. The yak knows when to go to *yarsa.* Here are maybe flies and mosquitoes and then they go. They know the road, always go the same time. Depends on the grass, when it is good they stay, when it is bad they go. We have lots of yaks because we used to go to Tibet for business, but now it is cold. Before we had to get salt from Tibet and carry potatoes and other things from Jiri and Salleri. Now we get them to Khumjung. Now when the tourists come, it is good life. But if no tourists, there will be more problems."

Ang Doma Sherpa comments: "Lifestyle and culture is little bit different now, many people have good life now, clean clothes and good food. Lives and jobs are little bit easier, easy things. Farming is still same here. Now coming many things from Kathmandu and other places. Before it was hard life, in this area people eat only *tsampa* (parched barley flour) and some dry meat with salt. Sometimes eat potato. But rice only once a week or two weeks. Always mash and potato and *tsampa."*

Ang Doma Sherpa continues: "There is little bit less Sherpa language, more learning in Nepalese and English, little bit going bad times for Sherpa language. Maybe children know the Sherpa tradition little less or something. I am a little bit worried about that. Only father and mother are teaching traditional things to children, some other old people."

Ang Doma Sherpa concludes: "More tourism business is nice, because tourists are teaching some things cleaning,

cooking. Tourists are good, good business. I think everyone of the younger generation is going for the tourist business, no more yak herding and farming. Little bit difficult to say is it harmful for the Sherpa culture. Now, sometimes not sure, if tourists are coming or not. Sometimes there are no tourists coming, then always need farming, cow farming."

Ang Norbu Sherpa remembers: "It was very difficult times here in Namche in1963, difficult for a job. Somebody going to a Tibet for some business. After people come to expeditions, then more people are coming to trekking. Then more easy. If tourist people do not come, then for Sherpa-country, Nepal-country, it is very difficult. No any job, nothing. Now everyplace is like this, many European-people come, good business and good money. Now everybody makes big lodges. If no tourists come, then no good. All money is gone, very difficult.

They started building these big lodges about 15 years ago. Before, my first house was downhill. Not much room. That time mister president Jim Carter come to my home, his party in my house, Khumbu Lodge. That time, no room, all were sleeping in floor. After that many tourists came.

In 1963 not so many houses here, old houses but no lodges. About 25-30 houses, now there is hundred and more. And the electricity came in 1994. Before that was one electricity down river of Thamo. After big flood, glacial lake outburst, came, big damage. Now is the new hydropower plant. Electricity is now very good. Everyone in Khumjung, Khumde, Namche, this area, have electricity."

Ang Norbu Sherpa continues: "Everybody still have animals here. Small cow also, not so many, 2-5. And *yaknak* is important for the area. They have many yaks and naks. Before many people had lots of animals. Now Namche people have no animals, only lodges. Some animals are carrying luggage. Now they are moving business. It is shame to see that people are only for the tourism business. Before here were many farmers. Now all the farmers are making houses, lodges. No interest in farming.

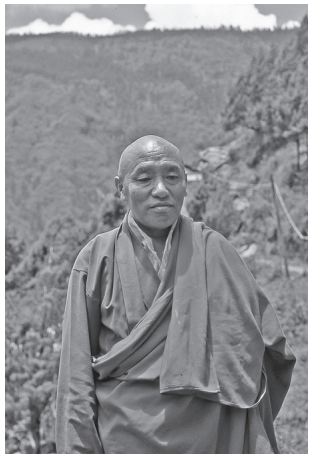
Many changes now, in tradition and everything. In peoples life. Now they don't use natural compost anymore, chemicals and such. No taste in food. People are also very weak, they get different kind of food. Now people get short life. Before people lived 80-90-100 years. Now they only more than fifty years, seventy years. Always have some stomach problems or something.

For vegetables use only natural compost. For grass they use chemicals, grass coming longer. After winter they need grass for animals, every year, month, buying grass for animals. Now the yaks going up high, after they are fat and strong they come back. Yaks are used in trekking and wool is used for blankets."

Ang Norbu Sherpa continues reflecting changes: "Every year less Sherpa language, other things more. Before many dance and *chyang* (local beer, often brewed from barley). Before only *chyang,* now whisky, red label, many kind, beer. All European countries are getting to here. Singing and dancing are disappearing. Now in schools all language is Nepali, all small children talking Nepali and English.

Effect of TVs and videos is for children, they don't do homework, no interest for schoolwork. Only interest about the programs. One effect is for the old people, they like looking for the TV. No mantra, and no *mani* payment. Little bit less, forgetting they Buddhism. It worries me. Now almost all have TV. Also worrying. Now in every house there is TV. If no TV, then wife asks why we have no TV. Before only one house had TV, we give ticket and everybody go there. Now everybody have TV.

Because many Sherpa ladies are only working home, always wear same, traditional dress. But many boys go with trekking groups, they get some presents, jacket or something. This is more easy. Only when Sherpa festival or monastery



Lama Ngawang Jimba.

festival, that time men use also Sherpa dress. Trekking clothes are more light and easy. Sherpa dress is big and heavy, and too difficult walk. Jacket is more easy and comfortable. Now many people are using trekking shoes, before there was one kind of buffalo leather shoe. Very tight and difficult to walk. Now easy trekking shoes are used.

Many words are disappearing. Like traditional clothing words, eating. Food has changed, children don't like *tsampa.* Only European food they like. Eat with fork and knife. Before here people doesn't eat egg, no chicken. No idea for omelette. But now everybody eat omelettes and fry eggs, like that. Children like always sweets and chocolate."

Ang Norbu Sherpa concludes: "It is little bit crowded with the amount of trekkers, but it is difficult to do something about it, control it. Everybody gets money, now more competition. This year Edmund Hillary visited here, said control Everest, one year or two years. But this is not possible, Nepal government need the money. If controlling here, then everybody go from Tibetan side. Now still they are opening more peaks. Permit price also going little bit down, if permit price high, then expeditions go from Tibet side. And government lose money, no business here, everybody loses. Many people say, make permit less, everybody gets money.

Khumbu-area and Namche area waiting for tourist, because also better business. Send your friends here. Namche people buy all food, no growing here. We think that more tourists is more important than the remaining of Sherpa culture. Send more trekkers, otherwise no good for village people. Always waiting for trekkers. If tourists don't come, all are dead meat. Now we Sherpa get good clothes, good shoes, good food. All is because of tourism. No trekkers, no expeditions come, no business and no nothing. There is worry about being so relied on tourism. If tourists don't come, there is less food, clothes, everything."

How about other traditions and skills, like reading and predicting weather. Is this kind of knowledge still alive?
Lama Ngawang Jimba comments: "No lamas with weather reading skills here anymore. No particular people in the village predict themselves about the weather. When there is a red cloud in the evening in the sky, then tomorrow the weather will be better, weather will be clear. And when there is wind blowing from the north side, now there is no more rain. They predict like this. And one thing, whenever the birds sing it will be good weather.

Some people do this in this area whenever there is a dry season. They put this, bad things or taste, something in the river. Animal skin, worms, flesh, like *chyang.* Sometimes when there is very dry season, people carry lama books and it starts raining, it is a peoples' belief."

Lama Ngawang Jimba continues: "No particular system for the place of a house, but people choose a good place. They build a field and house close to each other. The lamas choose the places according to books. When people go far away places, they look from the books which route to take. It is for important trips, to look from the text books."

Pasang Norbu Sherpa mentions: "Sometimes the bear don't find any animal meat, they eat white sand. Sometimes very good quality sand people also eat. They go to toilet the same way (as normally), they also eat some grass sometimes. When they have problems they eat also young bamboo."

Separating the wheat from the chaff.

Pasang Norbu Sherpa tells also: "It has been little bit hard to predict the weather for the past four five years. This year is only difficult to predict the weather. This year it has been hard to predict the weather, before that like the clouds in the afternoon evening then clear tomorrow. Children don't know these signs. When it rains, bring an umbrella; children go to their mother and father. Not anymore people who know these things in this area. Looking for the lamas for place of house and field, and some Brahmins take sand to lama and they say if you have good life. My father has taught me about medicine plants, and government organise these medicine plant groups. We teach the children about the plants, but they don't learn it."

Lama Dorjee reflects: "There is not any weather reading skills. When there is today less and cloudy, then there is good weather. There is the red clouds and night, like that in afternoon, then tomorrows a good weather. If it is in the mornings like that, then afternoon and night raining. Before some lama and some people putting an animal skin in the river. But now this is not possible, now there is no, not any lama doing that. Because this is very bad for god and other. When they are doing like that, very big storm coming and big hails, washing everything. People are killed, animals are killed. Now no people doing that."

Lama Dorjee continues: "Everybody is choosing house place like this. Sherpas have calendar, Sherpa-calendar. Looking for good place. Only for the lama possible to read. They look in one month how many days are bad, how many days good. Then see good or no good. After that they debate, good or no good. Good life for doing like that."

Phurba adds: "Only the lamas can read the book. When I make own house, lama come there with prayer flags. Lama is making more good luck."

Lama Dorjee continues: "Young people who don't want Sherpa culture are still doing like that. Lamas are also giving advice on travelling. It is always for long travels, but not for short. Like to Kathmandu, India or America."

Phuti Sherpa mentions: "Travelling routes are little bit changed, because of coming trees (planted and naturally). Weather reading like early morning cloudy, raining in the afternoon. Long time lamas who could make the storm go away, but no skills anymore. Place of houses according to Sherpa-calendar and asked from the lama, maybe the young people also so."

Ang Kami Sherpa reflects: "In travelling routes now also many changes, because new forest coming. Always changing. After few years maybe life bit harder. Because of National Forest, always forest. Little bit difficult for animals to find grass. In monsoon they are going very high. Not higher than before."

Ang Kami Sherpa adds: "Now some old people are teaching Sherpa culture to young people. Sherpa language, things, culture. Thinking about if bus coming and road coming here, no job for poor people. Because bus then carrying all things."

Ang Lhakpa Sherpa comments: "Every year more and more trees and the forest is nicer, and National Park is good. When in the afternoon red cloud, tomorrow there is a good weather, if there is dark sky it will be bad."

Ang Doma Sherpa reflects: "Travelling routes have changed because of landslides. Before route went down on this side, now on the other side. People in this area have owned three houses, in winter when snowing here, people go down and living there. During monsoon, people with yaks and sheep, they are going higher. There are also other houses. People who lived down there, in the now deserted village, had also houses here in Thame."

Ang Doma Sherpa continues: "No idea about the future, will these changes (e.g. weather getting warmer) have any effect. Maybe if every year going like that, then some effects. It

worries that glacier lake not full, maybe bursting again. But there is nothing to do about it."

Ang Doma Sherpa concludes: "To predict weather like if it is very hot in the morning, afternoon or night and tomorrow is raining. Sometimes if clouds are red in afternoon, then tomorrow is good weather. Only this kind of things."

Sherpa people are also known to be specialists of the high areas, and are often the crucial part of any successful mountain expedition. How you see the relation of the Sherpa people to the mountains in these days?

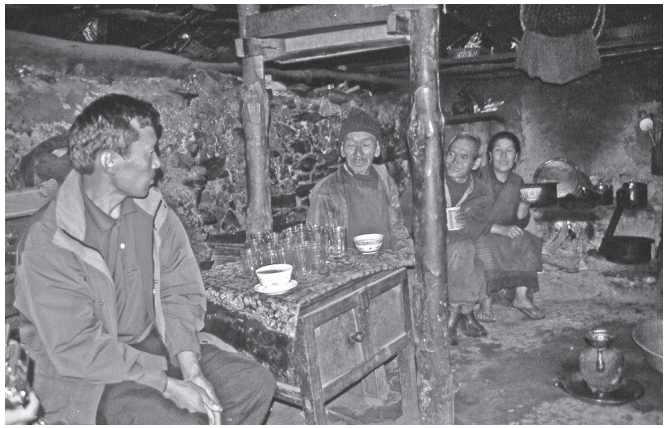
Lama Ngawang Jimba relates: "We have special hills, one village have one mountain god. We say *ylha,* Numbur is our *ylha*, so we pray for the mountain. Sherpa people climb mountains because they want to earn money, but some do this for own interest."

Pasang Norbu Sherpa tells: "In bad times we pray for the mountain gods. Children don't know these things. Our holy places are Numbur and Pike Peak."

Lama Dorjee reflects: "Still there are good relations for the mountains and Sherpa people. When there's, sometimes changing many things, long travel also. Some put praying, thinking about hills. Putting also prayer flags. No tourists and no other people, then no Sherpa climbing the mountains."

Phuti Sherpa comments: "Good relations with the holy mountain. Climbing mountain is living for many sherpa, climbing with the tourists. Very rich Sherpas do it also for fun."

Ang Kami Sherpa relates: "Still serving the good relation, mountain and people of this area. Some hills are hills, and they go every year there and put new prayer flags. And now they teach young and they do the same. Before there is lot of, only greetings in Sherpa language this area. Only going for monasteries and learning for Sherpa culture. Now always going in English and Nepalese language. Sherpas climb mountains only with tourists."



Small teahouse in the village of Mulkharka.

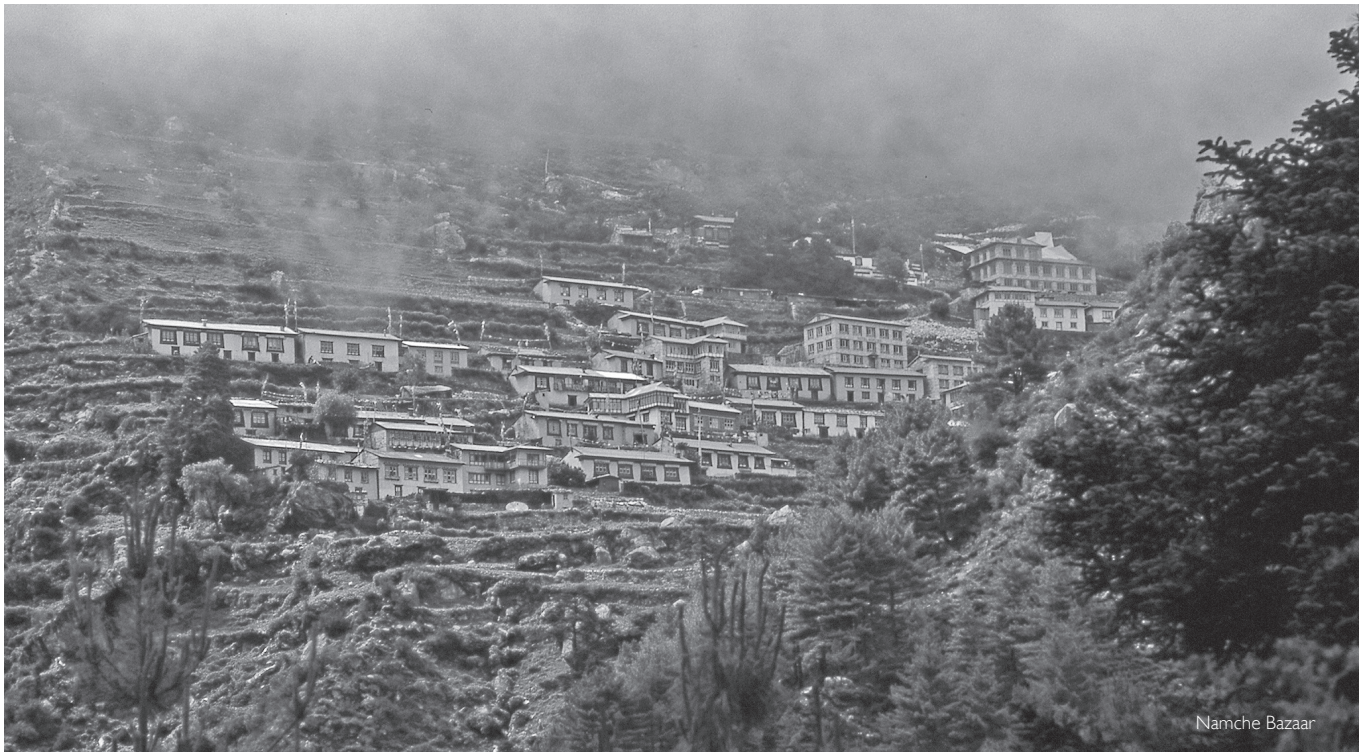
Ang Doma Sherpa comments: "Still every people have good relations to the mountains, holy hills. Not sure about the children."

Ang Norbu Sherpa reflects: "Relationship with the mountains is still the same. Now there is more, every village putting up prayer flags. Before little bit less, but now more. Good relations."

Ang Norbu Sherpa continues discussing: "Now mountain climbing is very easy, before no idea, no experience. Now we have good experience, good techniques and good equipment. Before many people lose fingers, many accidents. Now there are fewer accidents. Before stronger was better."

Ang Norbu Sherpa concludes: "No possible for only Sherpas to climb mountains. Sometimes some rich sponsor, then just Sherpas. But otherwise only climbing with tourists. Now this year two different new records, 12 and half ours base camp – top – base camp, and then 10 hours same.

Too many people (in high season), many people, some get robbed. Also equipment makes climbing more easy, many



Namche Bazaar

people successful. Good road going to summit."

In the Solu-Khumbu region, many areas have got electricity in the past few years. From small hydropower plants or solar panels. What are your feelings about this development?

Lama Ngawang Jimba comments: "The electricity here is still not enough, so we use wood to cook our meals. But when there is good electricity we use it, and save the wood, maybe afterward there will be electricity for the school…they are conscious people here. They are making a new power plant to the river down there, down hill from this school."

Lama Dorjee reflects: "We have a power plant just behind these buildings. It gives electricity 24 hours. They use more times electricity for cooking, sometimes when big groups and more people they use wood. Electricity is easy and very nice. Saves the trees. Power is still small, when we get bigger power, then we don't have to use wood anymore. There are plans for bigger electricity."

Phuti Sherpa tells: "Some solar power is used by the rich

people. It would be good to get electricity for cooking and other things. For children to do their homework. It is possible to get hydropower from the nearby river, but there is no idea, and there is not money."

Ang Kami Sherpa discusses: "This area has no electricity (line), only solar power, only for 2-3 years. I would be very happy about good electricity. Now give for some person other for government, but still no hope. Sometimes people just coming and checking and just going away. Electricity is very important for this area. Rich people have solar power, but poor people can't. Government not looking. Electricity only for people living more down, some donations. Not much interest in government about building electricity. Government might give some money, but people put it in their own pocket. That's bad. Always development and poor people lose."

Ang Doma Sherpa relates: "Not many bad things for people from the hydropower plant, sometimes animals happen to drop in to the canal like the cow you took out yesterday, also baby animals."

Ang Doma Sherpa continues: "Electricity brings very nice feeling, good life. And they see television and videos. They use heater for cooking. Electricity also used for cooking. Very happy with the electricity. Everything is different, electric heater is very easy and more clean. All health better, otherwise smoke affect eyes. And others. Sometimes little problems with the landslides."

Ang Doma Sherpa adds: "Money we pay for the electricity is going for new plant and such, some money deposited in bank. Now needing more power, after more money, they build new generator. Now guaranteed only for 20 years. All houses in this are have electricity. Something like 35 houses."

Do you see any links or relations between these changes?
Lama Ngawang Jimba reflects: "Mosquitoes appearing here

Porter. Indispensable carrier of goods in mountaneuos regions.

is because of the temperature, they are active in the summer but not active in the winter, but not so many mosquitoes here. People say that we have mosquitoes here. The deer are safer near the house and people, if much snow they come to village, but it is not because of the temperature. It is good to have deer around, because of balance, but for the farmers it is little disturbing. Because they come near the house and eat potatoes and plants. But for the environment is good."

Lama Dorjee comments: "This is, there is no link between changes. Because there are more people and other things. There is not any problem with the changes. Only sometimes running in jungle. When they are coming in night [refers to increased number of tigers]."

References:
(1) GIS for Sustainable Mountain D velopment. Glacial Lake Outburs Floods in the Hindu Kush–Himalayas. [on line] http://www.icimod-ginetweb/sustain/glacial.php [cited 24.4.2003]

Interviews:
[1] Lama Ngawang Jimba, 17.6.2003, Himalayan Sherpa Buddhist School, Phungmochhe Monastery
[2] Pasang Norbu Sherpa, 60 years. 19.06.2003, Mulkharka
[3] Lama Dorjee, 75 years. 24.6.2003, Lama Lodge, Ghat
[4] Phuti Sherpa, 50 years. 25.6.2003, Buddha lodge & Restaurant, Jorselin,
[5] Ang Kami Sherpa 25.6.2003, Bengkar Guest house
[6] Ang Lhakpa Sherpa, 60 years, 1.7.2003, Khumjung
[7] Ang Doma Sherpa 3.7.2003, Thame
[8] Ang Norbu Sherpa 4.7.2003, Sagarmatha Lodge, Nam-che Bazaar

For vocabulary and cultural information:
SHERPA, P.T. 'KERUNG' & HÖIVIK, SUSAN. Nepal: The living heritage, Environment and culture. Kathmandu: Jeewan Printing Support Press / Kathmandu Environmental Education Program (KEEP), 2002.

Introduction To Contemporary Issues In Hawai'i

Katrüna Menza, Department of Urban and Regional Planning, University of Hawai'i at Manoa

1. Introduction

A Hawai'ian creation account states that in the beginning, there was Papa (Earth mother) and Wākea (sky father). Their child, Hāloa (literally, *long stem)* was stillborn and once buried, he grew into *kalo* (the taro plant) and from this kalo, the first Hawai'ian was born /1/. This connection is the base for deep sense of respect for the land. As the younger siblings, the duty of the people is to take care of the *'āina,* the land and the relationship to land as well as to sea, is spiritual and religious. /1/

In the late 1700's the Europeans arrived in Hawai'i, and this connection was disturbed. The Westerners brought with them new ways of thinking, including the idea of cash economy. This lead to the *Kanaka Maoli,* the native people of Hawai'i, being deprived of their lands when a new kind of land division and a system of land ownership was introduced. Today, the indigenous people of Hawai'i continue to be at the bottom of the socio-economic scale in their own islands.

This paper introduces the islands in the post-contact period, i.e. following the years after the first Western contact with Captain James Cook in 1778; today's struggles to protect the rights to their lands, their culture and the well-being of their island home given the present economy based on military and tourism.

For this article, I have used only some of the many resources that have been written about Hawai'i. Therefore I ask the reader to bear in mind that mine is a preliminary interpretation of the culture, history and the current situation in the islands.

2. Pre-Contact Hawai'i

The people of the Hawai'ian Islands possibly came from the Marquesas, Tonga, Tahiti, New Zealand and other parts of eastern Polynesia over thousand years ago. The people who came to be called Hawai'ians easily adapted to the island life in Hawai'i and it was their belief that the abundant resources of the islands were gifts from the environmental gods/2/.

In return for these gifts, the people were to take good care of the resources. However, if people would neglect this responsibility, the gods would punish them by afflicting a drought, a flood or other kind of natural disaster on the people /2/.

The resources were believed to belong to all the people. The concept of private ownership did not exists; even the *mo'i,* the supreme chief did not own the land but rather held the land as a trustee of Kane and Lono, the nature gods who caused the land to be fruitful /3/.

The land was divided into land sections, called *ahupua'a*, which were supervised by *ali'i,* the ruling chiefs. Under the ali'i, were the *konohiki,* the resident agents who were both responsible to the ali'i for providing the products of the ahupua'a and the same time assuring that the people, who worked to produce these resources were treated fairly. If the people felt mistreated, they would move to another ahupua'a

where another konohiki would treat them better/3,4,5/.

An ahupua'a was often an entire valley, running from the mountain to the sea, divided by ridges but varying in size and shape on different islands. The ahupua'a included subdivisions called *'ili* that were administered by the chief who was in charge of the ahupua'a while some other 'ili were reserved for the paramount chief himself. A household could hold a number of plots in different environmental zones of the ahupua'a. These sections of land contained all the resources the people required for survival. The Hawai'ians brought with them new species to the islands, such as taro (kalo), kukui tree, ti *(kī)* plant, sugar cane, banana, pigs and dogs and the food and material for clothing, weapons, canoe making, and other products were cultivated or grew wild in the nature, both on land and in the sea /5,6/.

Hawai'ians were aware of the significance of renewable resources, which they utilized alongside with some ingenious environmental engineering techniques. Taro was grown in flooded patches, lo'i, as well as in dryland patches/5/.

As the water flowed down from the mountain, it nourished the plants and as the highly nutritious water reached level ground near the ocean, it was diverted to fishponds where the fish could feed on the nutrients of the water. The fishponds were located inland and on the shoreline. The inland ponds were always located by a stream. Some inland ponds had both taro and fish growing in them at once. The fishponds were built out of stones that were piled up to make submerged rock walls. Some fishponds had traps, such as a gate made of sticks placed far enough from each other that fish could swim right through the spaces. While the fish would feast on the nutritious water inside the pond, they would get too fat to get back through the gate. The brackish water ponds near the shoreline were large ponds and produced the most fish /2/.

As in any society, restrictions and regulations were enforced to ensure that there were enough resources for all the people. Since Hawai'ians lived on an island were fresh water resources were limited, they had to make sure this precious resource would not be depleted. The concepts of *kapu* (sacred and forbidden) and *noa* (free of kapu, profane), were enforced to govern resources, both water and other natural resources /7/.

For example, the laws of water, *kanawai,* allowed taking water from the up stream, whereas bathing there was forbidden. The marine resources extending at least a short distance offshore were accessible to all residents of that ahupua'a. However, residents of other ahupua'a were not allowed to access those waters for fishing, unless specifically permitted.

The ali'i of the ahupua'a could restrict the communal use of a certain resource by placing a species under a kapu for a period of time. The people were only allowed to fish at certain times of the year and severe punishments would follow if somebody was caught damaging the irrigation systems or harming the water sources. /2,5/

The people lived in a highly organized and self-sufficient system with a sophisticated language, culture, and religion. The estimations for the population by the end of 1700's, range from as low as 200 000 to as high as 1 million /8/.

3. End of isolation

As the Westerns powers were expanding into new areas, Captain James Cook, sailing under the British flag, pulled into a Hawai'ian bay in1778. The arrival of Cooke broke Hawai'i's isolation from the rest of the world /9/.

Up until the Westerners arrival, the Hawai'ians lived in a subsistence economy. Soon, however bartering of basic commodities such as fruits, food and wood started for the basic iron objects and tools provided by the Europeans. One of the chiefs, the Great Kamehameha, was in a conflict with the kings of the neighboring islands and with the help of the Eu-

ropean allies and western weaponry, Kamehameha managed to conquer almost the whole island chain of Hawai'i under his rule. A unified monarchical government of the Hawai'ian Islands was eventually established in 1810 under Kamehameha I. By that time, the Kingdom of Hawai'i was an internationally recognized nation and to manage the increasing foreign contacts, the Kingdom began adopting western legal systems such as a parliament, a constitution and treaties with other nations /9/.

In 1820, the first American missionaries arrived in Hawai'i /9/. The missionaries who had gained the spiritual influence of the royalty and who had worked their ways into the politics and trade, went on working on eliminating those Hawai'ian customs, such as language, dance, nudity and traditional arts, which they regarded as working against the Christian principles and the main purpose in life - material accumulation /9/.

The first Sugar plantation in Hawai'i, which became a success and encouraged other businesses to invest in this growing field, was established in Kauai in 1836. It was seen early on, that Hawai'i could become a "sugar country". However, for this to happen, the land legislation in Hawai'i would have to change. The new landowners, i.e. the foreigners, wanted the land to become a commodity, in a way similar to their home country and they demanded privatization of land. Furthermore, the missionaries believed that the lack of individual ownership of land was a major cause for the decreasing population /9,10,11/.

In the 1840's, European gunboats increased on the Pacific and many islands became occupied. To protect the lands, the missionaries advised the King to privatize the land.

The land was to be divided into three parts: King's lands, the chiefs' lands and the *kama ' ina's,* people's lands. The amount of land each group received was approximately the following:

250 Chiefs received approximately 1.6. Million acres (39%). The King set aside: approximately 2.5 million acres (60%), which the King further divided into two parcels: Government lands: approximately 1.5million acres (36 %), and the King's private lands: approximately 1 million acres (24%) /9/.

As a result of the land division, *Mahele,* foreigners could acquire land. In 1850 the legislature passed a Kuleana Act according to which the tenants were given fee-simple rights on the land they already occupied /10/.

However, there were some detailed conditions: the cultivators of the land, the hoa 'āina, were to notify the government in writing how many acres they claimed, where the lands were located and what right did they have for this claim. However, before the Westerners' arrival, there was no written language in the Hawai'ian language, so asking a commoner to notify in writing, was an overwhelming task. Also, many of the people did never even hear about the need to claim their lands because this was notified in the public newspaper. Some people simply disregarded the absurd demand of claiming the land where their families had lived and farmed for generations. Needless to say, many people ended up losing their lands /2,9/

By the time the *Board of Commissioners to Quiet Land Titles* as the commission was called, ended its work in 1855, 71.2 % of the population (adult males and their wives and children) had not received land under the Mahele of 1848 nor the Kuleana act of 1850 /2/.

The landless Native Hawai'ian population was dying off and the Hawai'ian culture deteriorated. The people who were used to harvesting the staple, kalo, from their fields and fish from the fishponds, suddenly were denied of these privileges. Even if people who were fortunate enough to receive the land they claimed, there were still land taxes to be paid. This turned out to be an enormous effort for Hawai'ian people who up to the arrival of the Europeans had been living

in a subsistence economy with no money. To be able to pay the tax and hold on to the land, the landowner would have to go work in the sugar fields to earn money. On occasion, a landowner would return with the paycheck in his hand, he would find his land being occupied by a new owner through a process called 'adverse possession' /2,12/.

People were forced to give up their traditional life styles and move to the urban areas. The number of full-blooded Hawai'ians dropped from an estimated 142,650 in 1826 to a mere 22,600 by 1919 /2/.

Because the landless Kanaka Maoli sought work in the sugar field as the only means for survival, the 'sugar lords' got exactly what they wanted, which was cheap labor /9/.
The Mahele paved the way for the sugar plantation economy and became the foundations of the foreigners, the *haole's*, economic and political power /9/.

However, as the diseases including typhoid, whooping cough, mumps and leprosy, the Westerners had introduced to Hawai'i, as well as poverty and general deterioration of living conditions, reduced the number of Hawai'ians to only one-sixth from the pre-contact era, the sugar producers faced a screaming demand for labor. Therefore they turned to China for labor and soon boatfuls of Chinese laborers and later on also Japanese, Portuguese, Koreans and Philippino laborers, where recruited to work on the plantations /5/.

The business oligarchy, consisting of the old missionary families such as Castle, Cooke, Alexander and Baldwin, ran everything linked to the sugar business. Banks, insurance companies and shipping companies were all ran by the same families who exchanged favors and socialized with each other /2, 9/.

Since the sugar cane exporters had to pay duty taxes to transport sugar to America, it was in their interest to annex the island to United States /9/.

While the Native Hawai'ian population was fighting to stay alive, the haoles overthrew the Hawai'ian government in 1893. A provisional Government was formed and Hawai'ians were forced to either swear allegiance to the new Republic or give up their voting rights. The Hawai'ian language was banned, alongside with Hawai'ian culture and arts. Queen Lili'uokalani, the last ruler of the Hawai'ian Kingdom and her people, petitioned Congress to return their nation but without a response /9,13/.

In addition to taking over their government, nearly two million acres of Hawai'ian government and crown lands were confiscated by the Provisional Government. In 1900, Hawai'i became a territory. Until statehood in 1959 the use of Hawai'ian language and any expressions of Hawai'ian culture were discouraged and seen as revolutionary /14/.

4. Military in Hawai'i

In 1941, in the midst of Second World War, Pearl Harbor was bombed and the US Department of Defense took over a sizable portion of the lands under martial law /9/.

Ever since, Hawai'i has been a crucial defense center in the Pacific. The military occupies over 200 000 acres of land, 25% of all the land in Oahu with altogether 657 sites /15/.

Many of these lands happen to be ecologically rich and culturally important. Some of the lands include submerged lands of Kaneohe Bay, which has been housing a Marine Corps Air Station since 1952 and the much discussed Makua Valley and Kaho'olawe Island, both used for military live-fire training and bombing practices for years /16/.

Following is a short description of each site.

4.1 Makua Valley

Makua Valley on the island of O'ahu is home to more than 40 endangered plant and animal species, including *Achatinella mustelina*, a tiny tree snail endemic to Hawai'i. In Makua

there are ancient native Hawai'ian sites such as heiau (temples), ko'a (fishing shrines), and agricultural features which are eligible for listing on the National Register of Historic Places /17/.

In 1943 the U.S. military took over the valley for target practice and ever since, the training and deliberate fires, have had disastrous effects on the biological and cultural aspects of the valley. The native forests habitats containing populations of endangered native and endemic plants, and cultural sites have been burned and destroyed /17/.

While the Defense Department acknowledged all the concerns, it did not abandon the valley. They argued that since 4190-acre Makua Valley's terrain is good for training, it is sheltered by tall mountains and it is situated just a few miles from the Army's Schofield Barracks, Makua was the most suitable place for training. And according to the defense department, the soldiers have to train somewhere anyway /18/.

For years, the local community pleaded the Army to study the impacts the over 50 years of military training had had on the environment of the valley. In 1999, Earthjustice Legal Defense Fund, representing Malama Makua *(malama* means 'to care to' or to 'take care of'), filed a lawsuit against the activities at Makua. Finally, in mid-July of 2001 Earthjustice managed to get an injunction that would block the live-fire training until a full court hearing could decide the case once and for all. The Army agreed to complete the EIS in three years and as a part of this process, the Army would engage in a "scoping" period to determine public concerns on Makua. /17, 19/

However, due to the events of September eleventh, the army begun the live-fire training again. In October 2001 the Army and Earthjustice reached a settlement according to which Army was allowed to conduct a limited number of live-fire trainings in 2002, 2003, and in the third year of the agreement. In July 2003, prescribed burn to rid he area of unexploded ordnance got out of control and burned 2500 acres. In April 2004, an agreement was reached that limited live fire training could happen only if computer models show that wind, grass moisture and other factors indicate no danger of fire and the same month bombs have been exploding in Makua - again/15/.

However, since 2002, Malama Makua has been given monthly visitation privileges to the grounds and its members are allowed to observe the Army's activities in the valley. Community involvement is an important part of the Army's study this time, as community members determine the focus and the scope of the EIS/20/. Since 2002, some members of the Hawai'ian community have been staying overnight in Makua valley where they have celebrated with offerings the close of the Makahiki season /17/.

In the beginning of Makahiki season Ku, the god of war, retires and Lono, god of peace, holds sway. Ho'okupu (offerings), are placed on rock altars in Makua and its adjacent valleys. This change of seasons signifies the changing of the mindset of the Hawai'ian people because in the ancient Hawai'i, wars had stopped at this time of year /17/.

4.2 Kaho'olawe

According to ancient chants and archaeological evidence, Kaho'olawe was inhabited for over a thousand years by Hawai'ians who fished and farmed the entire island. The island was also a place where some of the best navigators of the Pacific trained /21/.

Similar to Makua Valley, the island was taken into military purposes in 1941. Efforts to bring back Kaho'olawe started immediately after by Native Hawai'ians as well as general public, with Protect Kaho'olawe 'Ohana-coalition spearheading the protests /21/.

In 1976 the 'Ohana filed a federal civil suit seeking for compliance with environmental, historic site, and religious

freedom protection laws. In 1981 the entire island was included on the National Register of Historic Places. Almost ten years later, in 1990, President George Bush ordered the use of Kahoʻolawe for bombing and target practice to stop. A month later, Congress established the Kahoʻolawe Island Conveyance Commission to identify the terms and conditions for the return of Kahoʻolawe to the State of Hawaiʻi. Public hearings and cultural, environmental, and ordnance studies were conducted by the Commission from December 1990 through July 1993, to develop a plan for the future of the island /21/.

Finally, based upon the final recommendations of the Conveyance Commission, Congress voted in November 1993 to permanently stop all military training and bombing on Kahoʻolawe and return the island to the State of Hawaiʻi in November 2003, 62 years after the federal government took control of it. Under conditions of a special Memorandum of Understanding between the U.S. Navy and the State of Hawaiʻi, the U.S. Navy has spent nearly $400 million to clear unexploded ordnance and other munitions to provide safe access to the island since 1993. It took the Navy until 2004, to finish what has been described as "the largest Department of Defense unexploded-ordnance project in the world"/ 21,22/.

Today, Kahoʻolawe is under the management of Kahoʻolawe Island Reserve Commission and the master plan for the future of Kahoʻolawe is being drawn with the people of Hawaiʻi. The ʻOhana leads work trips as well as religious ceremonies and takes visitors to Kahoʻolawe. "Ancestral shrines and temples have been rededicated, hiking trails cleared, cultural-use areas established and soil conservation and re-vegetation programs initiated" /21/.

4.3 Military presence in the future

Hawaiʻi's Senator Daniel K. Inouye, the third most senior member of the U.S. Senate and a World War II combat veteran is the Chairman of the Subcommittee on Defense in the US Senate. Some believe that this chairmanship is the reason why the military stays in Hawaiʻi. However, the main factors in addition to the security concern defending military's presence in the islands are the money and jobs the defense department is claimed to bring to the islands. The military personnel and dependants make up 8 % of Hawaiʻi's population, the highest in the nation /15/.

To train and accommodate the personnel the military occupies vast areas of land for a ridiculously low cost, about a dollar a year.

Needless to say, the military's activities have caused serious environmental damage on the fragile and unique ecosystems of the islands. There are about 31 federal hazardous waste sites in Hawaiʻi. Navy has testified to releasing some 484 300 gallons of radioactive liquid wastes into Pearl Harbor between 1964 and 1973. The navy also dumped over 2000 55-gallon steel drums of solid radioactive waste 55 miles off the shoreline of Hawaiʻi onto the ocean floor /16/.

U.S. is withdrawing from bases in Asia. The reduction in the bases in Okinawa and South Korea could very well mean the increase in personnel here in Hawaiʻi. Some of the future plans are already apparent; the military is conducting a EIS for their plans to bring an Interim Brigade Combat Team (IBCT) to Oʻahu and the Big Island of Hawaiʻi, which would mean an addition of 380 eight-wheeled armored vehicles in addition to the roads and facilities that would are required. This means more noise, more building and less habitat for the endangered species.

In addition, the Bush administration claims that the environmental laws inhibit necessary training for the war on terror. A clash between the Department of Defense (DOD) and environmentalists has been going on over a year over whether military training should be exempt from provisions of the Endangered Species Act (ESA) and four other envi-

ronmental laws /23/.
The changes sought would prohibit critical habitat designations on those military lands that already have an Integrated Natural Resource Management Plan. The environmentalists fear, however, that this exemption could be the first step toward a further weakening of environmental laws. As the military operates with very few wildlife restrictions anyway, the exemption could destroy dozens of additional animals and plants. DOD fears that environmentalists will entrap them in ESA-related litigation, leading to dragging court orders, new regulations, budgetary drains and other administrative problems. This exemption is to be voted on in Congress this summer /23/.

However, due to public pressure, the military in Hawai'i is constantly under scrutiny and the defense department has to employ very expensive measures to ensure that no more damage is done in the areas were they currently train. How long will it be viable to keep on bombing Makua or other areas in Hawai'i, since the public pressure seems to be strengthening? On the other hand, given the current situation in Iraq and possible future conflicts and Hawai'i's strategic location, its future as a training ground, a staging and repairing facility and a fueling station seems inevitable.

5. Tourism in Hawai'i

Tourism, together with the military, is the most important factor in Hawai'i' s economy. The big jumbo jets, arriving for the first time in 1970, brought with them almost 7 million tourists in 2000 /24/.

Today, the tourism business has grown into huge operations with the headquarters somewhere in the mainland, Japan and beyond /24/.

The multinational operations dominate the whole business and to a large extent dictate the land use in the Islands. This has caused the cost of land in Hawai'i to rise sky high and to compete with the other hotels, everyone establishment is forced to expand into huge complexes consisting of designer stores, restaurants and many other facilities making it impossible for a small locally owned business to survive /25,26/.

The facilities associated with tourism - airports, hotels, shopping centers - require vast land areas, not to mention other resources. On an island as small as O'ahu, tourism contributes to garbage buildup, sewage spills, food costs and urban sprawl /26/.

Because of the dominating tourism industry, it is too costly and impractical to pursue economic diversification in Hawai'i. Statistics show a correlation between the increase in tourism and a dramatic decrease in previously primary industries such as agriculture and federal spending /25/.

As Hawai'i is a state strongly dependent on imports from the mainland as well as abroad, the prices of virtually everything are high. It has been studied, that it takes more than three full-time, average-pay hotel jobs to enable a family of four to live above the poverty level. Since not too many job opportunities exists outside of tourist industry and it is too costly to raise a family in Hawai'i, young Hawai'ians are forced to move to the mainland US where there exists more job opportunities /27/.

Tourism also conveys a completely distorted picture of Hawai'i and its people. The aloha that is sold in the hotels and restaurants in Waikiki and other resorts is not the real deal. Tourism ruthlessly practices its right to choose the best and most marketable aspects of the culture and modifies them to please the tourists. The hula shows performed by beautiful Native men and women with plastic leis around their necks, "are sold, often as a package with a 'traditional' Hawai'ian luau, a community feast. In this deal, not only will the Natives serve but they'll also dance and entrance the tourist with primitive sexuality", writes Mililani Trask, a former Office

of Hawai'ian Affairs (OHA) trustee and an expert on indigenous and human rights issues /27/.

According to Trask, "The tourist industry in Hawai'i violates the right of the indigenous Hawai'ian peoples to self-determination. In the Draft Declaration of the Rights of Indigenous Peoples, the right to self-determination guarantees all peoples the freedom to pursue their economic, social and cultural development" /28/.

Because there does not exist too many job opportunities outside of tourist industry, Hawai'ians are forced to "leave our homeland, join the military, or sell our culture and ourselves"/27/.

Furthermore, tourism development in Hawai'i have chosen the places that are culturally very significant to people. Many major resorts have been built on some culturally significant site, such as ancient Hawai'ian burial grounds, significant archaeological historic sites and other sacred places. Many *heiau* or ancient temples, house sites, fishing shrines, ceremonial platforms and agricultural sites have been turned into tourist attractions /25/.

6. Island Ecosystems

Because of the location of the Hawai'ian island chain, the plant and animal species of Hawai'i evolved in complete isolation from the rest of the world. Today the remaining native flora and fauna are competing with invasive alien species. Over the last 200 years, 4,600 species of plants have been introduced into the Hawai'ian Islands. Of these, some 86 species have become serious pests of native ecosystems. The unique and extremely diverse ecosystems of Hawai'i are under constant threat of being destroyed by expanding infrastructure and the pollution from tourism and other industries /11,29/.

Crowded beaches and commercial tour boating threatens shoreline or coastal fishing. Conflicts between residents and visitors are becoming more and more frequent and going to the beach is not as simple as before because there simply is no more room.

Public access is denied elsewhere as well. Some hiking trails are closed from individual hikers because of desperate efforts to try to save the last remaining native plant or animal species. Some other trails are closed because the owner has changed and public access is no longer possible. On the other hand, new hiking trails and camping grounds are established in the last remaining areas where Hawai'ians have the chance to practice subsistence gathering, fishing and traditional worship /25/.

Today, the majority of people live in Urban Hawai'i. The relationship to the land has changed. However, in the rural areas of the islands, there still exist people that practice the traditional livelihoods in the form of subsistence1. In the rural districts, even on the highly urbanized O'ahu, people hunt, fish and gather plant material and resources from the ocean for subsistence and other uses /31/.

Local cultural customs are more common in the rural districts than in the urban Hawai'i /31/.

The natural environment is crucial to the Hawai'ian culture and well-being. Nature is viewed sacred, as it is believed to be the domain of both ancestral spirits and Hawai'ian deities /31/.

The traditions are closely tied to natural events and resources, thereby creating an important cultural link to the land. Furthermore, the social problems of Hawai'ians can be traced back to the alienation of Hawai'ians from the land /31/.

A study, *E Ola Mau: Native Hawai'ian Health Needs Study, Mental Health Task Force Report,* concluded that a major source of the physical and mental problems of native Hawai'ians is their separation from the ancestral lands. The Hawai'ian concept of mental health emphasizes the unity of body, mind

and spirit and the harmony of these emerges from a sense of psychic relationship with the land, the sea, and the spiritual world. The study underlined the importance of promoting traditional beliefs and life styles as alternatives to Western ways /31/.

7. Kanaka maoli today

The present population of Hawai'i is approximately 1.25 million. About three-fourths of the total State's population is on the Island of O'ahu, 13.4% on Hawai'i, 12.8% on Maui, and 6.3% on Kaua'i. There are also residents on Ni'ihau, Moloka'i and Lana'i /11/.

The population of Hawai'i is one of the most diverse ethnic mixtures in the world. Native Hawai'ians are defined as the indigenous people of Hawai'i and constitute approximately 19 percent of the State of Hawai'i's population. The Native Hawai'ian category includes full-blooded Hawai'ians, who number less than 5,000, as well as part Hawai'ians/30/.

The indigenous peoples of these islands have suffered the most of all populations in Hawai'i. The native Hawai'ians are at the bottom of the socio-economic scale in the islands. The Kanaka Maoli, the native Hawai'ians, continue to be the poorest, sickest and least educated of all people in Hawai'i. Hawai'ians capture the highest percentage of unemployment and welfare recipients and as a population group, Native Hawai'ians dominate the prison populations /26, 30/.

However, regardless of the physical indisposition, the identity of Hawai'ians is anything but lost. Traditional practices and people's roots have been and are being rediscovered. In fact, there is a growing consciousness, which is being strengthened by the teachings of language, traditional culture, arts and crafts. The use of ' lelo Hawai'i, Hawai'ian language, is increasing as more classes and immersion programs are being developed. Today Pacific navigators are sailing again with great double-hulled canoes; ruins of houses, heiaus, trails and fishponds, are being studied before development and being preserved and remains of deceased Hawai'ians which were removed in the past are being returned and placed to rest /5/.

8. Closing notes

An old Hawai'ian custom when meeting a relative, a friend, or a loved one is to press one's forehead against the other person's forehead and then take a deep breath of the same air. This is a sign of respect, trust and 'ohana (family), which is the foundation of the culture. The 'ohana is an extended family that includes people not only related by blood, but all who share a common sense of *aloha*.

At the moment the people in Hawai'i live their life in what appears to be a harmonious balance. Different races and ethnicities live and work side-by-side, joke about the Portuguese, the Samoans, and the haoles, sharing the beaches, and the neighborhoods. But underneath the surface, there exists bitterness and low boiling anger which surfaces in protests, on readers columns, at public scoping meetings, and the hearts of the people who were robbed of their lands.

For an outsider who has just scratched the surface of all the things going on in Hawai`i, today's situation raises many questions which are certainly not easily answered. It seems like the Hawai'ian culture is respected as the host culture at different functions of every day life but nonetheless this respect is not comprehensive. Regardless of the cultural significance of the lands to the people, the military practices its right to take over the best lands, in the name of serving the country, the United States of America. Meanwhile, in the continental US, not all know about their 50th State located in the middle of the Pacific Ocean. When a Hawai'ian goes to the mainland, people marvel what a good English he speaks

or are surprised that in Hawai`i people also use American stamps and celebrate Halloween and Fourth of July.

In a mixed plate like Hawai'i, there are people who are aware of the wrongs that were done to the Native Hawai'ians, but are willing to forget and move on. These people, some of Hawai'ian ancestry, are proud of their country, the United States of America, and especially proud of their island home, the fiftieth state. Some people feel threatened or guilty by the embarrassing history. They certainly want to forget and move on. There are also people who believe that the only way to protect the native rights is to be recognized as a distinct political group and to take what is given to them. But there are others who believe that the United States of America can and will forced off the islands and the Kingdom of Hawai'i will one day be revived.

What does the future hold for Hawai'i? The two main universities in the islands, University of Hawai'i and Hawai'i Pacific University, are equipping smart, skilled and enthusiastic people who know the value of their home and recognize the things that should be changed. The question is how to keep these people in Hawai'i. Because of high prices and limited opportunities, it is easier to leave to build a life somewhere else. Meanwhile, a young mainland graduate, new to the islands, is hired to do the job because of the much-admired mainland education.

My guess is that good things will continue to happen to Hawai'i. Among the deeply Americanized Hawai'ian, Chinese, Filipino, Japanese, Samoan, Micronesian, Korean and American youth of the nation, there also exists the Hawai'ian youth, who feel the aloha and respect to their home and ancestors. These children of Hawai'i, all together, hold the keys to the future of their home.

References

1. Life in Early Hawa'ii. *About ahupua'a.* Kamehameha Schools Press. 3rd edition. Honolulu, 1994.

2. Notes from class Land tenure and use in Hawai'i, ES 340, 2001.

3. Handy, E. S. Craighill &Handy, Elizabeth Green. *Native planters in old Hawai'i: their life, lore, and environment.* With the collaboration of Mary Kawena Pukui Handy. Honolulu. 1972. Bishop Museum Press. ISBN 0910240116

4. Andrade, Carlos. Excerpt from *Ha'ena, Ahupua'a: Towards a Hawai'ian Geography* Dissertation by Carlos Andrade, Dec. 2001.University of Hawai.

5. Cordy, Ross. *Exalted sits the chief: the ancient history of Hawai`i Island.2000.* Honolulu, Hawaii. Mutual Publishing. ISBN 1566473411

6. Krauss, Beatrice, H. *Plants in Hawaiian culture.* 2000. Honolulu.Hawaii. Mutual Publishing. ISBN 1566473403 (pbk.)

7. Minerbi, Luciano. *Hawaiian Values and Concepts: The importance of beliefs, values and behaviors in the identification and preservation of sacred Hawaiian localities and sites.* Department of Urban and and Regional Planning at University of Hawai at Manoa. Paper presented at the Eleventh Pacific History Association Conference. History, Culture and Power in the Pacific. University of Hawai, Hilo.1996.

8. Stannard, David, E. Before the horror: the population of Hawai on the eve of western
contact. University of Hawaii Press.1989.
ISBN 0-8248-1232-8.

9. Kent, Noel J. *Hawai, islands under the influence.* 1993. University of Hawaii Press. ISBN 0824815521

10. Hasager, Ulla & Kelly, Marion. *Public Policy of Land and Homesteading.* Social Process in Hawaii.Vol 40. Edited by Ibrahim G. Aoude.2001. Department of Sociology, University of Hawai at Manoa.

11. Juvik, Sonia P & Juvik, James O.(edit). *Atlas of Hawai`i.* Department of Geography, University of Hawai`i, at Hilo. Honolulu, 1998. Hawai. University of Hawai`i Press.

12. Watson, Kali. *Adverse Possession spelled out for the layperson.* Notes from class Land tenure and use in Hawaii,
ES 340, 2001.

13. Pitzer, Pat. 1994. *The Overthrow of the Monarchy.* Spirit of Aloha, May 1994.

14. Hawaiian Independence Home Page. *Overview.* Available at http://www.nativehawaiians.com/hawn_past.html
[Cited 4/10/2002]

15. Notes from class Natural resources issues and ethics, Hawst 458, Spring 2004.

16. LaDuke, Winona.1999. *All Our Relations.* Native Struggles for Land and Life. South End Press, Cambridge, MA, USA. 1999.

17. *Ke One Kani O Makua: The Resounding Sands of Makua.* Available at http://www.oz.net/~vvawai/interventions/makua-
valley.html [Cited 6/18/2002]

18. Pacific Business News. *Inouye hails Makua outcome.* October 5, 2001. Available at http://pacific.bizjournals.com/pacific/stories/2001/10/01/daily59.html [Cited 5/15/2002]

19. The Honolulu Advertiser. *Hawaiians revive Makahiki in Makua Valley* by William Cole. 2/16/2002.

20. Military Toxics Project. *Communities in the line of fire: The Environmental, Cultural, and Human Health Impacts of Military Munitions and Firing Ranges,* Prepared by the Military Toxics Project, June 2002.

21. Protect Kahoʻolawe ʻOhana. *Kahoʻolawe: Moʻolelo ʻAina.* Available at http://www.kahoolawe.org
[Cited 4/23/2002]

22. Honolulu Starbulletin: *Kahoolawe access to be limited: The former target island will return to state control Nov. 11* by Pat Omandam. 2/22/2003.

23. Environment and Energy Publishing, LCC. SPOTLIGHT: CAMP PENDLETON, *Marine Corps claims species impede training at Calif. base* by Suzanne Struglinski, Greenwire reporter. Available at http://www.eenews.net/specialreports/sr_dod.htm. [Cited 4/8/2004]

24. Grant, Glen, 1996. *Waikiki Yesteryear.* Mutual Publishing, Honololu.1996

25. Patterson, Rev. Kaleo. *Tourism's Negative Impact on Native Hawaiians.* Available at http://members.tripod.com/~MPHAWAII/Tourism/TourismsNegativeImpact.htm [Cited 4/29/2002]

26. Rohter, Ira. 1992. *A Green Hawai.* Sourcebook for Development Alternatives. Na Kane O Ka Malo Press. 1992. Waipahu, Hawai, USA.

27.Trask, Mililani. *Hawai: culture vultures.*1998. Available at http://www.tourismconcern.org.uk/magazine/hawaii.htm [Cited 4/28/2002]

28.RCUH: Emergency Work Force Interim Report, January 15, 2002.

29. Clifford W. Smith. Impact of Alien Plants on Hawai's Native Biota. Botany department, University of Hawai.1998. Available at http://www.botany.hawaii.edu/faculty/cw_smith/impact.htm [Cited 4/23/2002]

30. Hawaiian Independence Home Page. *Summary.* Available at http://www.hawaii-nation.org/overview.html#people [Cited 4/29/2002]

31. Minerbi, Luciano; McGregor, Davianna & Matsuoka, Jon. *Native Hawaiian and Local Cultural Assessment Project, Phase I. Problems/Assets Identification.* 1993. University of Hawaii At Manoa, Honolulu, Hawaii. (Pp.21- 23, 25, 28, 34)

Footnotes

[1] Subsistence has been defined as "the customary and traditional uses […] of wild and cultivated renewable resources for direct and personal or family consumption as food, shelter, fuel, clothing, tools, transportation, culture, religion and medicine; for barter, or sharing, for personal or family consumption and for customary trade" /31/.

All these people had their own gods that they prayed to. And they did that cause they truly appreciated what ever they had.

Interview with Ann Akana

I think our climate(in Hawaii) has changed because of the influx of people. It's the foreigners who came here and brought their culture, new ideas and attitudes, which changed our simple lifestyle into a fast-paced-aggressive society. And the population increase brought taller concrete-marble buildings, massive concrete and asphalt highway-freeways, more trucks, cars, vans, stacks of old worn-out tires, trash-waste dumpsites, druggies, alcoholics and more prisoners than prison cells. Today, we have less vegetation. What were once spreading fields of sugarcane and pineapple is now developers' goldmines of subdivisions, condo buildings, timeshare resorts and hotels, industrial parks and a new town called Kapolei. New peoples with their new ideas and attitudes have certainly affected our weather and climate in Hawaii nei.

"I was born on a plantation, Ewa plantation, and those days there was sugar cane as far as the eye could see. Our population then was about oh, seven or eight hundred thousand. And we were a Territory of Hawaii, we were not a state. We became a state in 1959. But before the statehood we had so much agriculture and I could remember when the temperature would go up to as high as maybe about 85(F) and it would not go beyond that. Summer after summer we would say, oh it's so hot, but then we'd have the breezes and it would be cool because of all this sugar cane and pineapple. And we

would have lot more trees because there was less subdivision. And because there was less people, the school that I went to, took care of the leeward side. Waipahu High School was the only high school that served all of the high school students on the leeward side of Oahu because the population was not as large as it is today. With the waning and eventual demise of our sugar and pineapple industry, our legislators searched for a new economy, which would create jobs and income for Hawaii's market. Their concept was to sell a feeling, something intangible, which the Hawaiians valued that was not for sale. It was called "aloha". Hawaiians know that aloha cannot be sold because it is a feeling that comes from the heart. It is love. And love is not bartered or sold. It is given. However, with their twisted interpretation, the legislators sold Hawaii's aloha to people everywhere. Hence, our new economy was born. Tourist came, tourist saw, and tourist decided to make Hawaii their new home.

So, I've watched the climate change. You know, slowly it's changed. Right now we're sitting in a cool breeze, which is nice but if it wasn't for the trade-winds, the heat would be unbearable."

"The rain has also changed. ..I have a home, and my home is on the Big Island, in Kalaoa, Kona.. Up there, there used to be a lot of, notice I say, 'used to be', a lot of yellow ginger, which would scent the air. You could see just ginger, all along the road sides, over in the coffee land so much ginger.. And the ginger would go dormant during the dry months. ..in Kalaoa , it was dry, and it would rain in June-July and August. So during the summer months, there would be a lot of ginger in bloom all over the place. Well, it didn't take long, about 1988, -89, -90 – I noticed that with the increase of population, increase of buildings ...now its warmer. And I'm not saying that all of that population increase, that it had something to do with the weather, I think it's global because the rain stopped. And then it went dry - it would overcast, but it wouldn't rain…and the gingers didn't bloom. And it just changed. And then when I drove around the area, it was so dry, just so dry. You know the leaves were brown, the grass was brown and everything was dead. And then it got warmer.

What else didn't I see..? The poha, popolo..lot of plants were just gone. And lot of new stuff came. A lot of new introductions. People brought their plants from wherever, because our plants were gone. I think it had a lot to do with the climate too, you know, that we lost the plants. And we used to have these calla lilies, and we lost (them). You know why? Cause it stopped raining. It needed a lot of rain, yeah? Those were brought, those are not endemic to Hawaii but what I'm saying is that it used to grow but because of lack of rain, and the temperature change, I suppose, the plants didn't grow anymore."

Effects on the culture

"...Our children are now more American than anything else. They don't want to be Hawaiian, the children I know. Some of them want the culture, want to hang on to where we came from, but more and more I see today's children wanting to be American. And when you become American, you have American flowers, like the roses, cut flowers.. They'd rather have that than have the ginger! Than have the plumeria.. You see that shower tree? The state planted these shower trees all over the island, no matter where you turn you see shower trees...I get upset at that. Because this is Hawaii. When tourists come here.. they can go to the mainland and look at that tree! They come here because this is Hawaii, this is the land of flowers, of sweet scent, of plumeria!

I look at the change. You know, we've become so American. Unless people who really care - there are Hawaiian and non-Hawaiians, who really care about the culture, and they make an effort - it's hard. How do you teach a child my cul-

ture, if they don't want to learn it, they'd rather be an American.

This is what the white people, in 1893, they wanted the Hawaiians to become American so they cut out the language, tried to cut the culture out; the dance and everything, made it taboo and we'd be arrested if we even spoke our language. And they made us what they wanted to make us. They made us American, we are American. And, I'm not like Haulani Trask who says "I'm not American". No, I'm not gonna say that. I'm grateful to be American, cause American people have so much. It's the land of milk and honey. They have so much! You look at other countries around the world, we have so much to be thankful for. So I'm thankful that I'm an American but I'm also thankful that I'm Hawaiian. Because that is who I am. That's me. That's my DNA. Now, I appreciate the American and Hawaiian cultures. In fact, Hawaiian is part of American culture. All the cultures make up the American culture! So its a mix of all cultures coming together that makes America what it is today. So, that's it."

*Back to plants..."*In order for the Hawaiian plants to take their (other, introduced plants) place on what ever piece of land, other shrub and wood would have to be cut down. Would you want to see this monkey pod tree being cut down? I mean, this monkey pod is a beautiful tree.. even the iron wood - those are true pests! They just over ran everything. Took away the space for our trees. I kind of feel sorry for the trees because in a way, when you look at the trees, they reflect the Hawaiians. I mean, the trees were pushed to the side. And same thing with the Hawaiians. They were just pushed to the side! The trees and the Hawaiian people, we're a dying race! Ones the pure Hawaiians are gone..and there are not too many left.

The mango trees are confused, like the poinsettias. Look at the poinsettias. They're so confused! Poor tree is blossoming when it's not supposed to. It's supposed to bloom, in November the leaves start to change, and in December the blossoms are red...but now they're blooming in October. They come out earlier."

Why is the tree confused?

"Number one, the temperature has changed. Not only that, but light has a lot to do with it too. Now, we have more streetlights. Where I live, the streetlights are on all the time. And they (the pointsettias) need to go in complete darkness. That's what the tree needs, complete darkness, for the flowers to have enough energy to make the blossoms but now its confused. The light is on all night. When is the tree going to sleep? It doesn't. So the tree is just confused."

What could be done locally/globally about the whole climate change?

"I would suggest limiting the amount of massive building, like the hotels. Don't put up any more hotels, cause that's a lot of concrete and lot of heat ..also they'll be taking a lot of water. Where is all the water going to come from, right? To limit that, but also to set aside that ..you can build on only so much percent of property, like say you can build on 40% but 60% leave it for agriculture. This amount of acreage you must set aside for golf courses or whatever, no buildings. No more concrete highways, just so that we won't generate all this heat. Because I feel that when you have all this concrete and asphalt and more buildings, it takes up space for one thing, and it creates more heat and makes the place hotter not only that but with businesses and so on, of course there is a lot of water usage, sewage and all of that stuff you have to take into consideration. So if the government will just set aside only so much for improvement, you know houses, whatever, and so much for agriculture. They have to make it like a law. They can't overbuild. I think that would help our environment and the weather.

And here's another thing, the water. Rather than taking

all the waste and cleaning it up and letting out in the ocean, to redirect it to the golf courses. And let us drink the good water and let the grass drink the wastewater. Why don't they just recycle it?
We should stop cutting trees. We should look for something else. Why are they cutting them? Well, they're making room for more highways, for lumber.. They should look for new material, rather than looking to trees for houses, for firewood, they would look for some other material. And leave the trees alone. We've gone so far with technology, why can't they find a different kind of material like wood so that we don't have to cut the trees down. And paper - recycle the paper. What I'm suggesting is, don't cut anymore trees, leave the trees alone because we need the forest to survive.

And another thing is for gasoline, they don't need to look for oil anymore , there are other resources. There's vegetable oil, there's electricity..There's other means, let's use that and phase out all the use of oil. Then we can be independent, we don't need to depend on countries that are going to war. And then, people.. what it boils down to is that people are just too thoughtless. Americans are the worst people for wasting. Americans are too fat - they're just so wasteful. Our society is a throwaway society. If you don't like it, throw it away and get a new one, right? I refuse to do that, I am not going to join the race. Our society is in such a habit of getting something new, throw away what we have. The food! The food is still good – in to the garbage it goes! You should see the food America throws away! And that's why there's a need for more and more and more and there's no end. What I'm suggesting is, for this to stop. Just to say no more. No more wasting. We should have programs on recycling, more recycling. Rather than infomercials. There's always something new! There should be more commercials on recycling, on making good use of what you already have there's not enough commercials on that.

Americans' don't appreciate what they have. We're in a hurry to go from A to B. There's not enough time to stop and smell the roses. They want everything new. They're like peacocks. There's too many peacocks.. You have to look at the big picture. Look at how wasteful we are! "

"You know, the indigenous people are great ones in being practical. And it gets back to, appreciation. I'm sure all these people had *aumakuaʻ* (nature gods), all these people had their own gods that they prayed to. And they did that cause they truly appreciated what ever they had. They were people full of respect. And that's what they could teach these children of today, the Americans ..see the Americans, they never had gods. They never bowed down to anything. They never.. I should say, they never had respect. They were not taught respect. And to me, respect comes from that fiber, that main backbone of the culture.. there's something in your culture that teaches you respect. each group, indigenous group, have respect. Why? Cause they had their gods, they had their families - their grandpa, their grandma - their *kupunaʻ* where the ones who the children respected. They had great respect for them just as they had for their gods. And when you have respect, you have appreciation.

And Americans don't have appreciation , cause who did they bow down to. Ok, so you bow down to Jesus Christ. But its not the same thing cause the American families today don't carry it out today. The family's gone. There's no *ohana,* like the indigenous families have. They have a core, ohana. The American society doesn't have that today. That's why the children are on drugs, and they've gone haywire, cause there's no core. There's nothing to hold them together, there's nothing to teach them ..Mom and dad are out earning the all mighty dollar. Why? Cause they don't want to recycle. They want to buy new cars and what ever, they want want want want.. So they need two three four jobs and where are the children? Smoking pot, and getting into trouble, cause

there's no fiber, there's no family, there's no core. That's why indigenous people can teach he "Americans " today how to have family values. The government has no values, that's what's wrong. That's why they're off, they have no values. ""That's what indigenous people can teach societies, humans today. And through the values, they learn to appreciate what they have..

I think that it's going be the indigenous people all over the world who teach this powerful nation to come down and bow on their knees. Enough is enough. Get back to nature. Get back to being humble. And back to appreciation of what you have today. And when we have found respect and appreciation for all living things, the weather patterns will change. Our climate, then, will be milder and cooler, and more comfortable to live in because it will reflect mankind's attitudes and behavior.... and his thoughts and respect for one another. "

Samoa

A Samoan Perspective On The Role Of Traditional Knowledge In Advancing Our Understanding Of Climate Change

Penehuro F. Lefale[1]

Introduction

With Pacific Islands now firmly recognise as the most vulnerable communities to climate change[2] (UNFCCC, 1992, Barbados Programme of Action, 1994, IPCC Third Assessment Report, 2001, World Summit on Sustainable Development, 2002), Pacific communities are working towards developing adaptation response measures and policies to these inevitable changes. Traditional indigenous knowledge of weather and climate is considered as one of the highest priority areas to be investigated as part of Pacific Islands search to further improve their scientific understanding of climate variability and change but more importantly develop appropriate adaptation response measures and policies accordingly.

In a recent US National Oceanic Atmospheric Administration (NOAA) study on the potential consequences of climate change on US-affiliated Pacific Islands, for example, it found that regardless of the topic being discussed about climate change, there emerged a strong call from Pacific communities for the integration of traditional knowledge and practice into more contemporary western scientific methodologies of climate observations, research, assessment and responses for the region (Shea et al., 2001). Similar findings emerged from other conferences and studies (e.g. Barnett et al., 2002). They were not alone.

Early *papalagi (Heaven Busters):* the Europeans – explorers, coloniers, whalers, traders and missionaries, who made first contacts with Pacific people were surprised with their knowledge of their environments, including knowledge of climate and weather (Pratt, 1861, Brown, et al, 1861; Turner, 1884; Kerr 1976)). Kerr (1976), for example, observed that Polynesians and others who roamed the tropical Pacific Ocean long before the arrival of Europeans could not help but have known and feared the hurricanes of the South Seas. Their myths and legends reflected their knowledge. However, it was not all superstition. The Polynesians and other indigenous people of the Pacific are keen and accurate observers of nature. Similar observations emerged from other indigenous communities like those of the Aborigines in Australia (Davis, 1997; Young E., 2003) and Inuvialuit on Banks Island in Canada (Berkes, et al, 1997).

This paper describes the findings from a research project carried out in Samoa to document and evaluate the potential role of traditional indigenous knowledge of climate and weather and how these could be integrated into contemporary Western scientific methodologies of climate observations, research, and assessment and response to future climate change. It is widely accepted research into the knowledge of indigenous peoples has been the preserve of anthropolo-

gists and ethnographers (Roberts, et al, 1995). This research is unique in that it examines for the first time traditional indigenous knowledge of climate and weather from a Pacific Islander's perspective.

2. The Nature of knowledge

2.1 Defining knowledge

What do we mean by knowledge for the purpose of distinguishing traditional indigenous knowledge from papalagi scientific knowledge? Knowledge does not possess a precise definition. According to the Selfknowledge dictionary, knowledge is defined as *'the act or state of knowing; clear perception of fact, truth or duty; certain apprehension; familiar cognizance; cognition, that which is gained and preserved by knowing, instruction, acquaintance, enlightenment, learning; scholarship; erudition, that familiarity which is gained by actual experience; practical skill and scope of information; cognizance; notice'* (Selfknowledge dictionary, 2003).

Another approach to defining knowledge is to break it down into four operational levels; Know what, Know how, Know why and Care why (Davidson and Voss, 2002). The *'know what'*, also called cognitive knowledge, is the essential disciplinary knowledge achieved through training, studies, and formal qualifications. The *'know how'* is the level of practical application. It is where the learning achieved at the 'know what' phrase is translated into doing. This is also the area where most professional knowledge adds value in an organization through the ability to translate theoretical knowledge into effective execution. The 'know why', also called systems understanding is the deep knowledge of the web of cause and effect relationships underlying the discipline. This allows professionals to move beyond the execution of tasks to solve larger and more complex problems and create solutions to these new problems. The 'care why' is where the radical innovation can occur through imaginative leaps and lateral thinking.

Much of the debate on traditional indigenous knowledge is taking place in the context of Intellectual Property Rights (IPR) through the World Intellectual Property Organization (WIPO) under the umbrella of the International Committee on Generic Resources, Traditional Knowledge and Folklores (GRAIN, 2002). WIPO's working definition of traditional knowledge broadly defines it as *"it includes traditional medicinal, agricultural and ecological knowledge, as well as traditional music, stories and poems, dance, design, and sculpture."* (Correa, 1999). Correa (1999) suggested traditional knowledge encompasses very different types of knowledge which may be distinguished by the elements involved, the knowledge's potential or actual applications, the level of codification, the individual or collective form of possession, and its legal status. Thus, the different nature and forms of expression of the information embraced by traditional knowledge can make it difficult to agree on a legally and scientifically acceptable definition.

Other scholars also attempted to define traditional knowledge in the context of ecological and philosophical terms. Berkes (1999) defined traditional ecological knowledge as *"a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationships of living beings, including humans, with one another and with their environment".*

In the Samoan context, a definition of traditional indigenous knowledge is also elusive. Meleisea (1999) suggested 'for Samoans, knowledge is power, and the most powerful knowledge is historical [traditional] knowledge: treasured and guarded in people's heads' reflecting a highly sacred, taboo, and secretive nature of defining knowledge in the Samoan context. Samoans view historical traditional knowledge as 'treasures' to be guarded for a 'purpose', for example, to uphold the interests and *mana* (power) of the *aiga potopoto* (ex-

tended family), and *nuu ma itumalo* (village and tribe). Other Polynesian communities like those of the Maori of Aotearoa, New Zealand, share similar views as reflected in Maraketi's observation (Cram, 1996).

'The Maori did not think of himself, or anything to do with his own gain. He thought only of his people, and was absorbed in his *whanau* (group), just as the *whanau* was absorbed in the *hapu* (extended family), and the hapu in the iwi (tribe).'

Cram (1996) also suggested the Maori *tapu* (sacred) nature of knowledge also meant that when it was entrusted to individuals it was transmitted accurately and used appropriately. Thus, ethical practice was ensured, as was the survival and prosperity of the group *(whanau)* and the maintenance of its *mana* (status).

For the purposes of this paper, traditional indigenous knowledge as define in the draft 2003 Pacific Islands' paper on traditional knowledge is used. It is define as *"generation-old knowledge whether embodied in tangible forms or not, gained over generations of living in close contact with nature regarding the living things; their constituent parts, their information cycles, behaviour and functions, their efforts or an interactions with other living things (including humans) and with their physical environment; the physical environment including water, soils, corals, weather, solar and lunar effects, processes and cycles; the obtaining and utilizing of living or non-living things for the purpose of maintaining, facilitating or improving human life."* (GRAIN, 2003).

2.3 Documentation

Documentation is the conversion of traditional indigenous knowledge provided by communities into written documents, drawings or audio recordings (GRAINS, 2002). The main aim of such documentation is to ensure that information is not lost. Although there is wide agreement amongst governments, communities and researchers that documentation should be done in a participatory manner and that the documented form should be kept at the local level within local community control, there are diverge views on whether the documented material should be publicised or maintained in a state of secrecy. In this context, documented knowledge is also a social process in itself. In Samoa, documentation of traditional knowledge is considered an insurance policy, which is use in times of emergency. During the onset of a severe drought for example, knowledge of planting only traditionally drought resistant crops which can grow up in shorter time period (e.g. *ufi vao* (wild yams), *taamu, talo palagi – white taro, etc.)* kept alive through years of experience is life saving. Similar practices occurred in other indigenous communities. Sadly, these traditional practices are rapidly disappearing replaced by western practices.

3. Research Methodology

3.1 QUALITATIVE OR QUANTITATIVE?

The research methodology used in this study is the qualitative research model, using semi-structured, creative interviews, oral history and the triangulation methodologies and the use of multiple methods or dialectic through locally accepted protocols and participatory processes. While there is continued debate relating to the philosophical issues underpinning qualitative-quantitative research, the qualitative research was chosen as the most appropriate approach for this research project.

Qualitative research's main objective is to discover patterns, which emerge after close observation, careful documentation and thoughtful analysis of the research topic (Maykut et al., 1994). It generally examines people's words and actions in narrative or descriptive ways more closely representing the situation as experienced by the participants. Its underpinning principle is based on a positivist position. Within

the larger discussion of the history of science, positivism has come to mean objective inquiry based on measurable variables and provable propositions (Stromberg, 1986, as quoted by Maykut, et al., 1994: 3). The positivist research orientation holds that science is or should be primarily concern with the explanation and the prediction of observable events. It is the insistence on explanation, prediction and proof that are the hallmarks of positivism.

Quantitative research is based on observations that are converted into discreet units that can be compared to other units by using statistical analysis. Its underlying principle is the phenomenological position which focuses on understanding the meaning events have for persons being studied (Mayut, et al, 1994:3). The phenomenal approach to inquiry includes qualitative research but also has under its umbrella such areas in inquiry as ethnomethodology, symbolic interactionism, hermeneutic inquiry, and ethnography (Patton, 1991; as quoted by Mayut, et al, 1994;3). The phenomenological position sees the individual and his or her world as constituted (see Mayut, et al, 1994 for a fuller discussion).

2.2 SOURCES OF INFORMATION AND DATA

The main sources of the information and data used in this study are from an extensive desktop review of the literature on Samoa and answers to participatory, unstructured, casual interviews *(talanoa)* carried out over twenty years. As with similar studies of this nature which rely on oral recollection and sharing of historical events, myths and legends, access to data and information is not easy. The sensitive nature of sharing knowledge with strangers and non-family members *(e le ni suli moni o le aiga)* also hindered access to other Samoan elders and people possessing comparable knowledge. Brown (1861) encountered such a dilemma when attempting to collect information on the stories of Samoa;

'In the endeavor to get at the back of the mind of the primitive man [Samoan] and to estimate the value of these [Samoan] myths, we have always to guard against the danger of giving reasons for his beliefs and practices which never influenced him at all, and which indeed he never felt to be necessary. He, I think, simply accepted the facts, or what he regarded as facts, without troubling himself about the explanation of them, the myths which supply details and give reasons are the work of later generations of men who were trying to give an explanation of observed phenomena and facts.'

When taking these difficulties and observations into consideration, it is hard to arrive at a consensus or to verify some of the information collected. Solf et al., (1907) summarised this dilemma;

'It is difficult to arrive at anything like a clear and collected account of their [Samoans] mythology, as native statements are often vague and conflicting. I give some particulars, which I gathered from intelligent natives, and which I think may be relied upon, as I tested them carefully, and moreover, they were the outcome of more than one testimony. These accounts were collected more than fifty years ago, i.e., before the natives had had much intercourse with Europeans, and before their records had become mixed and unreliable, as they are likely to have been in later years. The Samoans had several superior divinities and a host of inferior ones, "lords many and gods many," and they are also accustomed to deify the spirits of deceased chiefs.'

Samoans also share with other indigenous peoples a legitimate concern and apprehension when uninitiatives enter their cultural world (Roberts, et al, 1995). Roberts et al (1995) strongly argued that not only there is need for respect when entering into indigenous peoples world, but also for caution about the dangers inherent in getting on the bandwagon but starting at the top without having first served an appropriate apprenticeship in learning about the culture, its history, cosmogony, customs and language. These cautions guide the implementation of this research project.

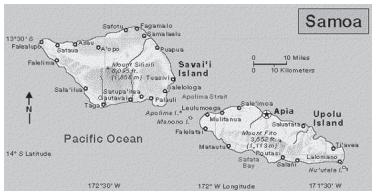


Figure 1. Map of Samoa courtesy of the Government of Samoa.

4. The Samoa Islands

4.1 GEOGRAPHY, CULTURE AND ECONOMY

Samoa (sacred heart) historically known as the *Navigator Islands, Cradle of Polynesia or Treasured Islands of the South Pacific,* is an independent nation made up of a group of islands halfway between Hawaii and New Zealand between latitudes 13° and 14°S and longitude 171° and 173° W (Figure 1). It was made famous by Robert Louis Stevenson, *Tusitala* (the story teller), who died in Samoa and on his own request was buried on Mt Vaea 'under the wide and starry sky', overlooking Apia, the capital of Samoa, which he described in his famous poem *'Requiem'* in 1879.

Samoa has two large islands, Savaii (1820km^2) and Upolu (1113km^2) and six small islets. The population is predominantly Samoa Polynesians, with Euronesians (mixed Europeans and Samoans) the second largest group, Samoan-Chinese and others accounting for the rest. The economy is heavily dependent on agriculture, fishing, tourism and remittances from expatriate Samoans. The population is about 176,000 (2003 estimate). A large Samoan community lives in New Zealand, Australia and the USA, Auckland in New Zealand hosting the largest Samoan (Polynesian) city in the world.

4.2 MAJOR CLIMATE AND WEATHER FEATURES IN THE SAMOA ISLANDS' GROUP AREA: THE *PAPALAGI* SCIENTIFIC VIEW

In order to understand past and future climate changes in Samoa, there is a need to have a basic knowledge of the key meteorological features driving the climate and weather of the South West Pacific. The main features are the sub-tropical high pressure zone, which is a belt of high pressure spanning the South Pacific and centered on latitudes 25° to 30° S, the trade winds, the South Pacific Convergence Zone (SPZC) and the effect of the El Niño Southern Oscillation (ENSO) on the SPCZ as shown in Figure 2 (Burgess, 1988).

Salinger, et al. (2001) analysis of South Pacific historical climate data set found seasonal and inter annual climate variability over the South West Pacific is dominated by ENSO with the SPCZ being the most dominant factor in the Samoa Islands' vicinity.

The SPCZ is one of the most significant features of subtropical Southern Hemisphere climate (Folland et al., 2001). It is the region of wind convergence and enhanced rainfall

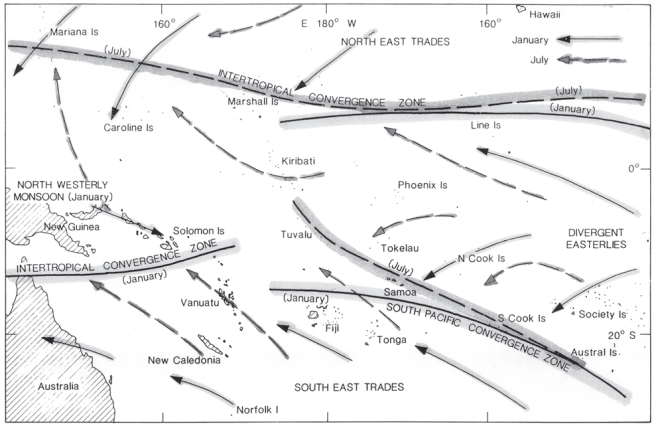


Figure 2. Typical Southern hemisphere summer (January – solid blue line) and winter (July – dashed purple line) circulation of the Southwest Pacific.

between migratory anticyclones in the southwest Pacific and the semi permanent anticyclone to the west of South America (Streten and Zillman, 1984). It is characterised by a band of low-level convergence, cloudiness and precipitation lying from the west Pacific warm pool southeastwards towards French Polynesia (Folland et al., 2003). It shares some characteristics with the Inter Tropical Convergence Zone (ITCZ), which lies just north of the Equator, but it is

more extra tropical in nature, especially east of the Dateline. The SPCZ is also one of the most extensive features of the global atmospheric circulation. Its location varies systematically with ENSO-related expansion and contraction of the west Pacific warm pool (Trenberth, 1976). Such movements can result in very large precipitation anomalies on either side of the mean location of the SPCZ (Salinger et al., 1995), as it moves northeast during El Niño events and southwest during La Niña events.

The SPCZ lies over the Samoan group during most of the year, but is especially active during the wetter months, October to April. The SPCZ thus plays a major role in influencing Samoa's microclimate. Its location and movement at any given time are crucial in understanding local climate conditions. The location of the SPCZ may be defined in terms of extremes of cloudiness (Outgoing Long wave Radiation (ORL)), low-level convergence, or related quantities shown in Figure 2 above (Folland et al., 2001). Beucher (1997) demonstrated that the location and movement of the SPCZ are directly linked to the relationship between the trough, pressure anomalies and the SPCZ. She used this relationship to develop the SPCZ Position Index (SPI), now used to determine the position and movement of the SPCZ during the wet (warm) season (May to October) in the South Pacific. During El Niño events, when the SPI is lower, the SPCZ moves east of the 180°W meridian and lies along the most negative pressure anomalies, while during the highest positive rainfall, anomalies are observed. During La Niña events when the SPI is higher, the SPCZ moves westwards and lies along the most negative pressure anomalies, while the highest positive rainfall anomalies are observed. Samoa becomes wetter in normal years, drier in El Niño years and records average conditions in La Niña years.

The Southern Oscillation Index (SOI) also has a major influence on the climate and weather of Samoa. When the averaged SOI is positive, the SPCZ is located further to the south of Samoa than usual (Burgess, 1988). A positive SOI also has an effect on the types of wind affecting the Samoan group. The frequency of winds from between north and northeast, for example, is likely to be greater than usual when the SOI is positive. Saifaleupolu (1985) demonstrated that winds from west through north to east were more frequent than usual at 1 metre above mean sea level, and that winds from east through south to west were more frequent than usual at 12 metres, when the SOI was positive. There was a complete reversal, with winds from east through south to west being more frequent than usual at 1.5 kilometers, when the SOI is negative.

Analysis of surface wind direction at Apia town in the north eastern part and Faleolo on the north western part of the main island Upolu for the period 1969 to 1983 showed that the annual frequency of winds between northeast and southeast and the SOI had correlations of 0.66 and 0.64 respectively, being significant at the 99 percent level (Burgess, 1988). Seasonal wind variation differences are governed mainly by the position of the SPCZ relative to Samoa. During the wetter part of the year, October to April, the SPCZ is located to the south of Samoa, and the mean wind flow at the surface is predominantly easterly. Winds from west to northwest have a low frequency throughout the year, but occur more often in these wet months than during the drier part of the year. During the dry season winds on Savai'i and Upolu mainly blow from between east and southeast, south-easterlies being more frequent on the southern coasts because of its greater exposure.

Recent studies (Renwick et al., 1998; Salinger et al., 2001; Hastenrath, 2002; Folland et al., 2002) suggested other factors such as the Interdecadal Pacific Oscillation (IPO), the quasi-symmetric Pacific-wide manifestation of the Pacific Decadal Oscillation (PDO) and global warming influence

the weather and climate of the South West Pacific region, including Samoa.

5. Samoan Traditional Knowledge

Samoan traditional knowledge of climate and weather has been around for generations. However, the colonisation of Samoa by Europeans influences how traditional indigenous knowledge was used and interpreted. To date, the literature on traditional knowledge of climate and weather of Samoa is mostly contained in diaries and books written by *papalagi Church Ministers and academics, particularly those from the London Missionary Society (LMS), now known as the Congregational Christian Church of Samoa (CCCS). Samoan Proverbs, commonly used by Samoan alii* (chiefs) and *tulafale* (talking chiefs) in their formal gatherings are based on social and environmental changes occurring in their daily lives.

According to these sources, Samoans view their environment as a total, integrated system with many climate phenomena being directly caused by activities of ancestral beings (Brown, 1861; Turner, 1884). Similar views are shared among other indigenous people (Davis, 1997; Overton et al., 1999; Berkes et al., 2001). Samoans have an extensive knowledge of cosmology (see full details in Brown, 1861 and Turner, 1884) which they use to predict environmental changes, including changes in weather and climate. Their myths and legends reflect such knowledge.

5.1 READING THE CLOUDS

Clouds, *ao,* are classified and named by the Samoans according to their physical appearances, shapes and movements. Clouds are made of drops of water and or ice crystals (Beaston, 1978). They are formed as warm moist air rises and cools. As the air rises, it is subject to less pressure and expands. When air expands, its temperature falls and water vapour in the air begins to condense. Cloud shapes are greatly influenced by temperature differences between masses of air. When the rising air is warmer than the surrounding air, it continues to rise to form cloud towers (heap cloud). When the rising air is cooler than the surrounding air, it loses its buoyancy and forms layers. The distribution of clouds on the surface of the earth is related to the distribution of land and sea. In the oceanic and coastal areas like Samoa, the high contents of water vapour in the atmosphere lead more frequently to cloud formation. Clouds are more common in the South Pacific because of its vast oceanic areas. Most clouds occurred in Samoa in the noon or afternoon hours and minimum at night.

Samoans referred to cloudy conditions during the day as *ao lagiā or ao lagilagiā,* (cloudy heaven) while cloudy conditions at night are referred to as *fa'atinifü* (Pratt, 1862). Table I gives a list of the types of clouds as classified by the Samoans, and their scientific equivalents with expected forecast conditions. The list includes the names of clouds commonly found in old Samoan proverbs and are still being used in today chiefly speeches, poems and songs.

To interpret the types of clouds identified, use has been made of the literal meaning of the Samoan terminologies to deconstruct compound terms and so attempt to determine their origins.

Scientific	Samoan	Group of Clouds	Forecast weather and climate conditions
Cirrus	Ao Lele	Streak cloud	Warm, fine weather conditions
Cirrostratus	Ao To'a	Layer of streak cloud	Expect warmer weather conditions
Cirrocumulus	Ao To'a	Billowy streak cloud	Expect rain
Altocumulus	Ao Po'a	Medium level cloud	Rain most likely
Stratus	Ao Po'a	Layered cloud	Indicates rain within the next few days
Cumulus	Ao Po uliuli	Heap, dark cloud	Expects heavy rain soon
Stratocumulus	Ao Fulifao	Cross between layer and heap clouds	Indicates a warm sunny day
Nimbostratus	Ao Fa'auliuli	Mainly layered cloud	Probably drizzle
Cumulonimbus	Ao Valevale	Mainly heaped cloud. Inauspicious, threatening cloud.	Indicates thunder and lightning soon

Table I. Samoan names for various cloud types and their Western scientific equivalents

Ao, means daylight, cloud, above or head, each literal meaning representing events relating to day, cloud, head and overhead. The naming of clouds by the Samoans is related to heavenly body-flying overhead during the day. This is a fair description of the clouds. *Lele* means "flying" so the high clouds are called *ao lele*, flying clouds (high clouds; cirrus, cirrostratus, cirrocumulus). *To'a* means calm or non-threatening so *ao To'a* refers to non-threatening clouds (cirrostratus & cirrocumulus). *Po'a* means "layered" so *ao po'a* are layered clouds (middle clouds; Altrocumulus, Altrostratus, Stratus). *Po uliuli* and *Fa'auliuli* means something appearing dark, black or evil so *ao po uliuli* and *ao faauliuli* are the names given to low threatening clouds (low clouds; cumulus, stratocumulus, nimbostratus). *Fulifao* means turning upside down so thus the name given to stratocumulus clouds. *Valevale* means threatening so *Ao valevale* refers to clouds of low vertical development but highly threaten in nature (cumulonimbus).

The naming of clouds by Samoans is based on their physical characteristics, heights and shapes. Samoan classification of clouds is consistent with Western scientific classification.

5.3 TYPES OF WIND

Wind is one of the climatic elements that have been given much attention since ancient times. It marks the instability of the atmosphere; calm one day, gale the next day; shifting in direction from one instance to the other. Samoans, like other ancient tribes (see Landsberg, 1964 for details), have names for their local winds *(matagi)*, storms *(matagi malolosi)*, tropical cyclones *(matagi matua malolosi)* and hurricanes *(afa)*. Many of these are synonymous in a sense that they designate identical weather and climate patterns. Samoans have high winds, confused winds, quiet winds, boisterous winds, and land beating winds (Turner, 1884). The direction associated with a specific wind type provides an indication of expected weather and climate conditions. Table II provides the Samoan names of the key winds affecting their islands with their Western scientific equivalent and the expected weather and climate conditions.

To interpret wind types, the literal meanings of the Samoan terminologies are used to deconstruct compound terms and so attempt to determine their origins. Solf et al. (1907)

Table II. Samoan names and descriptions of wind types and their English equivalent followed by forecast weather and climate conditions.

Types of Wind (Scientific)	Types of Wind (Samoan)	Main characteristics, Forecast weather & climate conditions
North and north westerlies	Matagi To'elau	This wind is a nuisance. It will cause many tempests. Usually associated with unsettled weather conditions.
South to South Easterlies	Tuaoloa	Indicates cooler conditions. Predominant during the dry season (May to September)
North Easterlies	Mata Upolu	Indicates bad weather, accompanied by heavy rain.
Westerlies	O le La'i.	Cool weather and climate associated with clear skies
East to South Easterlies	Tua Upolu	Good weather and climate conditions. Cool temperatures all round.
South to South Westerlies	Matagi Tonga	Bring rain and inducing drowsiness
North easterlies trade winds	Fisaga	Gentle, pleasant wind associated with good weather.

provides an interesting interpretation of the Samoans' method of forecasting tropical cyclones (afa).

'The natives [Samoans] have a word – *afa* - to describe the peculiar circle, which a cyclone makes. The winds begin to blow from one point of the compass, usually the north, and gradually growing in intensity shifts from point to point until the circuit of the compass has been made. Then it is that, having regained the starting point, the destruction begins… [h]ence when the natives cry *"O le Afa"* arises "it will be the four" – the wind that is, will blow from all points of the compass), it is a signal; for immediate preparation to ensure the safety of houses and other property. In a few minutes the work of a lifetime may be utterly destroyed.'

For wind directions, *Matu* means dry so the winds from the north *(matagai mai i Matu)* are interpreted as *ɔry winɔs*. *Tuaoloa,* the east to southeasterly trade winds *(matagi mai ɔasa'e)* designates the outbursts of cooler air, which become particularly pronounced during the dry season. *Tuaoloa* is associated with cooler than normal conditions and are of particular importance in the scheduling of planting specific crops during the dry season, particularly when drought conditions are expected. Tua means back and oloa means gold or teeth so *Tuaoloa* could be interpreted as gold like winds from the back of the islands. Perhaps the cooler conditions associated with Tuaoloa could be the reason for the name. *Tua* also refers to the windward or ocean coast so *Tuaoloa* are winds from the windward side of the islands predominantly the easterlies trade winds. In Samoan folklores, *Tuaoloa* will stop blowing when the quotas of deaths in a village are met.

Mata means *eye or raw* so *Mata Upolu* could be interpreted as winds from the *eye of Upolu or raw winɔs*. Mata Upolu is the northeasterly trade winds usually associated with unsettled and rainy weather conditions.

To'elau is the name of the Polynesian island groups to the north of Samoa so the north to north westerly trade winds blowing from the *To'elau* direction are named *matagi To'elau*. The occurrence of these winds is usually associated with the high probability of move low depressions over the Samoan group. When the Toe'lau winds are blowing for more than a few days, it signals to the Samoans the need to prepare for the likelihood of severe storms, tropical cyclones and heavy rain.

Matagi Tonga is the common name given to the south to south westerly winds which Samoans refer to as the winds from Tonga. Matagi Tonga is associated with wet but cooler

and less humid weather conditions. It is associated with good growing seasons for most crops and brings happy festive moods amongst the Samoans.

Fisaga means gentle, the gentle breeze. These are the north easterly trade winds that are dominant throughout the dry season. It brings cool, calm and pleasant weather conditions. Fisaga is commonly used in Samoan songs to describe a lasting loving relationship between two lovers.

O le La'i means sun setting and is the name generally given to the north westerly winds, where the sun sets. O le La'i is associated with clear sunny conditions during the day and cooler than normal at night.

It was not possible to deconstruct the Western equivalent of the winds referred to in some of the literature as *Laufala, Faati'u and Pi'ipaa.*

Placing the Samoan naming and classification of wind types in the context of scientific climatology, described in Section 4.2 above, the Samoan knowledge and classification of winds are consistent with the key wind patterns affecting the Samoan islands vicinity. *Mata Upolu,* the northeasterly winds, for example, are climatologically refer to as the 'divergent easterlies' which are predominant in the Samoan islands group vicinity during the wet season (October to April). *Mata Upolu* and the *Tuaoloa,* occur more frequently during the wet season. *Tua Upolu,* the southeasterly trade winds, and La'i, north westerly winds, are the dominant winds over the Samoan group during the winter dry season period (May to September).

5.4 SAMOAN SEASONAL CALENDAR

5.4.1 The Samoan Calendar

Samoans also have their own seasonal calendar given in Table III. Unlike the European calendar, which is based on astronomical events, the Samoan calendar is based on the onset of weather and climate events, including extremes, and environmental indicators, particularly the *palolo* (edible sea worm, *viridis).* Some months have more than one name, depending on the village, island and people's affiliation. There are two main seasons; the *Vaipalolo* season which begins at *Palolo muli* or *Toepalolo* (August) and extends to *Utuvamua* (January) and *Vaitoelau,* which begins with *Toeutuvā* (February) and extends to *Palolomua* (July) (Brown et al., 1861-1870).

5.4.2 ANALYSIS OF THE SAMOAN CALENDAR

Utuva mua, January, is named after the Samoan ritual of digging up of the yams for the first time in preparation for a major feasting activity during this time of the season. The first digging of yams also signifies the onset of destructive storms, according to some elders. This is no coincidence. It is generally accepted the formation of tropical cyclones and associated storms is most active around the Samoan areas during January and March. In fact, the most destructive tropical cyclones in recorded memory ever to strike Samoa occurred between January and March as in the cases in 1889 (March), 1903 (February), 1915 (January), 1926 (January), 1936 (January), 1939 (January, exceptional rainfall in Samoa), 1966 (29 January), 1968 (10 February), 1990 (January) and 1991 (February). The historical records appear to confirm this relationship (Kerr, 1976; Burgess, 1988; Krishna, et al. 2000).

Toe Utuva, is the name for February. It is associated with further digging up of the yams and continued storm occurrence. Again, the scientific data on tropical cyclones' frequency of occurrences and intensity confirmed this. Some of the most destructive tropical cyclones that struck Samoa in the past occurred in February (e.g. Tropical Cyclone Val, February 1991).

Fa'aafu, March, means the withering of the yam vine and

Table III. The Samoan seasonal calendar and its origin. The calendar descriptions are provided in the discussion section that follows.

* See Section 5.4.2 for full analysis.

European Month	Samoan Month	Origins*	European Seasons	Samoan seasons
February	Toeutuva	Digging yams again.	Summer	Vai To'elau – the 'north easterly winds' season
March	Fa'aafu	Withering of the yams.		
	Ta'afanua	Walk or Roam the land.		
	Aitu iti	Small Gods.		
April	Lo	Small fish.	Autumn	
	Fanoga	Destruction.		
May	Au nunu	Stem crushed.		
	Sina	Goddess white.		
June	Ologa manu	The singing of birds.		
July	Palolo mua	The first palolo - virides.	Winter	Vai Palolo – the 'virides' season
August	Palolo muli	The last palolo.		
September	Muli fa	End of the stem of a taro – colo cassia esculenta.		
October	Lotu O Uaga	Rain players.		
November	Taumafa mua	The first of plenty.	Spring	
December	Taumafa muli	The final meal/feasting.		
	Toe Taumafa	The final supper.		
January	Utuvamua	Digging of the first yams.		

other plants, which become coloured 'like the shells' during this time. March is also known as *Ta'a fanua,* which means roam or walk about the land and *Aitu iti,* small gods, from the household gods worshipped at this time. These gods are specifically implored to bless the family for the year 'with strength to overcome in quarrels and in battle.'

April is known as *Lo,* which is the name given to a small fish that are plentiful during this time. The appearance of the Lo signals the beginning of the end of the wet season.

May is known as *Aununu.* The name is from the crushed or pulverized state of the stem of the yam at this time of the year. May is often an unhealthy month, being the time of transition from the wet season to the dry season, and hence the crushing sickness and superstitious vagaries amongst Samoans. It is worth noting the coinciding of the Samoan transition from the wet to the dry season and the Western scientific transition

in the Southern Hemisphere.

June is known as *Ologa Manu,* which literally means *the singing of birds,* named after the unusual joy among the birds over a plentiful supply of favorite buds and berries. The bright scarlet flowers of the "Erythrina indica" begin then to come out and attract a host of parrakeets and other happy chirpers. The signing of birds signifies the onset of the best weather and climate conditions in Samoa.

July is called *Palolo mua,* named after the palolo "virides" which is the singular worm, eggs and sperms, which swarms out from certain parts of the Samoan barrier reefs for three days in a course of a year and of which Samoans are very fond, all the more so from its rarity. Pa means to burst and lolo, fatty or oily. Hence the origin of the name probably lies with the fatty or oily appearance of the worms as they break, burst and are mixed up in the heaps directly after they are taken together. Palolo mua is the first month of the half-year, according to the Samoan seasonal calendar. This is the beginning of the Vaito'elau season, the wet season. The other half of the year is Vaipalolo season, the dry or trade-winds season.

August is known as *Palolo muli,* meaning the *last of the Palolo.* It signals the end of the dry season.

September is known as *Muli fa.* It is associated with unusually dry and parching drought conditions, the scorching rays of the sun leave little of the taro stem except for a small piece at the end. Others also refer to Muli Fa as the end of the season for catching the fish *Fa.*

October is known as *Lotu o Uaga,* named after the special prayers, which are offered to the gods for rain. The offering of special prayers for rain signals the beginning of the end of the drought conditions. It is at this time the rain occurs and the first appearance of the palolo. This is seen by some as blessings from the Gods.

November is known as *Taumafa mua,* the *first of plenty of food.* Fish and other food become plentiful at this time and this was followed by what are called the palolo and fly-hook feasts. Public dinners in the houses of the leading men of the village were the order of the day during this time. The first of plenty month signifies the end of good weather and climate conditions. It also indicates the arrival of storms and tropical cyclones.

December is known as *Toe Taumafa* or *Taumafa muli,* the finishing of feasting festivities or the last meal. It signals food is less plentiful, after some of the December strong winds and heavy rain. Hot, humid and wet conditions are associated with less food.

From all accounts the *palolo* has a major influence in the formulation of the Samoan seasonal calendar. The description by Brown (1861) is worth noting;

'It is very surprising the signs (portents) which are connected with Palolo. Their coming is accompanied with (or causes) hurricanes, rains, many troublesome contrary winds, and heavy breakers. Their influence continues until they have entered into hiding. Then there is quiet. The calm only comes when the palolo has escaped into hiding again. Behold the little fish how surprising it is that it should have such influence as to cause the heavens to shake with thunder and also the lightning. It is just like a chief.'

Based on the chiefly status of the *palolo* in the Samoan seasonal calendar, it is fair to postulate that the key environmental change that marks seasons in Samoa is identified and associated with the rise and fall of the palolo, which are directly link to the key meteorological features dominating the areas during this time. The *Vaipalolo* season, for example, is the wet (tropical cyclone) season. *Vaitoelau,* is the dry (drought) season. The two distinct Samoa seasons is consistent with Western scientific understanding of the weather and climate if Samoa.

Table IV. Samoan methods of climate and weather monitoring and observations

Samoan plant/ animal/phrase	English	Observations*	Tool/Expected climate and weather conditions
Atafa	The Frigate bird	The appearance of female frigate birds during the peak of a tropical cyclone indicates the worse of the damages associated with it is over.	The tropical cyclone is expected to weaken in the next few days. The worse of the damages are over and the onset of good weather is imminent.
O Itu sa o Tamalii	Men's testicles	Fishermen use their testicles to locate their positions in the open sea.	Natural tool to estimate sea surface temperatures (SSTs).
Palolo	The virdes	The appearance and disappearance of the palolo marks the onset of the new Samoan season	The appearance of the palolo is associated with the arrival of the wet tropical cyclone season and vice versa. It clearly marks the seasons.
Ua oso foi le gugu o le toeaina	The old man's gout is back	The onset of old people's gout is a sign the rain is on the way.	Rain is imminent.
Mogamoga	The Cockroaches	Unusually large number of cockroaches flocking into Samoan open houses during evening prayers.	Signals hot, humid and clear skies the next day.
Ua tulisia foi moa ua lata mai le timu.	Chickens are running for cover, rain is on the way	When chickens began chasing each other in a particular manner (i.e. running around in a circular manner), it signals heavy rain is on the way.	Heavy downpour is imminent.
O le Kupa ma lona lua	The hermit crab and its hole	Unusually large numbers of hermit crabs digging up holes in the sand or mud. When this happen, the onset of storms and tropical cyclones is imminent.	Storms or tropical cyclones are not far away. Hot, humid, and dead calm conditions (no wind) are expected followed by powerful deadly storms.
Ua oso mai foi le Tua Oloa	South easterly trade winds are imminent.	Signals the onset of which type of winds.	Weather and climate conditions will depend on wind types. Tuaoloa is associated with the onset of hot, humid conditions. Mata Upolu provides the opposite conditions – wet and cooler conditions.

5.6 SAMOAN METHODS OF CLIMATE AND WEATHER OBSERVATIONS

A variety of methods used by Samoans to observe climate and weather is given in Table IV. Although some are well known, many of the details remain to be resolved. The cockroach methodology, for example, is acceptable to some villages in Samoa while others do not subscribe to it. In other cases, conflicting interpretation of the same method varies from village to village. Many of the methodologies documented by missionaries, suffers a similar fate (Brown et al., 1861; Turner, 1884). Different villages have different versions of

these methods depending on factors such as geographic location, beliefs, genealogies, their origins and traditions.

5.6.1 ANALYSIS OF THE SAMOAN WEATHER ABD CLIMATE METHODOLOGIES AND OBSERVATIONS

Turner et al. (1884) provides a tale of the origin of Samoans through the bird *tuli (snipe)*. This perhaps explains why Samoans use animal behaviours to anticipate the onset of weather and climate events. Some Samoans, for example, believe that when the female frigate birds appear during a tropical cyclone or storm event, it signals the arrival of the eye of the tropical cyclone (see Table V for the scientific western equivalent of the Samoan methods). The arrival of the eye of the tropical cyclone signifies the eminent end of the destructions caused by tropical cyclones or storms. It is not unusual at this time to see Samoans wandering outside of their traditional fales (houses) to assess the damages caused by the tropical cyclones or storms.

The scientific interpretation of the arrival of the eye of the tropical cyclone is associated with calm conditions before the rest of the tropical cyclone or storm passed through. Thus the Samoans reasoning that the majority of the destructions from the storm dissipated after the arrival of the eye of storm could be explained by the nature of what actually caused the major damages. Experiences with tropical cyclone events in the Pacific show the majority of the damages are associated with storm surges, not sustained maximum winds. Storm surges lead the eye of the storm so the destructions associated with storm surges would be much more severe prior to the arrival of the eye of the tropical cyclone.

The use by the Samoan fishermen of their testicles to estimate sea surface temperatures (SST) is another common survival method. A scientific explanation of the testicles test is to do with the principle of the expansion of bodies when heated. This is the same principle commonly used for thermometer construction, which gives rise to the usual liquid-filled thermometers and the metallic thermometers. The testicles expand or contract in respond to temperature variations. Similarly, the onset of gouts is interpreted as of falling pressure which triggers the gout hormones off. The other examples, such as the frigate birds, hermit crabs and chickens identified are far more indirect, and result from millennia of observations of the plant and animal species by the Samoans.

6.0 Discussion

This study shows there is a direct link between Samoa's traditional knowledge and Western Scientific knowledge of climate and weather. The naming of clouds, winds, methods and techniques of weather and climate observations use by the Samoans to forecast weather and predict changes in the climate are consistent with western scientific theory. However, these observations were restricted to their local environments. In the search for teleconnections between local observations and broader features of the climate system driving the weather and climate of Samoa, it appears Samoans do not have a broader understanding of the key features of the Pacific region's climate. Samoans appears not to have words for ENSO, SPCZ, ITCZ, IPO nor do they have indexes to determine the movement of these key features (e.g. SPCZ Index, SOI Index). However, it was clear they are well aware of changes in their local environments and the associated changes in weather and climate conditions. The rise and fall of the palolo for example provides a clear distinguish between the wet (tropical cyclone) and dry (drought) season in Samoa. Other indigenous animals and plants, like the frigate birds, hermit crabs, and mango trees serve as reliable 'bio-indicators' of the upcoming changes in the weather and

Table V. Samoan methods of climate observations and possible Western scientific equivalents

Samoan Indicator/Phrase	English	Possible Traditional scientific tool/climatic element equivalent
Mogamoga	Cockroaches	Barometer/Pressure
O le kupa ma lona lua	The Hermit Crabs	Anemometer/wind
O le Atafa	Frigate Bird	Automatic Weather Station (AWSs)
O itu sa o Tamalii	Testicles	Thermometer/Temperature
Ua oso foi le gugu o le toeaina o le a sau le timu	The old man's gout is back, rain is on the way	Relative Humidity
Tulisi'a foi moa ua lata mai le timu	Chickens are running scared the rain is on its way	Solarimeter/solar radiation Thermometer

climate patterns. An example of the important bio-indicator for predicting climate change can be seen by the startling correlation discovered by researchers in New Zealand between titi (mutton birds) harvest rate and upcoming of El Niño climate fluctuations (Moller, et al. 2003). They found the muttonbirders' harvest success could not only predict the direction and intensity of the upcoming El Niño or La Niña climate oscillation, but could do so 4-6 months before national climate models could confirm the polarity of the oscillation (Lyver et al. 1999). Moller, et al (2003) suggested *titi* must encounter and be affected by the precursor conditions of El Niños. They are presently checking this preliminary finding with more extensive muttonbirder diary data and search for potential mechanisms for such a remarkable 'bio-indicator' of upcoming global weather patterns (Moller, et al.; 2003). They suspect perhaps the startling correlation is related to altered wind patterns that greatly impact on *titi* mobility and energy drain. This startling 'bio-indicator' finding points to the importance of analyzing the linkages between the biological cycles of the indigenous animals and plants (e.g. frigate birds) used by the Samoans to forecast and predict local weather and climate conditions. These findings indicate that benefit to science could be realised by utilizing traditional indigenous knowledge. Direct science benefits include the application of techniques and methods of observations used by the Samoans to monitor and forecast weather and climate changes. It also added indirect benefits to the protection, management and conservation of biodiversity. Much of the debate under the biodiversity convention is biodiversity be protected and conserved because of their 'intrinsic' values. The importance of indigenous animals and plants for monitoring weather and climate changes strengthens the need to protect biodiversity. The accurate identification by the Samoans of the various meteorological features driving the weather and climate of their islands is a testimony of the important role this local knowledge would play in not only improving scientific understanding of climate and weather but more importantly in the formulation of local and site specific adaptation response strategies to future climate change.

This study also raises a number of challenges that need to be addressed in future research of this type. Firstly, the process used to collect, analyze and interpret the documented information is just as important as the information itself. Secondly, the information and data documented in this research are open to many interpretations. It is worth noting though that the success of the study of this nature, a cross between

social science pure science depend largely on researchers who have both the scientific and social expertise and skills on climate and weather. These challenges are rooted in the different notions and conceptualisation by different groups on how they value and perceive knowledge. Samoans, for example, prefer to keep their knowledge within members of their *fanau* (families/tribes). Most view the provision of knowledge to non-family members and academics as a real threat to their mana (power) and future survival of the fanau. Roberts et al (1999) also raised some important points when dealing with indigenous communities. They suggested some of these efforts at accommodating indigenous perspectives while commendable in principle fall victim to several inherent dangers. Perhaps the least innocuous is the prosperity to romanticise indigenous knowledge, by falsely assuming that these belief systems contain long lost wisdoms universal to all peoples of all cultures. More serious are the problems which can arise through efforts to assimilate or integrate the two world views into a single new system of western science. The caution expressed by some Samoans during the course of this research project could be attributed to some of these issues.

As for the interpretation of the information and data, it was obvious from the analysis that there is no single Samoan perspective on traditional knowledge of climate and weather, not indeed on any other subject. Samoans are composed of discrete groups, each group *(alalafaga* ma *itumalo* – village and tribe) having its own distinctive, although recognisably similar, perspective. Despite taking all the precautionary measures to ensure the gathering of information and data for this research is conform with Samoan traditions and cultures, there remains, as Mutu described it, the problem of 'the inherent difficulties that exits when one attempts to describe the concepts and values of one culture [Samoan] using the language of another culture [Western Science]" (Mutu, 1994, quoted by Roberts, et al, 1995). This difficulty increases when the two cultures concerned hold quite different world views and value systems. However, it must also be pointed out that while acknowledging the sensitive nature expressed by some Samoans about protecting their knowledge, perhaps their reluctant may well have to do with most of them not having any knowledge of the topic.

7.0 Conclusions

This study is the first in the Pacific Islands to explore traditional knowledge of weather and climate. It has provided a number of contributions to further improve scientific understanding of climate and weather in the Pacific region. These include establishing a foundation for formulating research questions and hypothesis in research aims at documenting traditional knowledge of climate and weather in other Pacific Islands, acts as a first source of traditional knowledge of climate and weather history and baseline data and provides the first insights into how indigenous communities like Samoa can formulate adaptation and response strategies to the likely impacts of climate change and long-term community based climate monitoring in the Pacific Islands. These findings are consistent with those found in other studies of similar nature outside of the Pacific (Riedlinger et al., 2000). The need to continued documenting this body of local indigenous knowledge will be invaluable in greatly assisting the international community and Pacific people to integrate traditional knowledge and practices to Western scientific understanding of climate and weather of the Pacific region and to adapt to weather and climate extremes.

Acknowledgements

This research was supported by the New Zealand Foundation for Research, Science and Technology (FRST) under

contract No. CO1X0202. I have received many invaluable contributions from numerous people, in particular, Dr Jim Salinger, Senior Climate Scientist, NIWA Auckland, who acted as my main reviewer, Mr. Taala Pauga, a high chief from the village of Laulii, Upolu Island who was the main informant. Chief Pauga is known locally as the 'Weather Guru' of Samoa. Pauga served thirty-five years as a weather observer with the Meteorological Services Division, of the former New Zealand Meteorological Service (NZMS), Apia Observatory, Mulinuu, Samoa, Professor Richard Moyle, Anthropology Department, University of Auckland, Dr Jon Barnett, Anthropology and Human Science Department, University of Melbourne, Australia, Dr Guy Penny, post Doctorate, Social Scientist, NIWA Auckland and Dr Melani Anae, Director, Centre for Pacific Studies, University of Auckland, offered advice in the areas of human science research and methodology. Another Samoan elder who kindly assisted us is Mr. Taala Leapai, another long serving weather officer with the Samoa Meteorological Service. Other key staff of the Samoa National Meteorological Service Division, Ministry of Agriculture, Forests, Fisheries and Meteorology, Apia Observatory, Mulinuu, who provided the information, is Tuisamoa Seve, Faatoia Malele, Steve Kamu, Ausetalia Titimaea and Bismark Crawley. I also acknowledged the invaluable guidance and feedbacks from High Chief Utu Abe Malae of American Samoa. The assistance of my extended family elders - the Lefale and Su'a families' elders, in partuclar, my parents, Matiu Ligaliga Fatu Lefale and Satuala Su'a Palasi Lefale - are highly appreciated. I owed this work to them.

References

Barnett, J. and Busse, M.: 2002, 'Ethnographic Perspectives on Resilience to Climate Variability in Pacific Island Countries', in Asia-Pacific Network (APN) Secretariat (ed.), Asia-Pacific Network for Global Change Research, Projects 2001/2002, Kobe, Japan, 45-48.

Beatson, D.: 1985, The New Zealand Weather Book, A Guide to the forces that shape our climate, BCNZ Enterprises, Whitcoulls Publishers, Christchurch, New Zealand, 22-23.

Berkes, F.: 1993, 'Traditional Ecological Knowledge in Perspective.' in Inglis, J.T. (ed). Traditional Ecological Knowledge: Concepts and Cases, Ottawa: International Program on Traditional Ecological Knowledge and International Development Research Center, Canada, 3.

Berkes, F.: 2001, 'Making Sense of Artic Environmental Change?' In Krupnik, I. and Jolly, D. (eds.), Navigating Social-Ecological Systems, Building Resilience for Complexity and Change, Washington, USA, 335-349.

Beucher, F.: 199, Large Scale Circulation Dynamics in the South-West Pacific, Vol. 1, National Institute of Water and Atmospheric Research (NIWA) report, Auckland, New Zealand, 178-195.

Brown, G., and Penisimani, 1861-1870.: 1974, Rev George Brown Papers, Penisimani, Samoan stories, vol. 1, vol. 2, Part A, pp1-132, Part B, pp.1-79, Council of the Library of New South Wales, Manuscript in the Mitchell Library, CY Reel 181, Filmed by W. &F. Pascoe Pty. Ltd., NSW, Australia, 1-11.

Burgess, S.: 1988, The climate and weather of Western Samoa, New Zealand Meteorological Service, Wellington, New Zealand. 44pp.

Cram, F.: 1996, Developing Partnerships in Research: Pakeha researchers and Maori research, University of Auckland, Auckland, New Zealand, 2-9.

Correa, C. M.: 2001, Traditional Knowledge and Intellectual Property: Issues and options surrounding the protection of traditional knowledge; A Discussion Paper, Quaker United Nations Office Geneva (QUNO), Geneva, Switzerland. The document is available in downloadable electronic format from: http://www.quno.org.org (accessed on June 16, @ 10.50.00am); 2-4.

Davidson, C and Voss, P.: 2002, Knowledge and Management: An introduction to creating competitive advantage from intellectual capital, Tandern Press, Birkenhead, Auckland, New Zealand, 55-56.

Davis, S.: 1997, 'Documenting Aboriginal seasonal calendar.', in Webb, E. (ed.), Windows on Meteorology : Australian Perspective, Commonwealth of Australia, Scientific, Industrial and Research Organisation (CSIRO), CSIRO Publishing, Collingwood, Victoria, Commonwealth of Australia.

Dick, B.: 1997, 'Approaching an action research thesis: an overview', Resource papers in Action research, Available online at http://www.scu.edu.au/schools/gcm/ar/arp/phd.html (accessed June 17, 2003 @1340 local time).

Folland, C.K., Renwick, J.A., Salinger, M.J., and Mullan, B.: 2002, 'Relative influences of the Interdecadal Pacific Oscillation and ENSO on the South Pacific Convergence Zone', Geophysical Research Letters, Vol. 29. No. 13, The American Geophysical Union, 21.

Folland, C.K., Salinger, M.J., Jiang, N., and Rayner, N.A.: 2003, 'Trends and Variations in South Pacific Island and Ocean Surface Temperatures', Journal of Climate, Vol. 16, 2859-2874.

Generic Resources Action International (GRAIN) and Kalparvriksh.: 2002, 'Traditional knowledge of biodiversity in Asia-Pacific: Problems of Piracy and Protection', New Delhi, India. Available online at http://www.grain.org/publications/tk-asia-2002-en.crfm (accessed June 25, 2003 @1000local time).

Generic Resources Action International (GRAIN).: 2003, 'Model Law for the Protection of Traditional Ecological Knowledge, Innovations and Practices". Available online at http://www.grain.org/docs/brl-model-law-pacific-ene.pdf (accessed October 27, 2003 @1100local time).

Hastenrath, S.: 2002, 'The Intertropical Convergence Zone of the Eastern Pacific Revisited.', in International Journal of Climatology, Int. J. Climatol. 22, 347-356.

Intergovernmental Panel on Climate Change.: 2001, Climate Change 2001: Impacts, Adaptation, and Vulnerability, Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, McCarthy, J.J., Canzianni, F.O., Leary, A.N., Dokken, D.J.,and White, K.S. (eds.), Cambridge University Press, Cambridge, U.K, 843-876.

Jolly, D., Berkes, F., Castleden, J., Nichols, and the Community of Sachs Harbor., 2002., 'We can't predict the weather like we used to: Inuvialuit Observations of Climate Change, Sachs Harbor, Western Canadian Artic.', in Krupnik, I., and Jolly, D., (eds.), The Earth is Faster Now, Indigenous Observations of Arctic Environmental Change, Washington,

DC, 93-125.

Kerr, I.S.: 1976., Tropical Storms and Hurricanes in the Southwest Pacific, November 1939 to April 1969, New Zealand Meteorological Service, N.Z. Met. S. Misc. Pub. 148, Wellington, New Zealand, 86-88.

Krishna, R., Lefale, P.F., Sullivan, M., Young, E., Pilon, J., Schulz, C., Clarke, G., Hassett, M., Power, S., Prasad, R., Veitch, T., Turner, K., Shea, E., Taiki, H., Brook, R.: 2000: A Needs Analysis for the strengthening of Pacific islands Meteorological Services: Meeting the Challenges, South Pacific Regional Environment Programme (SPREP), AusAID, Apia, Samoa, 3.

Landsberg, H.: 1964, Physical Climatology, Office of Climatology, US Weather Bureau, Second Edition, Gray Printing Co., Inc, Dubois, Pennsylvania, USA, 196-221.

Lefale, P.F.: 2002, 'Traditional knowledge of weather and climate prediction, the Samoa Experience.', in Barnett, J., and Busse, M., (eds.), Proceedings of the APN Workshop on Ethnographic Perspectives on Resilience to Climate Variability in Pacific Island Countries, University of Canterbury, Canterbury, New Zealand, 30pp.

Lyver, P.O'B.; Moller, H.: 1999, 'Tītī harvests by Rakiura Maori: a case study of the use of Maori Traditional Environmental Knowledge for sustainable natural resource management.' Proceedings of Landcare Conference, Wellington 21-23 April, 1999. Published on Landcare Research Web page: http://www.landcare.cri.nz/conferences/manaakiwhenua/papers/index.shtml?lyver

Maykut, P., and R Morehouse, R.: 1994, 'Part 1: Building a Philosophic Foundation for Qualitative Research', in Beginning Qualitative Research: a philosophic and Practical Guide, The Falmer Press, London, UK, 1-25.

Meleisea, M.: 1987, Lagaga, A Short History of Western Samoa, University of the South Pacific, Oceania Printer, Suva, Fiji.

Manton, M.J., Della-Marta, P.M., Haylock, M.R., Hennessy, K.J., Nicholls, N., Chambers, L.E., Collins, D.A., Daw, G., Finet, A., Gunawan, D., Inape, K., Isope, H., Kestin, T.S., Lefale, P., Leyu, C.H., Lwin, T., Maitrepierre, L., Ouprasitwong, N., Page, C.M., Pahalad, J., Plummer, N., Salinger, M.J., Suppiah, R., Tran, V.L., Trewin, B., Tibig, I., Yee, D.: 2001, 'Trends in Extreme Daily Rainfall and Temperature in Southeast Asia and the South Pacific: 1961-1998', International Journal of Climatology, Int. Climatol. 21, 269-284.

Moller, H., 2003.: 'Harvests of Tītī by Rakiura Maori.' Proposal Number 8324-AMAO-RAKIURA, Otago University, Dunedin, New Zealand.

Overton, J., 1999.: 'Sustainable Development and the Pacific Islands' in Overton, J., et al (eds.), Strategies for Sustainable Development, Experiences from the Pacific, London, U.K, 3.

Pratt, 1862.: Pratt's Grammar & Dictionary of the Samoan Language, Reprinted 1960, Printed and Published by the Malua Printing Press, Malua, Samoa.

Renwick, J., Katzfey, J., Nguyen, C., McGregor, J.: 1998, 'Regional model simulations of New Zealand climate' in Journal of Geophysical Research, Vol. 103, American Geo-

physical Union, 5973-5982.

Riedlinger, D., and F. Berkes.: 2000, 'Contributions of Traditional Knowledge to Understanding Climate Change in the Canadian Arctic.' Available online at http://www.arcus.org/award/pdf/5th_pdf/Riedlinger_Abstract.pdf (accessed June 26, @1013 local New Zealand time).

Roberts, M., Norma, W., Minghinnick, N., Wihongi, D., and Kirkwood, C.: 1995, "Kaitiakitanga: Maori perspectives on conservation", Pacific Conservation Biology, Vol. 2 Surrey Beatty & Sons, Sydney, Australia, 7-20.

Saifaleupolu, S.: 1985, The Influence of the Southern Oscillation on the climate of Western Samoa. Masters Thesis, Victoria University of Wellington, Wellington, New Zealand.

Salinger, M.J.: 2001, 'Climate Shifts in the South Pacific', in Wolfgang, S. (ed.), Proceedings Science Component, Linking Science and Policy, Pacific Islands Conference on Climate Change, Climate Variability and Sea Level Rise, National Tidal Facility, The Finders University of South Australia, Adelaide, Australia, 67-72.

Salinger, M.J., Renwick, J.A. and Mullan, A.B.: 2001, 'Interdecadal Pacific Oscillation and South Pacific Climate', International Journal of Climatology, Vol. 21, 1705-1721.

Selfknowledge, 2003.: Dictionary Information: Definition of knowledge. Available online at http://www.selfknowledge.com/53102.htm (accessed June 26, 2003, 1000 local New Zealand time).

Shea, E., Dolcemascolo, G., Anderson, C.L., Barnston, A., Guard, C.P., Hamnett, M.P., Kubota, S.T., Lewis, N., Loschnigg, J., Meehl, G.: 2001, 'Integration of Traditional Knowledge and Practice' in Preparing for a Changing Climate, The Potential Consequences of Climate Variability and Change, Pacific Islands. A Report of the Pacific Islands Regional Assessment Group for the U.S. Global Change Research Program, East-West Center, University of Hawaii, Honolulu, Hawaii, 40-44.

Solf, George II, and Hunter, H.: 1907, The Cyclopedia of Samoa, Tonga, Tahiti, and the Cook Islands (Illustrated). A Complete Review of the History and Traditions and the Commercial Development of the Islands, with Statistics and Data never before compiled in a single publication, Sydney, N.S.W., Australia, 11-48.

Streten, N. A., and J. W. Zillman.: 1984, 'Climate of the South Pacific Ocean', World Survey of Climatology, H. van Loon, Ed., Vol. 15, Elservier, 263-429.

Terralingua.: 2003, 'Definition: Traditional Ecological Knowledge (TEK)', Partnership for Linguistic and Biological Diversity, USA. Available online at http://www.terralingua.org/Definitions/DTek.html (accessed June 26, 2003, at 1400 local New Zealand time).

Trenberth, K.E.: 1976, 'Spatial and temporal variations of the Southern Oscillation', Quarterly Journal of the Royal Meteorological Society, Vol. 102., 639-653.

Turner, G.: 1884, Samoa: A Hundred Years Ago and Long Before, London Missionary Society, First Printed London 1884, reprinted 1984, 1986, 1989, Institute of Pacific Studies, University of the South Pacific, Suva, Fiji, 3-9, 201.

Turner, G.: 1861, Nineteen Years in Polynesia: Missionary Life, Travels, and Researches in the Islands of the Pacific., John Snow, Paternoster Row, 1861, London, United Kingdom, pp. 245-255.

United Nations.: 1992, Framework Convention on Climate Change, UNFCCC Secretariat, Bonn, Germany., Preamble, Article 4.8.

United Nations Environment Program.: 1994, Barbados Programme of Action for the Sustainable Development of Small Islands Developing States., Nairobi, Kenya, Preamble.

World Intellectual Property Organization (WIPO).: 1999, 'Experts discuss Traditional knowledge and the Intellectual Property System.', WIPO Press Release PR/99/195, Geneva, November 2, 1999. In www.wipo.org/pressroom/en/releases/1999/p195.htm (visited June 16, 2003 @ 11.00am).

Yeoman, I., Peters, S., Lehaney, B., Clarke, S.: 1996, 'Effective Group Knowledge Elicitation Through Problem Structuring Methodologies?' in: Systemist, Vol. 17(2), May 1996, 79-91.

Young, E.: 2003, 'Koalas fight, shepherd's delight', The Guardian, London, UK, October 23, 2003. Available online at: http://www.guardian.co.uk/life/feature/story/0,13026,1068418,00.html

Footnotes

[1] Pacific Climate Analyst, National Institute of Water and Atmospheric Research (NIWA) of New Zealand, *PO Box 109 695, Auckland, New Zealand.* E-mails: p.lefale@niwa.co.nz Web Site: http://www.niwa.co.nz

[2] Climate Change usage in this paper uses the United Nations Intergovernmental Panel on Climate Change (IPCC) definition. It refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage is differs from that in the United Nations Framework Convention on Climate Change (UNFCCC), where *climate change* refers to a change of climate attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that us in addition to natural climate variability observed over comparable time periods (see IPCC Third Assessment Reports (TAR), 2001 for details).

Snowchange Africa: Ghana

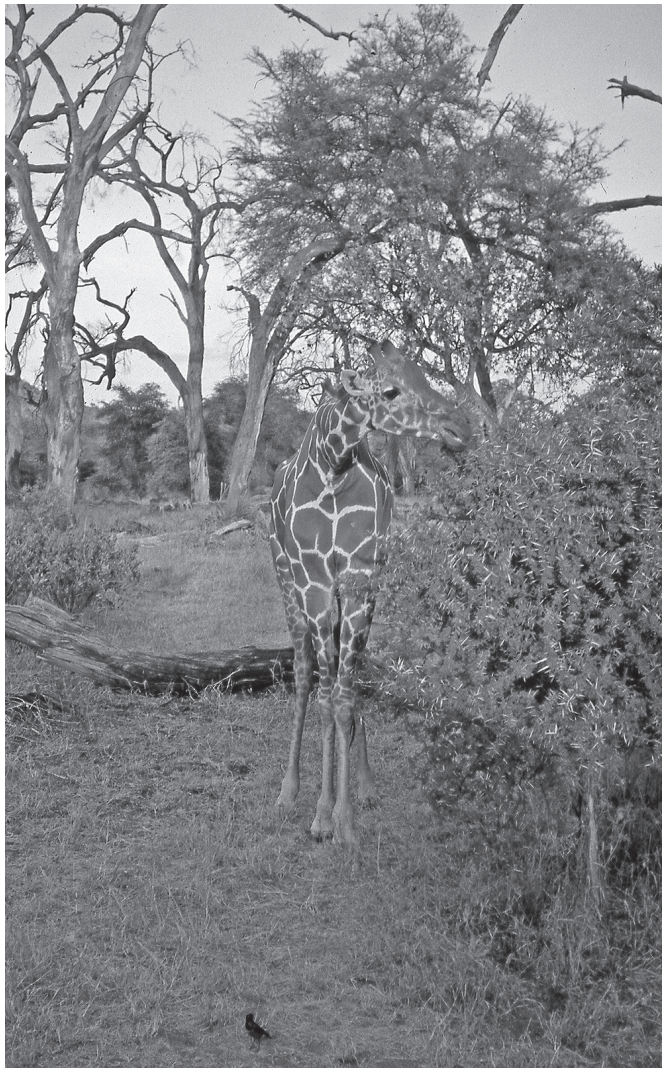
Traditional Beliefs and Biodiversity Conservation in Ghana:

Lessons from the Grassroots.

Michael Yaw Poku-Marboah [1]

Abstract

Through many generations and over many years native African people have lived in close relationship with their environment. They have, based on a number of historical, social and ecological factors, and through experimentation, critical observation as well as innovation evolved a holistic, traditional, "scientific" knowledge of the vast biological diversity around them. This study takes a look at how this was made possible and, therefore, lessons to be learned from it. In the past various rules and regulations mainly in the form of taboos based on religion and the traditional value systems protected biodiversity in these communities. Respect for these rules and regulations have waned considerably compared to the past, nevertheless there is still an appreciable level of regard for them. It is recommended that formal conservation interventions take advantage of such already-existing informal situations to ensure maximum local participation and success. Furthermore, the need for more scientific evaluation of the traditional beliefs and taboos, and provision of legal backing for the enforcement of these traditions to ensure continuous biodiversity conservation is recommended.



Introduction

In Ghana Tradition-Protected Areas (TPAs) which include sacred groves, ancestral home/groves, fetish shrines, animal sanctuaries etc. play an important role in the lives of local communities. The wealth of biodiversity found therein provides local communities with food, economic, socio-cultural, and spiritual benefits. In the past the mechanisms for the conservation of these TPAs have been based on religion, taboos, norms, culture, and local rules and regulations though without formal legal backing. This notwithstanding, the attachment to the beliefs were strong enough to make people respect the traditional values that sought to protect this wealth of biodiversity (Ntiamoah-Baidu, 1991).

This paper evaluates the current perception of the traditional conservation strategies by local people from two local communities in Ghana: Tafi Atome and Assin Akropong. The qualitative effectiveness of the strategies in ensuring the conservation of the Tradition-Protected Areas (TPAs) was assessed using six socio-cultural parameters.

Study Area

The study areas and their approximate geographical locations are shown in Figure 1.

Tafi Atome (B) is situated in the Volta Region of Ghana in the Hohoe Administrative District. It is a small farming community of approximately 1500 people. The inhabitants are mostly farmers and the area is predominantly cultivated farmland. However, the village is surrounded by a grove of semi-deciduous forest and the community considers the Mona monkeys, which live in the forest, sacred. Traditional laws protect the grove and the monkeys, preventing anyone from destroying the forest or harming the monkeys. The species of monkeys found there are *Cercopithecus mona.* The total size of the (TPA) is estimated to be about 27 ha (Switzer, 1996). History has it that over 200 years ago the people of Tafi migrated from the present day Ashanti Region (A) to their current abode in the Volta Region. This was as a result of tribal wars and the great god of Tafi who guided and protected them from all calamities during their exodus to the south used the monkeys as emissaries. It is believed that the forest is the home of the god and its emissaries and that there are mystical powers in it such that anyone who dares challenge the powers will suffer for it (Amoah, 1998 and Pers. Comm.).

Assin Akropong (C) is situated in the Central Region of Ghana in the Assin Fosu Administrative District. The TPA is owned by the chiefs and elders of Assin Akropong but is being held in trust by them for the benefit of the community. The population of Assin Akropong is estimated to be about 6500 and they are predominantly farmers. The size of the TPA is estimated to be about 215 ha (Anon. 1995). History has it that the first people to settle at Adwenaase were the *"Aduana"* clan of Assin Akropong after emigrating from Ashanti Esumegya around 1820 AD. The cause of the emigration was also tribal wars. As the *"Aduana"* clan moved away, they came to a big tree with many branches called *"adwenaa"* and they decided to settle under it. The place eventually became known as *"Adwenaase"* (meaning under the *adwenaa* tree). With time as the wars spread to their new abode they moved on to other new settlements until they finally settled in present day Assin Akropong (Anon. 1995 and Pers. Comm.). As a sign of remembrance and respect for the former home, burial place etc. of their ancestors the people of Assin Akropong decided to preserve the Adwenaase forest for posterity and also for the sound rest of the souls of their departed ancestors. Laws in the form of taboos were enacted which helped in preventing people from misusing the forest (Anon. 1995 and Pers. Comm.).

Figure 1. Approximate geographical location of study areas.

Methods

For the primary data, a multi-phased sampling method was used to obtain respondents for a set of prepared questionnaire. Having obtained the sample size, which was 2.5% of the total population of each community visited, stratified proportional sampling was applied. In this, a number representing 20% of the total number of respondents that make up the 2.5% of the communities population was set aside for the Chiefs and the elderly in the community. This was done because traditional knowledge is not always universal within a community. Rather, it is confined in most cases, to experts such as the traditional rulers and the elderly. Next, the identification of key informants constituting the 20% mentioned above was done by purposively identifying a single respondent who provided leads to successive interviewees.

With regard to the remaining 80% random sampling was used to obtain the respondents. This was achieved by randomly picking house numbers from a box that contained all the assigned numbers of the houses in each community visited. In each selected house a specified number of respondents were interviewed. However, in the course of the interviews conscious effort was made to obtain at least 40% women respondents for the questionnaire to ensure some form of gender balance. This leaning in favour of women was done for the reason that in the traditional African setting women suffer the most in the event of biodiversity loss or degradation because they carry out the fetching of water from streams, fuel wood, mushrooms, snails, and other products from the wild

Aside the 2.5% sample size, focus group discussions were held. This was to afford an opportunity for those who may not have been selected but might have something to say. It also served as a sort of validation or otherwise for the information gathered during the personal interviews. The focus group discussion had three groups. These were Chief/ elders (including men of 45 years and above), youth (young men and women 18-44 years) and elderly women group.

For the secondary data documents dealing with population figures from the Ghana Statistical Service, Community Forest Management Plans and other study reports about the study sites were used.

From the responses obtained, the general traditional conservation strategies used in the TPA were documented. The status of extent of attachment to the beliefs, present condition of the TPA and the desire for its' continuous existence were assessed. Other assessments covered effectiveness of the traditional rules, the adequacy of traditional beliefs and values in ensuring the protection of the TPA, and the applicability of traditional knowledge in formal biodiversity conservation situations. The assessments were based on the judgments made by respondents and expressed in percentages using Microsoft excel program.

Results

TAFI ATOME (TAFI ATOME MONKEY SANCTUARY)

Out of the 38 respondents who were interviewed in this community, a number representing 60% said the extent of attachment to the traditional beliefs has improved or remained unchanged. Thirty seven percent said it has deteriorated and about 3% said they had no idea of the current status of the extent of attachment to the beliefs.

For the present state of the TPA 97% indicated that it has improved or remained unchanged. Nobody said it has deteriorated while 3% indicated that they had no idea about the present state of the TPA. In the opinion of all the 38 respondents (100%) the TPA was desirable and should be

allowed to exist and, if possible, improved. The same number was of the opinion that the traditional rules were effective.

However, not all agreed that the traditional rules and beliefs alone could ensure the protection of the TPA in the future. Eighty one percent said the traditional rules and beliefs alone were adequate in ensuring the TPA's protection and 3% said it might or may not be depending on other conditions. Those who were of the opinion that the traditional rules and beliefs alone are not enough to ensure the protection of the TPA constituted 13% of the respondents while another 3% had no idea whether it was adequate or not. Those who said the traditional values alone were not enough advocated for external backing including government support in the form of legislation.

Seventy one percent of the respondents believed that traditional knowledge could be used in formal biodiversity conservation while 29% said they remain neutral since its' applicability may depend on other factors. None of the respondents said it could not be used. Figure 2 gives the graphical representation of the findings for this Community.

ASSIN AKROPONG (ADWENAASE COMMUNITY FOREST RESERVE)

Out of the 162 respondents 69% said the extent of attachment to the beliefs had remained unchanged or improved. Seventeen percent said it had deteriorated and 14% had no idea of the present status of the extent of attachment to the beliefs.

Fifty percent of the respondents judged that the present state of the TPA had improved or remained unchanged from the former condition. In the opinion of 37% of the respondents the TPA was in a deteriorated state, while 13% had no idea about the present state of the TPA.

Ninety one percent of the respondents were of the opinion that the TPA was desirable, 9% were not sure whether it was or not but none said it was not desirable. On the effectiveness of the traditional rules 84% said it was effective while 7% said it was not. Nine percent had no idea on the effectiveness.

Though judged to be effective by a significant number of the respondents, the traditional rules and values alone were not universally accepted as being adequate in ensuring the continuous protection of the TPA into the future. Sixty six percent of the respondents indicated that the traditional rules alone were adequate whilst 20% said it was not and needed to be strengthened by other means. Seven percent said the adequacy of the traditional rules and values was dependent on other factors while another 7% had no idea.

On the applicability of traditional knowledge in formal biodiversity conservation 65% said it can be used, 2% said it cannot and 10% had no idea about this. Twenty three percent judged that the applicability was dependent on other factors such as the culture and traditions of the people and their willingness to accept the intervention. See Figure 3 for graphical representation of the results.

General Traditional Conservation Strategies

The general traditional conservation strategies used at the study sites are:

Prohibition of land cultivation and visit to surrounding forests and water bodies on taboo days in the community. The taboo days are Mondays and Tuesdays for Tafi Atome and Assin Akropong respectively. Additionally, based on the traditional calendar, any Wednesday, Saturday or Sunday that fell on *"awukudae", "dapaa"*, or "akwasidae" is regarded as a taboo day in Assin Akropong.

Prohibition of entry into the TPA in all two communities. Entry was only allowed under special permission for specific

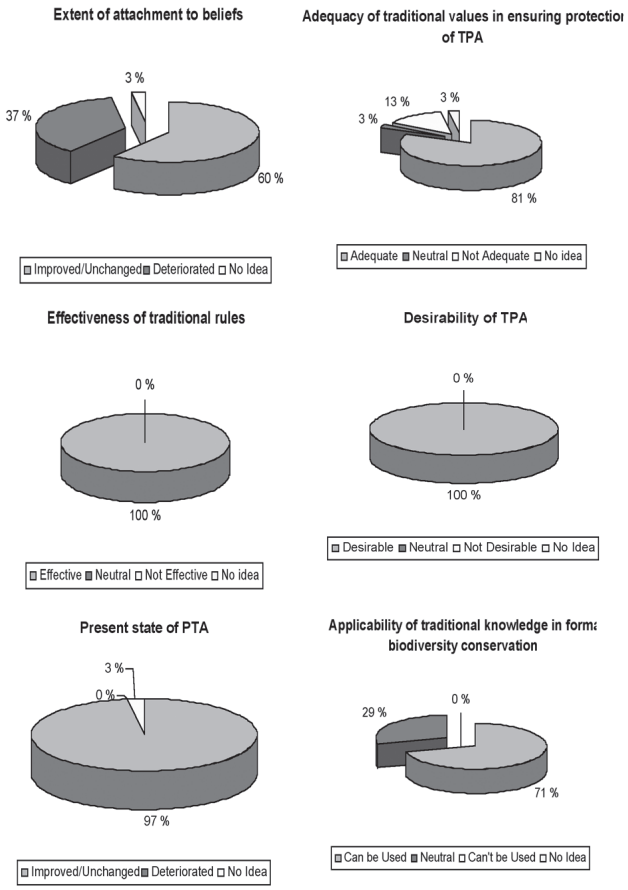


Fig. 2 Tafi Atome (Tafi Atome Monkey Sanctuary)

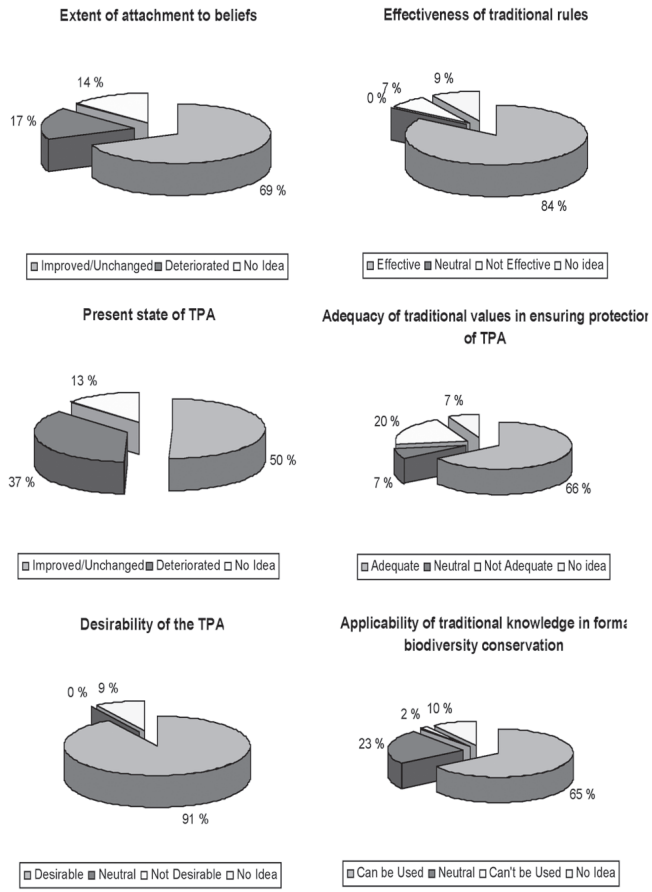


Fig. 3 Assin Akropong (Adwenaase Community Forest Reserve)

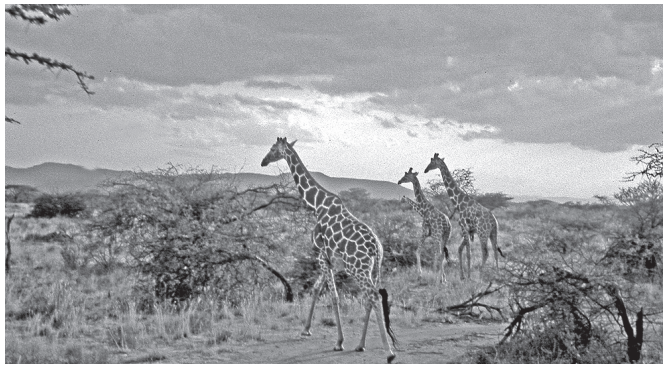
purposes and/or at specific times. It was noted in Tafi Atome that in the olden days, the monkeys could be killed once they left the forest and crossed the River Atoa-Ahavor, which flows at one side of the forest in the north but these days, for the purpose of preservation, they cannot be killed even if they cross the river.

Discussion And Conclusion

While traditional management systems maintained the stability of their ecosystems as evidenced by the high levels of biodiversity in such systems, the so-called modern management systems have failed. This is especially true in many parts of the world where agricultural technologies geared for production of export crops have been implemented on a large scale. The consequences of these technologies, for example, in terms of desertification in northern Africa are well documented; the cost in terms of biodiversity is yet to be ascertained.

However, from the numerous literature the author read as well as field observations there seem to be the indication that traditional beliefs and value systems, upon which traditional management systems are based, are under incessant attacks from a lot of sources. In Ghana the main social elements that have had significant impact on traditional beliefs and value systems are age structure, the exposure to foreign cultures (mainly from migration, technological advancement in the form of easy and ready access to information), introduction of Western-style education, and the spread of other religions.

In such situations, the main threat to traditional knowledge and its application in biodiversity conservation come from the youth, the educated, migrants, farmers (since they clear the forest), people of other religions (fight for religious supremacy), and men (since they are the main decision-makers). But fortunately, a detailed analysis of the results



using gender, age, origin, religion, and occupation against the six socio-cultural factors mentioned earlier in the methods revealed very encouraging signs for the future of traditional knowledge in biodiversity conservation.

TAFI ATOME (TAFI ATOME MONKEY SANCTUARY)

In this community, out of those who indicated that the extent of attachment to the traditional beliefs has improved or remained unchanged 65% were aged below 50 years, 91% were non-traditionalists, 83% have had formal Western education, and 33% were immigrants.

Ninety seven percent of the respondents said the present condition of the TPA has either improved or remains unchanged. Not even a single person said the present state has deteriorated. This, definitely, does raise an interesting question. What accounted for this was that there has been another equally important reason, aside the religious/cultural one, for which the whole community is prepared to protect the TPA. The Monkey Sanctuary is now a tourist attraction and for the benefits that the community derives from this activity

they are all out to develop and protect the TPA. This shows a clear case where the traditional value systems have served as a custodian of the resource upon which other interventions have been built to ensure biodiversity conservation.

Every single respondent in this community said that the TPA was desirable and, at least, should be maintained if not developed. The same was the case for the effectiveness of the traditional rules.

The fact that all the respondents see the traditional rules as effective but not all (13%) see it as adequate in ensuring the future protection of the TPA presents a somewhat good situation for some form of intervention. Some of the youth and elderly (36^{+} years) men and women who are the main decision-makers in the community shared this view.

At least 76% of the respondents who are close to the decision-making circles or are decision-makers themselves see that traditional knowledge can be applied in formal biodiversity conservation. This assures an atmosphere of willingness on the community's part to incorporate workable would-be interventions in its' management of the TPA. Also since the elderly remain the storehouse of traditional knowledge there is an assurance that they may be prepared to share their knowledge.

ASSIN AKROPONG (ADWENAASE COMMUNITY FOREST RESERVE)

The trend in this community followed a similar pattern to that of Tafi Atome. In this community, out of the 111 respondents who said the extent of attachment to the traditional beliefs is, at least, unchanged 57% were below 50 years, 87% belonged to other faiths other than traditional religion, 76% have had formal Western education and 46% were immigrants.

Among the 148 respondents who said the TPA was desirable 53% were under 50 years, 47% were 50 years and above, 86% were farmers (including hunters and trappers), 90% belonged to other faiths other than traditional, 95% were natives, and 53% have had formal education.

Though 137 respondents said the traditional rules were effective 32 of them said they were not adequate in ensuring the protection of the TPA in the future. Out of the number that believes that the traditional rules alone are not adequate (i.e. 32), 63% fall within the decision-making age group and 88% are natives. On the applicability of traditional knowledge in formal biodiversity conservation, at least, 71% of the respondents in the decision-making group indicated that it could be used.

Other Motivation For Biodiversity Conservation

As stated earlier on, the Monkey Sanctuary in Tafi Atome and the monkey species living in it have now become a tourist attraction. The income thereby generated is being (or will be) used for development projects in the community. As a result of this some local people have voluntarily offered parcels of land for the expansion of the sanctuary and the community has also responded by planting more trees and maintaining the Sanctuary.

During the interview the author was informed that around 1986 local people started killing the monkeys and cutting down trees in the TPA. The main reasons for this were attributed to the spread of Christian beliefs, need for more farmland and the need to protect food farms from destruction by the monkeys who frequently invaded the farms. However in 1993 the community's attention was drawn to the benefits of the sanctuary and its monkeys including its potential to become a tourist attraction. This marked a turning point for the community

At Assin Akropong extensive cutting of trees occurred in the 1970's, 1983, 1991/92 and during the time that the TPA

was given to an agricultural company for the establishment of Oil Palm plantation. Most of the felling in 1970's and 1991/92 were illegal and, together with the others, initiated the wave of all the encroachment that followed later. The spread of Christian beliefs was also given as one of the reasons. But in January 1994 the then District Forest Officer prompted the community about the potential benefits of the TPA and that marked the turning point of the prospects of the TPA. The community supported by the Forest Services Division of Ghana, now takes a very active role in the protection of the TPA and all encroachment have stopped or at least minimized.

From the author's observation, it appears this community could also benefit from tourism. The forest itself is of tropical nature and it has rivers and streams with wonderful caves and rocks some of whose architecture show where the ancestors had their community gatherings. Furthermore, the Community is geographically located close to other Assin towns through which the historical "slave route" (routes which slave masters took their slaves during the slave trade en route to the coast before shipment) pass and these towns are becoming increasingly popular among tourists.

Points of Agreement and Disagreement

Most of the literature read by the author seem to blame Colonialism, Western influence and education, introduction of Christianity as well as immigration of people from other ethnic groups who neither believed in nor respected the local traditional values for the weakening of the traditional value systems which, hitherto, ensured biodiversity conservation.

The intrusion of Europe into Africa introduced attitudes that contrasted sharply with those which were known and upheld by Africans and these new attitudes ubiquitously and violently disturbed local attitudes. In brief, the European attitude, as Paul Santimire characterized it in 19th century America was as follows:

"Nature is analogous to a machine, or in the more popular version nature is composed of hard, irreducible particles which have neither colour, nor smell nor taste …beauty and value in nature are in the eyes of the beholder. Nature is the dead res extensa perceived by the mind which observes nature from a position of objective detachment. Nature in itself is basically a self-sufficient, self-enclosed complex of merely physical forces acting on colorless, tasteless and odorless particles of hard dead matter".

This was made worse by the so-called Aristotelian legacy, the natural hierarchy which states that:

"…The world is arranged into lower and higher forms. The lower forms exist for the higher forms and since human beings are placed at the top of the pyramid everything else exist for the sake of them".

The products of the schools established by Europeans were taught to accept this "scientific" view of nature.

This contrasted sharply with the African belief in a common essence in nature that postulates that all things are gods, all things posses spirit, all things are medicines, everything has power, and their power derives from the Creator who is the supreme power. These postulates constituted the set of ideas that established the culture of respect, protection and fear for nature that guaranteed the preservation of all species for sustainable use.

The European early Christian missionaries made their contribution by launching their attacks on traditional attitudes and practices from the viewpoint of the Judaeo-Western heritage. This was basically interpreting the bible and Christian principles with Judaeo/Western cultural backgrounds. Based on this they relentlessly attacked and tried to destroy what they believed to be "pagan animism" and this led to the crumbling of the old inhibitions with regard to the exploitation of nature (Opoku,1993).

In as much as the author agrees with previous authors

on almost all the factors to blame for the weakening of the traditional value systems which, hitherto, ensured biodiversity conservation, it is worth-stating here that he does not agree that the Christian religion per se can be held blamable for what went wrong. The author believes that it goes without saying that a message is different from its' carrier. Even though the way a message is received has a lot to do with who carries it and how it is carried this does not obliterate the distinct separation.

Contrary to the early European missionaries interpretation of the African traditional values as "pagan animism", a report of the 1978 Yaounde Consultation of the World Council of Churches on Religious Experience in Humanity's Relation with Nature, which dealt with the relationship between African Tradition, and Christianity put it thus:

"…Our concept of taboo as a ritual prohibition is designed to protect nature, its' violation calls for restitution to be made to nature. Humanity is at the centre of the cosmos, not in a self-appointed or self-assertive role, but in a dependent, caretaker role, for its' life depends on cosmic harmony being maintained. Nature is therefore not just an object but a tangible reality from which humanity derives its' sense of wholeness and well-being".

Juxtaposing these two views brings in the question whether the two groups belong to the same religious faith. Of course, they do but the reason for the apparently conflicting views can be found in one African wise saying which goes like *"If the only tool you have is a hammer, you treat everything like a nail".* It is not everything that requires a hammer. For some problems (issues) you need a hoe, an axe or a saw and a hammer may not do. All that the author is saying is that it was due to the ignorance of the missionaries or their unpreparedness to learn about their new environment i.e. Africa or both that led them to condemn the traditional values before even knowing what they actually condemned.

Turning now to the bible, Leviticus. 25:3 – 8 gives an equivalent of the African tradition of giving rest to the land in the form of land fallow/taboo days/closed season. So after all the principle is supported by the bible, the base of the Christian faith and teaching. Secondly, in Philippians 4: 8 the bible enjoins Christians to uphold things that are true (ethically), dignified, well spoken of …. . The author believes that if the early missionaries had taken the trouble to go beyond what was on the surface to find out what the real reasons behind those traditional values were they would have found them as something worth upholding.

With reference to Genesis 1:26 – 30, the author believes that being fruitful and multiplying, replenishing the earth and subduing it, and having dominion over the beasts of the field, birds of the air, fishes of the sea etc does not necessarily make nature a mere tool for human beings to use for their comfort without due regard to the consequences. The author is of the strongest conviction that it rather imposes, on humanity, a caretaker role as stated in the 1978 Yaounde report of the World Council of Churches. This is also in perfect line with the first guiding principle of the cosmological basis of the African environmental ethic which sums up as "everything has its' proper use". Note should be taken of the fact that the same bible that says be fruitful and multiply and fill the earth in Genesis 1 says that a Christian who brings forth children and is not able to cater for his family is worse of than an unbeliever (1 Tim. 5:8). This shows clearly that for every authority the bible gives to humanity it goes with responsibility.

Moreover, according to the Concise Oxford dictionary, replenish means fill up again/renew and this obviously means that humanity has a responsibility to renew and refill whatever resources it takes from the environment thereby ensuring the sustainable use of resources. Again the same dictionary gives the meaning of having dominion as having control. It is the authors belief that having control over nature also connotes

having responsibility towards it.

The Way Forward

Indigenous people have, over several ages, learnt to live harmoniously with their environment through trial and error. For the fact that they lacked the scientific research-based evidence to prove and support their prohibition of certain actions they resorted to the use of mystical powers associated with supernatural beings to ensure that the natural order that existed between them and the environment was not unduly disturbed. Particularly in the culture of most African countries, including Ghana, this was the most effective way of ensuring compliance at the time. After all there is a proverb by the Akans of Ghana, which says *"Ǫsebǫ de ne ho hu na ɛwɛn n'afuw"* (lit. the leopard protects its' farm through the fear people have for him). In the same vein, since the gods and the spirits of the ancestors are believed to inflict severe and frightening punishment on offenders their dwelling places are avoided for fear of obvious consequences.

People who break traditional rules regarding the TPAs are punished under local laws and sanctions. Offenders are often made to pacify the ancestral gods (religious sanctions) to avoid being visited with calamities such as sickness or even death; pay fine in cash or drinks (economic sanctions) or isolated by members of the community (social sanctions). All these sanctions are imposed by recognized local power structures in the communities. Interestingly, during the author's field interviews one respondent summed it up by saying, "we are prepared to obey the rules because they are made by our chiefs".

However, globalization and technological advancement is changing the world and its' culture thereof so fast. As a result there is the need for the scientific, economic and other real reasons behind these traditional prohibitions to be unearthed so that people in the communities who may not subscribe to the traditional religion may also have cause for which they may have to accept the TPAs and its' related dos and don'ts.

At the end of this study the following conclusion and recommendations are made:

- *TPAs provide evidence of how indigenous people, through traditional value systems, have been able to protect and maintain biodiversity despite the incessant attacks on these systems. They are embedded in the social, cultural and religious practices which need to be clearly appreciated, understood, and respected so that they can serve as the basis for any would-be intervention.*

Furthermore:

- *More studies should be conducted into the scientific/economic links between taboo days/fallow periods/closed season and restoration of biological vitality as well as the scientific/economic roles played by totem species in the ecology of the communities in which they live. The knowledge so gained should then be used to convince other members of the communities who may be of other religious persuasion about the need to conserve biodiversity.*

- *New formal conservation efforts in the communities should rather take advantage of existing informal conservation initiatives and build upon them instead of always being directed by Western models of so-called "biological hotspots".*

- *More case studies should be conducted to document traditional practices in the communities that support biodiversity conservation.*

- *Studies should be conducted into local power structures with the aim of using and supporting them to enforce traditional rules on biodiversity conservation.*

- Legal backing should be secured for other local structures involved in the enforcement of traditional rules relating to biodiversity conservation, which may otherwise not have such a backing.

References

Amoah, A. E. (1998). Tafi Atome Monkey Sanctuary, Graphic Showbiz Newspaper Article. April 30 – May 6, 1998.

Genesis. (1967). The Bible, King James Version, pp. 5 – 6, Chapter 1: 26 – 30.

Hagan, G. P. (1998). Traditional Laws and Methods of Conservation and Sustainable Use of Biodiversity. In Amlalo, D. S. et al (eds): Biodiversity Conservation: Traditional Knowledge and Modern Concepts. Proceedings of the Third UNESCO MAB Regional Seminar on Biosphere Reserves for Biodiversity Conservation and Sustainable Development in Anglophone Africa (BRAAF), March 09 – 12, 1997. Cape Coast, Ghana.

Leviticus. (1967). The Bible, King James Version, p 136, Chapter 25: 3 – 8.

Ntiamoa-Baidu, Y. (1991). Conservation of Coastal Lagoons in Ghana: The Traditional Approach. Landscape Urban Planning 20: 41- 46.

Opoku, K. A. (1993). Traditional Attitude Toward Nature in Africa. Inaugural Lecture at the Institute of African Studies, University of Ghana, Legon Accra.

Philippians. (1991). The Bible, Recovery Version, p. 915, Chapter 4: 8

Poku-Marboah, M. Y. (2001). The Role of Traditional Knowledge in Biodiversity Conservation: A Case Study of Southern Ghana. MSc. Environmental Science thesis submitted to the University of Turku.

Switzer, D. (1996). Tafi Atome Monkey Forest Sanctuary Primate Population Assessment Report, October 14 – November 30, 1996. Nature Conservation Research Centre (NCRC), Accra Ghana.

Acknowledgement

The author would like to acknowledge and thank the Turku University Centre for Biodiversity (TUCB), the Finnish Biodiversity Research (FIBRE) Project, and Profs. Juka Salo and Mari Walls who helped in various ways, including, paying for my air ticket to Ghana for the field interviews for my thesis from which this paper has been taken.

Footnotes

[1] Michael Yaw Poku-Marboah completed his MSc. in Environmental Science (TEMMPRO Programme) at the University of Turku in June, 2001. He is currently studying at the University of Helsinki.

North Star

There once existed a great fear among the Sámi that the world would fall apart. This fear still exists, in different ways. There must be a connection between the fear and the willingness to make offerings. This is one of the reasons why Sámi people used to offer a male reindeer to the North Star, in autumn. This sacrifice maintains the balance, keeping the world pillar from falling. The Sámi would carve a wooden worship pole, symbolizing the world tree. The wooden pole stands upright in a sacred place, smeared with blood. Sometimes, an iron nail is hammered into the other end of the symbolic pole.

Why is this so? Earlier, people envisioned the sky as a roof-like dome that had to be held upright and unmoving by a world column. In this dome, the North Star was a fixed point, around which all other stars endlessly circled, if you kept the world going.

Máilmmi Cuolda- The World Pillar

The World Pillar is a giant tree
It touches the Polar star
All the fortunes, all the shadows
are born in the nests

I climb up the tree
I'm going in
to seek
the shadows
first

The Shadow-bird
is watching me
Máttaráhkku
at the root of the tree
is helping me
on my journey
(From Luohtu- The Wild. Biret Máret Kallio. Áldá, Norway. 2001)

Cosmic Elk Hunt

Listen carefully to this dramatic story:

Kassiopeia, Perseus, and Vuoddji, among others, belong to the Elk constellation, in Sámi called Sarvva. The stars that are chasing the Elk are the gemini, Castor and Pollux. A dog runs between the twins. And Fávdna (Arkturus), shining nearby in space, is hunting the elk. One day, he hopes to shoot Sarvva, the elk.

There are many beliefs about Sarvvabivdu, the elk chase, or cosmic hunt. In some Sámi areas, the star Sirius is named Gallá. The Orion-belt contains three stars that are called Gallá bártnit, the sons of Gallá. Gallá and his children are also chasing the elk, Sarvva.

Johan Turi, a northern Sámi writer, tells us that the Northern Star holds the sky in place. But at the time of Armageddon, Fávdna shoots the North Star from the heavens, and the sky falls upon the earth, bringing all life to its end. The Russian-Sámi tell the story of Gollečoarveheargi, the golden antlered reindeer bull.

Mighty Diermmes, the Thunder, controls the storm skies. Diermmes is the size of ten giant fir trees. In one hand Diermmes grasps a rainbow, and in the other, a bow, and arrows of lightning. Space is filled with lightning when he travels and shoots his bow wildly in all directions. The sky is wide and is mirrored in earth's waters.

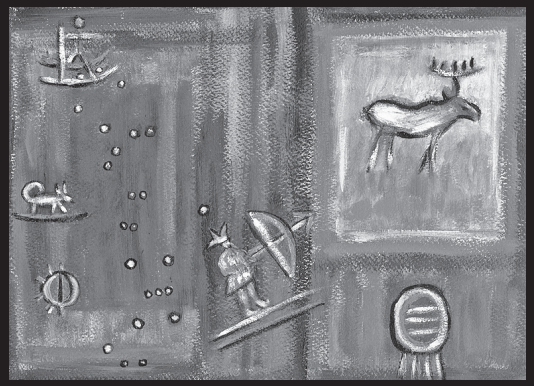
Diermmes charges across the skies, hunting, fishing, and running. His steps imprint the ground so heavily that the forests fall down, and valleys are born wherever he treads. And Diermmes' dogs run before him.

Diermmes chases the golden-antlered reindeer. The deer has a coal black head, a snow-white body, and, a radiant coat- shining silver. With invisible wings, the deer flies, soaring upon the soft winds of birds' free songs. This is Meandaš-pyyrre who flies through the air, eyes burning fire, and if you look at his eyes, they burn you. The sound of his movements is overwhelming, and one should not listen to his movements, because they make one deaf. The air that passes from his lungs makes you unable to speak.

Diermmes will overtake Meandaš-pyyrre. When Diermmes comes starts to come nearer, he sends arrows after Meandaš-pyyrre. When the first arrow strikes the golden antlered deer, the neighboring mountains fall down, crushed and crumbling, and rivers turn up-stream. The heavens become a desert-sky, and it will not rain anymore. The earth thirsts, oceans become barren and the lakes become empty. But the sun stays alive and continues to shine. This has already happened.

Then Diermmes sends his second arrow towards Meandaš-pyyrre and it pierces the reindeer between his golden antlers. When this takes place, mountains begin to boil, birthing new mountains in their place. The eternal ice begins to melt, and the areas of the North erupt in flames. This has also happened, or is taking place now.

Diermmes' dogs have Meandaš-pyyrre at bay. When the dogs attack the reindeer, and Diermmes has the opportunity to stab Meandaš-pyyrre's living heart, then the world will end. All stars fall down from the night sky. The ancient moon, Aske, who is hiding in the darkness, fades to black. Beaivváš, the sun, plunges into endless darkness, sinking into the remote depths of space. Huge flakes of ash cover the earth. Is this happening today? I trust your judgment, but I do not think so.



Draft Declaration On Traditional Ecological Knowledge Snow-change Workshop, February 2002 - Tampere, Finland

Indigenous Traditional Ecological Knowledge Is A Viable Source Of Information In Scientific Assessments On Climate Change And Should Be Recognised As Equal Tool Of Research

While the threat of global climate change has received a tremendous amount of attention worldwide, very little has actually been done to address the root causes of this change. This is in part because the majority of the earth's citizens have not seen any significant climate changes thus far, and may not see any until major ecological damage has already been done. The residents of the Circumpolar North, especially the Indigenous communities are already witnessing disturbing and severe climactic and ecological changes.

The United Nations Framework Convention on Climate Change and the Kyoto Protocol should be ratified as soon as possible. There is as well a need of an "Arctic Message on Climate Change", for example through the work of the Arctic Council and other relevant international fora.

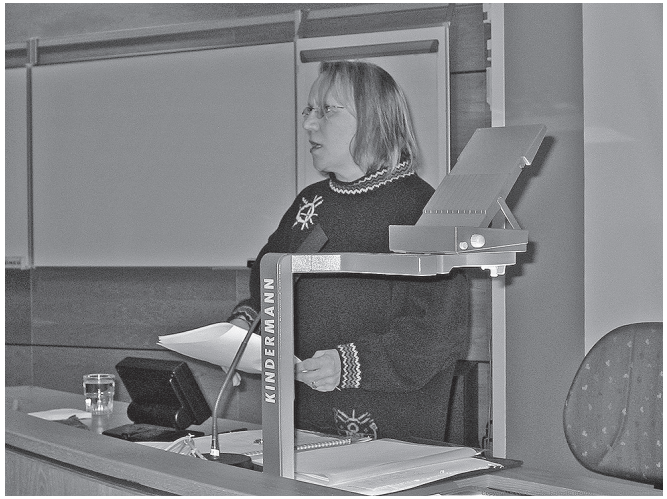
But more is needed. Our modern needs, the ways of spending and consuming will have to change. We need to choose again and choose well.

The changes threaten to increasingly undermine the North's ecology, economy, society and culture.

It is felt, that the Traditional Ecological Knowledge (TEK) and the First Teachings of the Indigenous Peoples of the World should be recognised as equal tools of research, methodology, assessment and observation in the global Climate Change work as the methods of the Scientific Community.

Traditional Ecological Knowledge has been discussed in various Indigenous fora. It is local, relevant and valid.

Traditional Ecological Knowledge is a system of knowledge that builds on generations of people living in close relationship with nature. Thus Indigenous climate change assessments and observations build on countless generations of knowledge, since Time Immemorial.


KINDERMANN

Traditional Ecological Knowledge carries within itself systems of classifications and empirical observations about the local environment and a system of self - management that governs sustainable resource use. Knowledge brings responsibility.

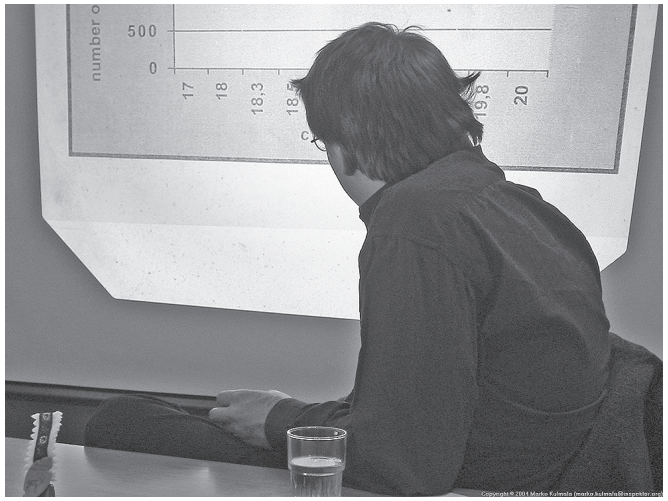
Indigenous Peoples around the world use the Traditional Ecological Knowledge, and especially the Elders of the different Peoples, the carriers of this vast system of knowledge, accumulate the Traditional Ecological Knowledge through direct relations with the environment on the local level. Traditional Ecological Knowledge accumulates and adapts knowledge in a holistic manner. It is a system of holistic ecology.

In the scientific assessment of the Global Climate Change, mostly only the western science data has been seen valid in the past. It is not enough. Regional examples, such as the work of the Arctic Climate Impact Assessment (ACIA) and the Mackenzie Basin Impact Study (MBIS) have shown good regional recognition of the validity of the Traditional Ecological Knowledge.

There is an urgent need to integrate the Traditional Ecological Knowledge respectfully, equally and responsibly with the Western Science to create a fusion of hybrid way of thinking and perceiving the relationship between human and the nature. Currently, such recognition of the Traditional Ecological Knowledge has not been made.

Various international fora, such as the Intergovernmental Panel on Climate Change and other forums are urged to validate the Traditional Ecological Knowledge as a recognised vehicle of knowledge in the assessment, research and other scientific work on Climate Change. More broadly, the same recognition is needed worldwide in all environmental and resource-management work.

There is a need of peace, power and righteousness in finding answers to the challenges of the climate change. The ini-



tial impacts of the climate change will be on the Indigenous peoples, and therefore there is a clear need for a direct participation to bring awareness. There is a need to develop an active, ongoing circumpolar Indigenous community-based monitoring network to share information and to develop local adaptations to climate change.

The representatives of the Snowchange Workshop feel that the urgency of climate change requires immediate action from the scientific community in multiple forums to recognise Traditional Ecological Knowledge as an equal system of knowledge.

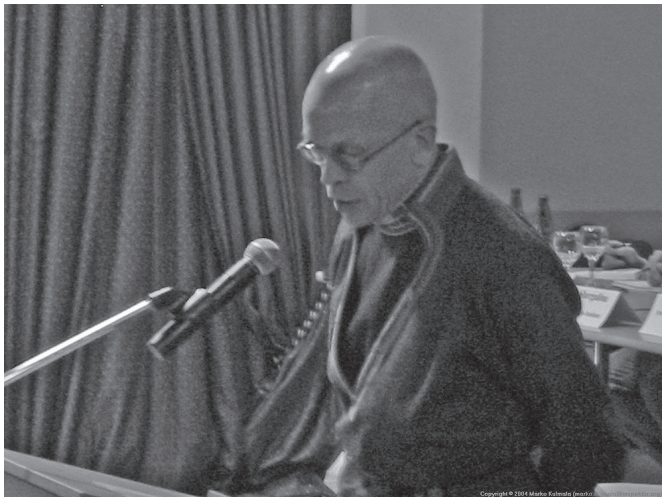
CONFERENCE DECLARATION SNOWCHANGE 2003

Indigenous Observations of Ecological and Climate Change 22-25 February 2003 Murmansk, Russia

As Arctic peoples have shown since time immemorial, life in the North requires flexibility. In the modern world, this principle applies not only to our physical and spiritual connections to the environment, but also to the legal, political, and economic circumstances that affect our lives. To maintain and improve our ability to respond and adapt to climate change, or any other environmental disturbances, we must preserve a healthy, resilient environment and create human institutions based on participation, and respect. This course means aiming not for maximum economic use of resources, but for investment in environmental reserves and cultural diversity.

The world is in an accelerating spiral of change and uncertainty. Participants at Snowchange 2003, representing indigenous communities from around the Arctic, shared stories of common experiences. Temperatures are warmer and the weather is now unpredictable; the sea ice is thinner and freezes later in the fall and melts earlier in the spring, winter rains create thick layers of ice on the tundra. Species that form the basis of our traditional lifestyles -whales, seals, reindeer, and many birds- are under increasing threat from climate change.

We do not own the Earth, we just borrow it from future



generations.

We, as participants at the Snowchange 2003 and representing a wide range of individuals and non-governmental organizations (NGOs), call on world leaders to replace the unrestrained use and misuse of natural resources with develop-


ЗОРИ
00, 289 504
Polarzor@dipois.mels.ru


(8152) 289 500, 289 504
Polarzor
Stefan Mikaelsson
Sami Council
Sergey Zavalko
Murmansk State Technical University
Tero Mustonen

ment that follows the principles of sustainability and respect for human and indigenous rights.

On behalf of our peoples, our children and in respect of our ancestors, we call upon responsible nationstates in general, and the Russian Federation in particular, as citizens of the global village and members of the United Nations who carry a responsibility to uphold international laws, ratified conventions and signed agreements, to immediately implement them.

We especially highlight the following actions:

- Ratification of the Kyoto Protocol by the Russian Federation to ensure its entry into force during 2003.
- The establishment of mechanisms for involving indigenous peoples when evaluating impacts related to transportation on the Arctic Seas, and extractive and industrial developments in the North.
- Ratification of the International Labor Organization Convention Number 169 concerning indigenous peoples and tribes in independent countries
- Securing rights and cultural interests of indigenous peoples in relationships to forestry, tourism and lichen-industry.
- The extension of an invitation to the UN-Special Rapporteur of Indigenous Peoples issues, Mr. Rudolfo Stavenhagen, for an official visit concerning the Sámi people on Kola Peninsula in Murmansk oblast.
- The incorporation of traditional uses on the land by indigenous peoples, including the hunting and harvesting of culturally significant species, into environmental protection plans.

The Snowchange process is one mechanism for providing indigenous peoples with a common forum for raising and discussing issues of concern to them and for sharing ideas for progress and improvement. Our future work and conferences will continue this effort, and we invite all who share our commitment and concerns to join us.

The Goahti and Goahti-dwellers

In the past, people would always sit in the goahti, around the fire stones, or fire. But there are other inhabitants in the goahti as well. One group is Máttáráhkká and her daughters. Máttáráhkká dwells under the goahti, Sáráhkká is under the fire, and Juksáhkká and Uksáhkká are near the goahti door. While sitting and tending the fire, people give gifts and worship to Sáráhkká.

Sáráhkká molds the body that grows around a child's soul inside the mother. She helps a mother give birth, and aids within the womb. Sáráhkká also helps with a woman's menstrual cycle. People offer food and drink to Sáráhkká. Sáráhkká is very popular, and is regularly included in most offerings; she received her part of all food that was eaten in the goahti: one should give her drink often. There are many stories about Sáráhkká. In Sweden, it is believed that Sáráhkká is not only the creator of children and animals; she created the entire world. In any case, she is the one with whom it is possible to discuss all mundane and spiritual illnesses.

Juksáhkká can make a spirit male, but she demands great gifts. Uksáhkká helps newborns. She protects the young from illnesses and keeps children from harm. Juksáhkká and Uksáhkká teach the young how to shoot and hunt, and Juksáhkká instructs boys in the necessary tasks of men. Boassuáhkká also resides under the goahti, in a sacred place, on the opposite side of the main door.

Sacred spirits dwell in the goahti. The goahti is not simply an ordinary living space and a place to stay over night in. The goahti is also a ceremonial place, a sacred site, and the center of the world. Through the goahti's smoke hole, you see the star world; the North Star; Basse Aske, the holy moon; and Beaivváš, the sun.

The Sámi move often from one place to another, migrating with reindeer herds and fishing in other places. Their center of the world moves with them, their home is dwelling in their hearts. And your sacred and spiritual life is also there, with Sáráhkká and the other male and female spirits. In the air or in the ground, the sacred spirits follow the Sámi wherever they go. The sacred life is forever with the Sámi as well.

But wait! Tell me, who are the dwellers in your goahti?

Bieggaolmmái

The wind and weather always affect Sámi life, such as fishing and hunting, reindeer herding, and berry picking. People believe that Bieggolmmái, the wind man, dwells on high mountains and rocks, controlling the weather and winds from these high places. Bieggolmmái, the wind-spirit, is known across the Sámi lands. He has been drawn in a very central place on some noaidi drums. This is reasonable, because Sámi people always need to follow the weather, attempting to know, and influence local weather conditions, in every possible way.

When Sámi were herding reindeer in the mountains, or voyaging at sea, they would worship and honor the wind-man. Then, Bieggolmmái would not put fierce storms upon them. Reindeer antlers and other offerings are left on mountaintops for the wind ruler. These ceremonies take place whenever needed.

The Sámi are gifted in stopping the wind and knotting the wind in ropes. One knot can hold an ordinary, weak wind. Another knot contains hard gusts. And in a final knot, a raging storm is leashed.

It is told that the Sámi can, in any case, rule the wind with Bieggolmmái's aid- especially the winds that blow on the days when a person capable of catching the wind is born.

Have you ever tried to trap the wind? I have.

Always Wanted

I always wanted to meet someone
with a self image rock-like
understanding my eyes
moving within,

always wanted
to meet someone
to give them the wind.

I always
wanted to meet someone weighing words
dreaming life's feathers
seeing birch-covered hills,

in heart wind and swans' wings
I hear juoigan
in the spirit sky colors' sounding
the Northern Light's joy
and ptarmigan chatter.

Dream seeing where to go
then give
on stony mounts wind knots loosen.

Bieggolmmái forgets not
to birth
stay well and leave well
with hand greetings return.

and I awaken him
caught
to the sky mooring fastened.

I always wanted to meet someone
always wanted
to fasten words to sky and skins
always wanted to meet
the light one who warms others.

south of Beaivváš on stony heights
finding and feeling
upon red-stone-heights alight
I meet
the releaser.

Basse Aske

Basse Aske, Sacred-Mánnu, the moon, is special to the Sámi. Basse Aske is the moon that rises near the winter solstice. During the winter, it is the moon that provides light to live, migrate and work by. Basse Aske helps to lead the reindeer herds during the dark-time.

During the time of the Sacred-moon people must be cautious, so Mánnu will not drive the reindeer through the night. A reindeer yoked to Mánnu is very tired in the morning.

To honor Basse Aske, a moon ring is made, through which Mánnu's soft light shines. The moon ring is hung by the goahti's smoke hole or door, an invitation to Sacred-Mánnu to come and give light, softening life.

Traditionally, people hang food-offerings in trees. When the new moon appears, one is forbidden to make noises. When it is cloudy, you may fashion a wooden ring with a handle on it. Hold out the ring, and Basse Aske may shine through.

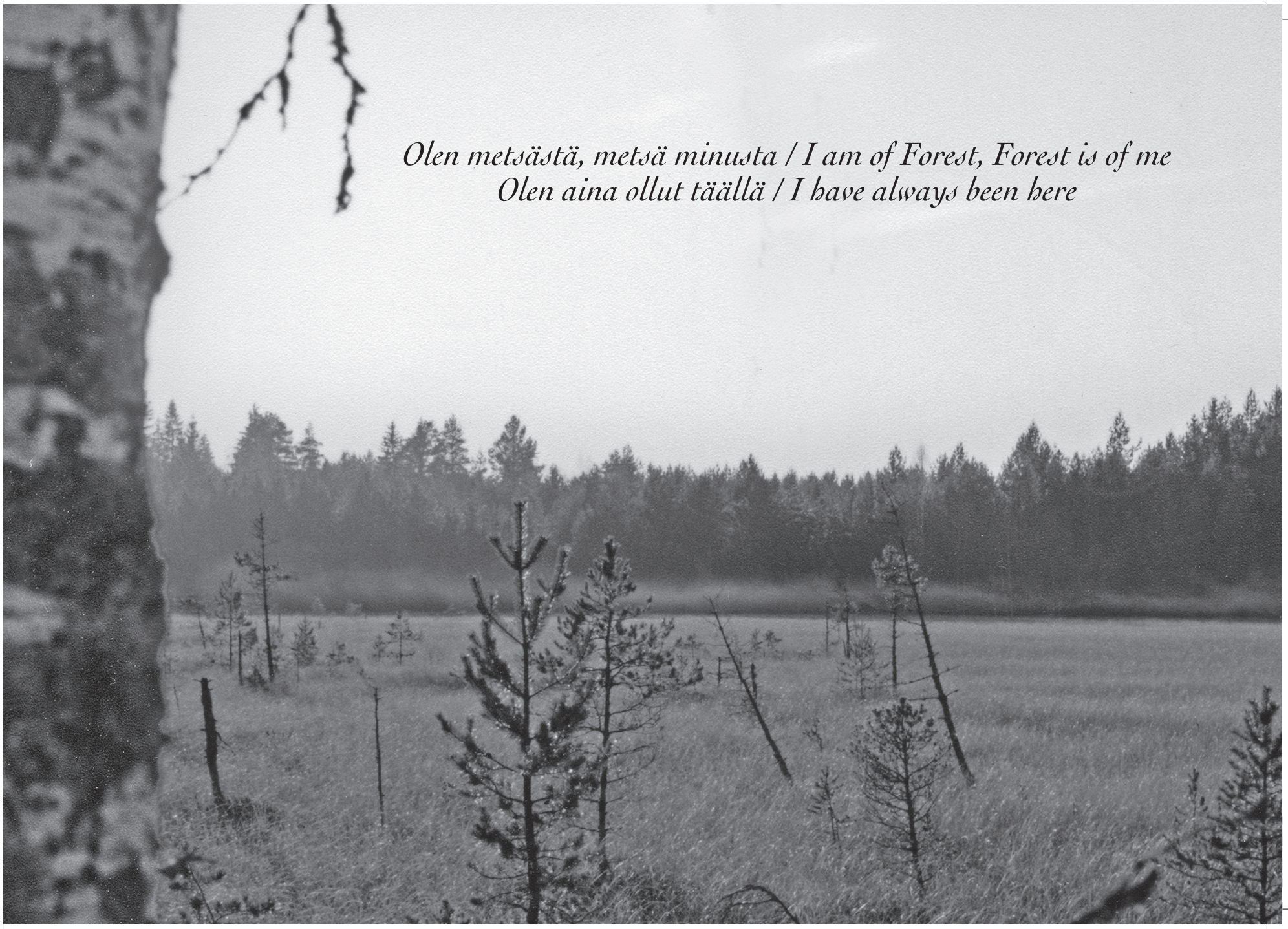
In some Sámi areas, a young reindeer calf was sacrificed to Mánnu, the moon, already in early winter. In December, reindeer furs would adorn the outside of the goahti, in honor of the Sacred-moon. In February, moon rituals were conducted, such as the offering of shoe-hay. It is believed that shoe-hay is Mánnu's food. These ceremonies would partly ensure the health of next season's reindeer calves, which would be born that coming spring.

During the next Basse Aske time, spend a few moments with the moon ceremonies. Perhaps you will get a sense of what the Sacred Moon is about.

Lunar eclipses used to deeply frighten people. People would chase away the spirits tormenting Mánnu, and then offer Basse Aske gifts, pleading with her to shine once again as always.

Still today, food and reindeer meat are offered to Basse Aske. But, it is unclear who conducts these ceremonies, how many they are, and precisely where this happens.

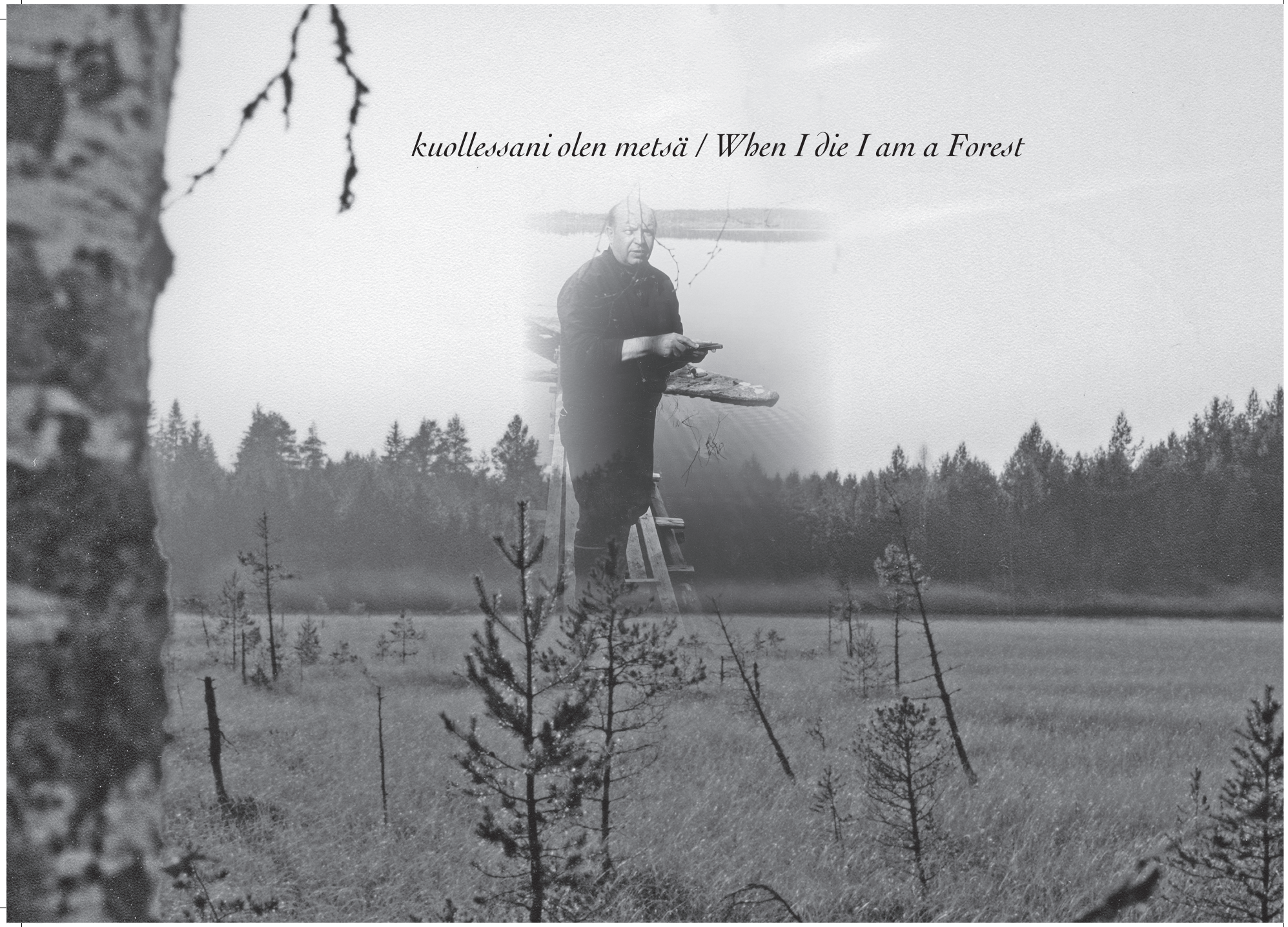
Muutoksen lumiunia - Dreams of Snow Amidst Change - Ramblings For A Post-Colonial Arctic



Olen metsästä, metsä minusta / I am of Forest, Forest is of me
Olen aina ollut täällä / I have always been here

Syntyessäni olin metsä, / When I was born I was a Forest

kasvaessani olin metsä, / When I grew up I was a Forest


kuollessani olen metsä / When I die I am a Forest

Words above come from a book of poetry I finished last year. I come from a culture that has the largest documented oral history project in the world. *Suomen Kansanrunousarkisto - Collection of Folk Poems of Finland.*

This collection hosts millions upon millions of lines of worldview, ethic, sacred ways and knowledge recorded over a period of 200 years. It formed the basis of a book that a Christian Doctor of Medicine Elias Lönnrot compiled in the 19th Century when we thought we needed a book, a national epic. This is how *Kalevala* came to be. Lönnrot documented fishermen, hunters and shamans in the White Sea Coast of Karelia among tribes that had a strong relationship to the Finnish communities further South and West.

This thrill of *'discovering'* something that has been always there and remains there led to the increase in value in the book form of Kalevala. This conversion from oral to written brought our oral traditions to a brink of extinction. Rune singers died, remembered, but poor. It has taken us 100 years to re-discover things that have been thought lost. We ourselves became different in the process as well.

Stories and creation events of our oral histories received as well a strong Christian element into them when Lönnrot wrote Kalevala. Some of the histories already had this cultural flavor in them due to the centuries of influence of different outside religions such as the Russian Orthodox Church and the Lutheran world view. Today both are state religions here. Authors like *Juhani Aho* in his book *Panu* have explored this process of conversion from oral to written, from 'Pagan' to 'Christian'. Many people are interested in these issues even today.

This archive of documented oral histories and peoples 'knowledge is at www.finlit.fi, the Association of Finnish Literature in Helsinki. Any person can without a cost see and read our stories, miles of bookshelves filled with knowledge.

What happened since? Kalevala became a book, a tool for nation-state building. Children were made to read Kalevala, not to live life. Public schools and churches convinced people that there are needs, needs to be 'decent, civilized, well-behaved, European'. Some of these events were needed. There is no point to sit here and write whether decisions that were made life times ago were 'good' or 'bad'. We must look forward. We are what we are today. We have our Elders, we know what knowledge we have possessed.

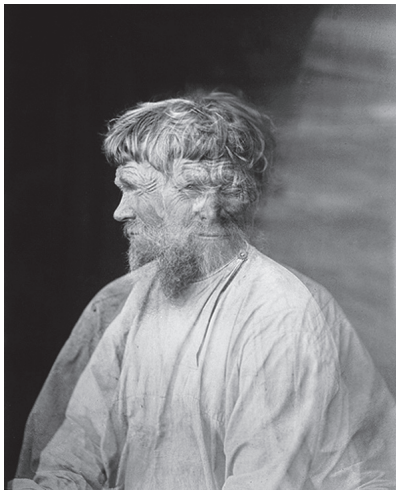
This knowledge and these poems that some people consider sacred knowledge and others 'folk lore' almost died when they became written. People stopped believing in the power of oral histories and systems of knowledge. Nokia Company has an ad - *'Connecting People'.* I believe while owning a Nokia that we have grown more estranged and apart today than ever before from our connections.

Like it has been said before in the past 40 - 70 years our territories have seen a transformation from small communities of farming, fishing and hunting into industrial suburbias and city life that never grew here very well.

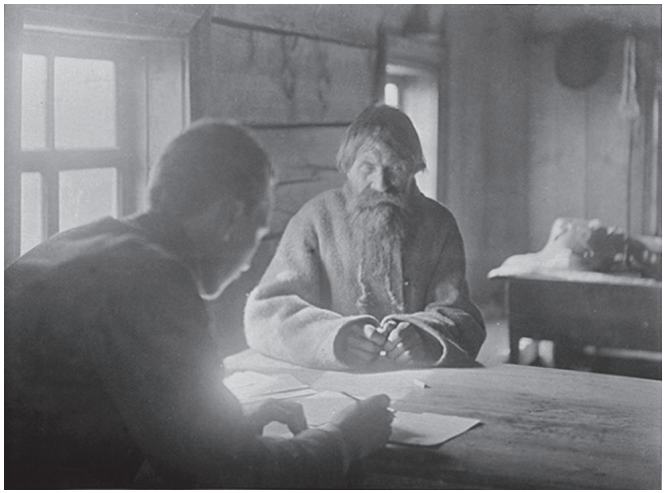
Our language is facing tough times despite the fact that it will 'survive' this form of economic globalization. But what kind of survival will it be? Windows Office[tm] in suomi language? That is not surviving, it is surrendering. Loss of words and ways of interacting with nature is of immense proportions at the moment. This is the root cause of the spiritual crisis that we witness today. It is nothing more complex than severing ourselves from a relationship with nature.

This process of self-colonization represents a direct attack on our cultural roots and language. It is said that languages adapt and change over time. I agree. However it is the communities that can influence this process, take an active role in the change. We can try to adapt to the changes of outside tools and new processes but we have to remember at the core of who we are to retain this consistency with the past and

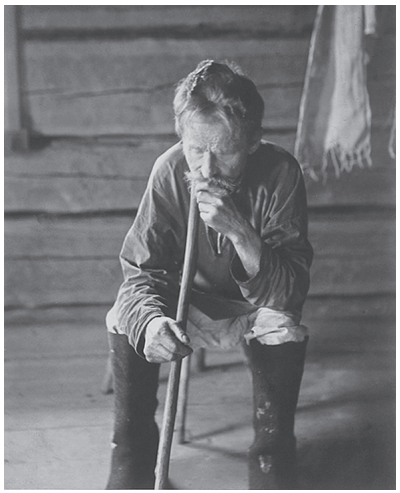
© I.K. Inha / SKS / Juminkeko archive



© I.K. Inha / SKS / Juminkeko archive



© I.K. Inha / SKS / Juminkeko archive



© I.K. Inha / SKS / Juminkeko archive

everything it entails.

We have already destroyed the Sámi dialects of our country through a process of belief that we know what is best for a people that knows it much better themselves. They have always known this.

The Internet words and English represents the worst threat to our way of singing the world into a being. It is a form of cultural warming that is connected to a larger process of climate and ecological disasters that humanity will face. We are not alone in this process but our language is unique. It is only we ourselves that can influence this wonderful language.

If we are to do something about accelerated climate change, this crisis of economic forestry that leaves our last places of power empty of spiritual contents and highways and urban housing construction that destroys *pirkanpalkinen,* extremely rare form of water insect that is only present in Hervanta in Tampere region we have to take a pretty hard and long look into mirror. This takes courage. This is how it all began in 1999 for Snowchange.

Challenge

Sure we heard of climate change for many years. It caused great concern among us, across the North and the Arctic. In the beginning some good people were around. I think they have been always around. Jyrki Terva. Marjukka Dyer. Mika Flöjt in a sauna in Yukon owned by Esa Ekdahl. Alexey Cherenkov. Sergey Zavalko. Ville Kurki. Amanda Bedard. Paavo Tulkki. Curtis Rattray. Taiaiake. The fishermen. Grandmothers and Grandfathers, Mothers and Fathers, Families, Elders. Mika Nieminen. Mikko Lamminpää. Juha Jämsä. Theresa Neel. Kaisu. Peter 'Arctic Aussie' Hardy. Norm Snow. Elina Helander. Marko Kulmala, Magician of Internet Worlds. Jukka Arstio, the drives of the 'Magic Bus'. Stefan Mikaelsson, the big Sámi Potato. Peter Such and Joyce. Jackie Price. Henry Huntington and many, many more. You know who you are.

While I will not mention more, there were lots and lots of good people around who were concerned and supportive of ideas that were bouncing. The air was electric with ideas, learning, hopes. We hoped to create new style of education [of Environmental Engineering and Ecology] and partnerships in the North. Something that would merge the local with the larger context in a 'post-colonial' way. Something that would respond to climate change effects and concerns in a positive and constructive way. With education, sharing and respect. Something that would empower people - *Let them speak!* we said.

Response

Fast Forward to Murmansk Region, September 2001. 10 days after New York and Washington have been hit with planes. We have just lost 400 litres of diesel from a damaged tank of a student bus inside the biggest military region in the world - the Northern Fleet base of Russia.

True environmentalists one might say, polluting Russia. The spill was an accident but the response was an attempt to make things better. Before that they got worse. It was somewhere between crashing, falling support pillars of the bus, the 5 Vodka bottles that was the price of a repair in a military depot and the General of Northern Fleet with his brand new BMW that we knew the students would come out of this with great memories and stories. I think that it was in the sauna on Lake Inarijärvi when we started to breathe again. Magic moments of Snowchange.

Students during this 'crisis' never screamed, they always took part. Snowchange would have never become the four

years of work that it was if not for the students. Thank you - Kiitos! Students in Iceland, Canada, Russia, Finland, Sapmi -all these places took action, such as online courses, excursions, samples, interviews, organized conferences, collected big environmental prizes to make the world a better place.

As well, Elders, community people, universities and research organizations, scientists, all sponsors, WWF International and Finland, Ministry of Environment, Sámi Council, tribal organizations and others - your voices have been heard and help much appreciated. Thank you so much!
All mistakes in this book are solely the responsibility of the editors. We are sorry if information has been misrepresented. All efforts were made to insure a proper code of conduct and good representation. While not all people in a community would feel 100% same of what is here we have tried to convey real events and observations.

No work is possible without support. Through tough and good times, one person has had faith and provided strength in our work. She is Marjukka Dyer from Environmental Engineering, TPU. She is behind much of the magic of Snowchange. As this stage is ending she deserves all the credit and will continue to provide unparalleled education of environmental issues in Tampere Polytechnic over years to come.

Outcome

This is yet another book. It is not the knowledge - far from it. But we hoped to present a voice, a place where Northern people and others could speak. People came and they spoke. We listened. All the endless discussions on traditional knowledge are needed, but as we have learned we have to live it. We - people of the North - have to live the knowledge to understand it. Books are not enough. Some students on the field became fishermen, part-time reindeer herders and hunters. They lived the life. No book in written form will ever be able to convey these events, meetings and moments.

In August 2002 a Snowchange student delegation led by Marko Kulmala, 'vice-chief' of Tampere operations, was invited to attend a Medicine Wheel Ceremony of First Nations of BC, Canada. A lot of healing was done. Elders in BC in April 2004 were still talking about 'that nice group of students'. To me this represented a new world, a post-colonial world that is possible if we have the courage to live it, to do life and yield to nature.

Spring 2004 marks the end of this stage of Snowchange under Tampere Polytechnic. This book is the conclusion of thousands of miles of travel and efforts by many people to take action. All the voices will be kept in a new-style cultural archive of Snowchange that will be built in 2004 - 2005. These voices will be available to communities, students, researchers and all who want to listen and learn. I want to thank in the end my co-editor and teacher Elina Helander for everything so far. And Kaisu, my wife as well.

There is something in the air - *ilma*. There is no beginning and no end in the lives of the Northern people. Circle unfolds. The wind carries new messages. It tells of new places, new dreams. I can see the nuotta boats on lake Näsijärvi. There is talk of a new meeting in Anchorage, Alaska in 2005 or 2006. Ghana? Who knows...First Nations of BC want to visit Finland in 2005. Swans just flew overhead. Wind carries many news, whispers of.....who knows...maybe of a change.

April 18th 2004 in Tampere, Finland

Tero Mustonen

Weather

Stuorr-Antt Anna was a diehtti-noaidi (shaman) from Inari. She lived by Idjajavri, the Night Lake. Her father was Stuorr-Ante, who was also a diehtti-noaidi, who had in his lifetime also killed a Stallu. A Stallu is a spirit figure that enjoys fighting with the Sámi people. Anna had received all of her shaman abilities and know how from her father.

Anna lived all by herself in a goahti, an earthen hut, on a little island; and there, she sustained herself by fishing. She had her own sacred rock near the islet, and she gave sacrifices there to her stone god. She could change the bad weather, and for this reason, the reindeer herders living nearby needed her help. She alone lived on the island, and worked there, practising shamanism and magic. Visitors seldom came by. One summer day Anna was about to fetch water from the Night Lake, but died alone, as she always was, and her body was found one week afterwards.

As I already said, Anna was regarded as a shaman, and there are stories about her. Here are three stories concerning weather change that involve the shaman abilities of Stuorr-Antt Anna:

Snowstorm

Stuorr-Antt Anna took a mouse that was alive, tied it up with iron wires in a tree, and left the mouse there, bound, until it was dead. After the mouse had died she buried it under a snowdrift and drew a cross upon the snow. When this was done, Anna poured hot water over the burial spot in the snow, so that as the snow grave melted, the mouse came into sight.

Then Anna made a fire and put the mouse on a piece of wood and placed the wood in the fire, after which she uttered these following words:

"Now I will burn this dead mouse so that the ruling spirit of the sky may stop the clouds and cease the snowing."

After she had pronounced these words, Anna took dried mosses and threw them upon the flames, so smothering the fire, and only the smoke was left rising. Then she took a tail of a cow (sometimes Anna used a piece of a rein in place of a cow tail), and said:

"Now I am holding a ruler of the weather in my hand. Therefore you have to cease snowing so that I don't need to prepare another offering for you."

Cold weather

Stuorr-Antt Anna fought cold weather like this. She started by taking fungus from a birch tree, and boiled this fungus. Then she heated up a stone in her goahti until the stone glowed red. Anna then took the stone out of the hut and placed it on a piece of wood. She took the birch fungus and placed it on the stone. Anna also had a curved, bent wand with which she hit the fungus. While slapping the birch fungus she recited some magical words:

"See how the cold weather is softened!"

Then Anna went to a spring, searching after a frog, and once she found a living frog, she placed it upon the hot stone. When the frog jumped away, she declared:

"Stuorr-Erke, Stuorr-Erke, the frozen one, don't nip my nose anymore! You see now that your offer did not stay on the

stone!"

After all of this was completed, she took a dead mouse and placed it on the heated stone, sitting on her knees, staying and watching there until the hair of the mouse burned away. And then she said:

"You see how the gift for mild weather is smoking. It does not cease smoking as your gift did."

When the offering ceremonies were finished, Stuorr-Antt Anna carried the stone with the mouse on it into her goahti and left it there until the cold weather became milder.

Rain

Stuorr-Antt Anna took grayling intestines and cut them. Then she searched for mussel shells, and when she had found five shells, she caught a fish and drew out its intestines. After that she placed the mussel shells inside the fish and boiled the fish in a pot. When the fish was ready and well cooked with the shells fastened inside, she poured off the fish-bouillon. Then Anna took this fish and went to her fish sieidi. There she prayed to her fish god and promised fish to him if he would bring the rain. Afterwards she took the fish to the shore. Upon the shore she felled a birch tree and using her knife, fashioned an angle in the other end of the tree. Then Anna threw the cut wood into the fire. When the freshly cut birch became warm upon the open flames, it started to steam. And she said:

"Oh my god, you who are one of my friends, you see, how beautiful is this offering I am burning. I do this in your honour so that you would send wet weather, so that the days will be much like the steaming offering is now, and the springs will be moist in the same way!"

Then she took the fish and threw it into the spring. Afterwards she went to her fish god and said:

"Now I have finished my offering, and I hope that you will create cloudy days, but if you don't hear my prayers and promises, I am not going to trust in you anymore as long as I live."

MYTHS, SHAMANS AND EPISTEMOLOGIES FROM AN INDIGENOUS VANTAGE POINT

ELINA HELANDER

1. What is myth?

Interest in mythology, as well as in shamanism, is increasing. This interest partly results from the current world-condition, a world characterized by war, poverty, the threat of nuclear disaster, pollution, advanced endangerment of biodiversity and life, the 'death of god,' and other factors both caused and experienced by modern man. It also depends on the epistemology of the modern man, an approach that separates man from nature. Many people hope that myths will give answers to questions that are troubling them during these late-modern days of turmoil and change, thus freeing people from their burden of a mechanistic and dualistic mind set.

According to Campbell, the meaning of life is to exist,[1] and people are searching for the experience to live. Many people do not know why they exist. [2] In their daily lives, people often search for explanations for their existence, for problems to solve, for the thoughts and plans of gods, for certain truths to emerge. While searching, people do not necessarily search for meaning and truth in the forms of reasoning and the rational world. Instead, people turn towards myths and traditions that continue to influence their lives century after century. Due to the multidimensional and open character of myths, myths are able to give answers that modern knowledge systems cannot afford. In postmodern times and beyond, myths help to stretch the boundaries of the prevailing worldviews and modes of thought. Reality itself becomes stretched. Traditionally this takes place through dreams, visions, story telling and shaman journeys.

When Black Elk told John Neihardt a Sioux Indian story about White Buffalo Calf Pipe, Black Elk said, after finishing the story, "This they tell, and whether it happened so or not, I do not know, but if you think about it, you can see that it is true."[3] The Sámi reindeer herder and author, Johan Turi, wrote a book so that Swedish authorities would better understand the nomadic ways of the Sámi. Turi wrote and published stories about reindeer herding activities, shamanism, healing, religious issues, women and children, underground spirit and wolves.[4] Turi relied on the fact that a story contains potential for increased understanding. Turi also understood that there is immanence in a story, containing both information and critique at the same time.

According to Anna-Leena Siikala, the borderline between myth and reality in traditional cultures is unclear,
espcially in comparison with the picture of reality found in the modern Western mind. [5] This seems to be an idea coming

from the Western split. Myths have a foundation in and a close connection to an empirical external world: the thunder, the sun, and the bear really exist. Myths also have a connection to the world of spirits.

What is a myth in the Sámi context? Sámi mythology is a local expression of a larger pattern of ideas, knowledge, visions, beliefs, rituals, spheres, stories and symbols. 'Classical' Sámi mythology, which was presented by Friis[6] refers to a concept with a very broad content, including the myths and stories concerning gods, shamans, spirits, supernatural beings, rituals, and sacrifices. The myths of the present are exactly as they are visualized, perceived, and practiced in the present. Generally speaking, today's mythic images are constructed on the basis of previous myths. For example, the traditional Sámi yoiks and poems can be understood in this light. But nothing hinders us from renewing old myths. Sámi mythology is not just a collection of stories and songs from the past, and it is not merely a believable theory, far removed from life. Sámi mythology is something very much alive: it is felt in the body and mind, continuously changing, expanding and renewing itself. A Sámi expert, Biret Máret Kallio[7] avoids using western terms when talking about Sámi mythology.[8] Western concepts may trap the indigenous mind if one is not attentive and suspicious about them.[9]

We have to see myths from different levels and angles of existence. Myths in the Sámi cultural context are patterns and ways that are measurable and easy to observe. Sámi myths also have other aspects and a deeper meaning, a dimension of depth that is less easy to grasp or observe. For instance, when a shaman or healer is active or present, then the depth dimension is open. Many myths, tools and rites connected to shamans and healers allow for an alteration of awareness and knowledge-based consciousness.

Myths help to maintain cultural realities. As Janice Acoose states, "Despite 400 years of cultural invasions, Indigenous cultures have survived, and are very much alive, in one way, through the mythology." Acoose continues, "During those invasions, however, the mythology went underground and consequently contemporary Indigenous peoples' spirits are infused with it."[10]

Regardless of how we choose to define myths, the myths are available to us. When we need them, we learn to know them. To know the myths is "to make them reappear when they disappear."[11] One of the disappearing myths within Sámi circles was a poem about the children of the Sun, 'The Son of the Sun's Courting Journey to the Land of the Giants'. This poem was written down and told by Anders Fjellner (1795-1876), a southern Sámi priest from Härjedalen in Sweden. Fjellner told that he heard this poem in different geographical and language areas of Swedish Sápmi[12].

Regardless of the origins of the poem presented by Fjellner, I regard him as the recreator of a great myth within Sámi cultural circles. His writings renew and cast light on the Sámi traditions still alive today. The sun is very important in Sámi culture. There are many stories about the sun and his children among Western and Eastern Sámi, and in many Sámi shaman drums the sun is placed centrally. In addition, there are many stories about the sun clan Päiviö/Vuolab.

Louise Bäckman is a southern Sámi and professor. As a result of her scholarly research activities concerning Sámi religion, Bäckman can be regarded as a modern mythmaker, influencing the lives of contemporary Sámi. In her article in this book, Bäckman writes that the Sámi noaidi (shaman), as an expert of mythology, is traditionally the 'stabilizer' of Sámi society.

Actually, the shaman myths served four main purposes within traditional societies:

1. Psychologically, myths provided the individual with a path through the various stages of life.
2. Sociologically, myths enforced and maintained a specific

social and moral order.
3. Spiritually, myths linked waking consciousness with the mysteries of the cosmos.
4. Epistemologically, myths provided understanding and explanations to nature and natural phenomena.[13]

At the age of fifteen, on a clear winter Sunday in Utsjoki on the sacred mountain 'Ailigas,' I saw a beautiful, huge reindeer herd, belonging to a group of spirits called 'Gufihtar' in the Sámi language. Such a herd is a gift from the spirits, and the sight of it was and still is a great honor. The image and the reality behind it serve without doubt all the functions mentioned above. I later interpreted the event as something being an intrinsic part of me, and myself being an intrinsic part of the event.

2. The renewal of mythic stories

Nils-Aslak Valkeapää (1943-2001) was one of the great mythmakers or myth re-creators among the Sámi of our time. Some Sámi regard him as a shaman. Shamans have always been the ones who, through their knowledge and activities, transferred myths from the past through the present and into the future. Valkeapää was born in Karesuvanto, Finland, and was an internationally known artist, musician and writer. Searching for new expressions in art, music and poetry, he spoke for the necessity of cultural development based on traditions.[14] Valkeapää used old myths, songs, and drum symbols, and by modifying them, Valkeapää gave the older material a content and context resonant with the contemporary situation of the Sámi. His book, 'The Sun, My Father', is perhaps Valkeapää's most important work from the vantage point of mythology. This book shows clearly that through myths our ancestors share their wisdom with us.

Valkeapää's work has helped many Sámi to enter the collective dream state, leading them both individually and collectively towards the enforcement and maintenance of Sámi identity. His work has enhanced cultural self-awareness and dynamics among the Sámi people and guided many individuals to the key elements of Sámi traditional culture.[15] Valkeapää´s work also reflects, in part, cultural-political resistance against the powers of colonialism.

In this way, we actually are able to, and should, recreate and renew myths that address the life and problems of our time. It seems to me that Sámi myths and other indigenous myths help people to see that there are many worldviews and many stories to learn. Myths can also help to establish a new epistemological paradigm intrinsic to the development of the contemporary human mind and the world situation at large.

It has become obvious that the existing world view of modernity is self-destructive, mechanic, anti-ecological, severed from nature, rational, oppressive, plundering, and capitalist-based on masculine thought. These aspects of modern man's condition function as the powers of chaos, threatening the maintenance of life on earth, and threatening the cultures and epistemologies of indigenous peoples. Many ask questions similar to those posed by Starhawk,[16] "How do we find the dark within and transform it, own it as our own power? How do we dream it into a new image, dream it into actions that will change the world into a place where no more horror stories happen, where there are no more victims?"

In this context, many thinkers value indigenous knowledge and culture, and are prepared to listen and learn, and "cleanse earth and sky".[17] Jurgen W. Kremer presents concrete steps in his book, 'Looking For Dame Yggdrasil', for the process of integrating modern and tribal minds.[18] As Kaarina Kailo notes in her article 'Technology and Globalization: the threats to ecological balance,'[19] Kremer's solution for white man's dilemma is a change of epistemology. Many people seek for their own history and tribal ways in myths. According to Kremer, the meeting place for the tribal and

modern mind is "the participatory process which all humans are capable of."[20] He advocates for intentional participation in the world of phenomena.[21]

Many people in modern mainstream and indigenous society are still preoccupied with their personal journeys, trying to heal and emancipate themselves from unresolved personal or family traumas. Many go through a spiritual development. After this development, people have a need to become conscious of and re-establish a contact with their own tribal/societal collective and natural environment, thereby helping to continue the healing of our planet and nature. Jurgen Kremer, in his book about Yggdrasil, talks about the re-tribalization of people of European origin.[22]

3. Shamanic knowledge

Shamanism is a very central cultural-ecological factor among northern peoples. Sámi shamanism is connected with the myths of Sámi people. The inner world and thoughts of a shaman find expressive voice through songs, drum symbols, and (descriptions of) their rituals, activities, experiences and dreams. The list could be made longer.

The Sámi shaman is a nomadic knower in the sense that coming-to-knowing takes place in many different ways and situations. Shaman thinking and knowledge is one art of mythology.[23] Mythic images can be seen, visualized, described and experienced as concrete phenomena. The mythic 'language' is open-ended and filled with an endless resource of symbols and metaphors. A shaman learns to pay attention to symbols, signs and coincidences. Moreover, he or she has to know how to give meaning to mythic images and symbols, as well as comprehend the interdependence between different images, symbols, phenomena, and events. This understanding of deeper truths and mysteries, and wholes instead of pieces, oftentimes relieved as relationships, refers to the mundane as well as the spiritual world. The cultural tradition, concepts and ways of interpretation help a Sámi shaman with this task. Here is a story that gives an example of how one can see things in terms of symbols:

There once lived a young Sámi woman named Saava[24], who lived with her parents and two brothers in an earth hut called a 'goahti'. Saava was a noaidi with shaman-knowledge. Not far away lived another family who had two daughters. Now, the mother of this young noaidi wished that the two girls from the neighboring goahti would become her daughters-in-law. Saava's father had gone to the family herd to fetch a reindeer, and soon came back from the wilds with a reindeer that he was aiming to sell. After they had slaughtered the deer he left their camp with some pieces of meat for selling. In the meantime, the mother started to make blood sausages, and Saava made coffee for her father to have when he returned.

What happened then, is that the two daughters from the neighboring goahti came for a visit, and Saava's mother offered them coffee to drink. Saava became angry with this and said to her, "Don´t dare to give them my coffee! And, by the way, don´t expect them to become your daughters-in-law." After a while, the father came home, and because of his great tiredness, he went straight to bed. The mother and her daughter went out to take care of some things and when the mother came back she saw that two goats were inside their goahti. The goats had eaten her sausages! She shouted to her husband in irritation, because he had done nothing to hinder this. But Saava said to her mother, "You have to understand that these are not real goats! Now you can see, what kind of daughters-in-law you were about to have!" (Those days Sámi did not have goats of their own but they had seen them in the settlers' places.)

With these words Saava made her mother see that she had transformed the two girls into goats in order to reveal their

true nature. She wanted to appeal to her mother's culturally learned ability to think and act through symbolic formation. In her area, a goat reflected people with cheeky and poor character. For Saava, a goat as a symbol was a reality that one could participate in.

In the world traditionally known by the Sámi people, there are at least three layers of the world: (1) the realm of the heavenly deities, (2) the middle (human-animal) realm and (3), the realm of the dead. The drums found in Finland bear witness to the belief of a three-tiered world. According to the Sámi way of seeing, these realms are filled with life and spirit. A noaidi knows and partakes in all these realms. In special occasions, using controlled ecstasy, he or she fetches information from these realms for the public good. The interconnectedness of humans with the different realms of the world and modes of life is expressed through magic ceremonies.

Many shaman insights come into being in a state of solitude. For instance, Sioux Indians search for a vision in a private ceremony in the solitude of the bushes. Sámi shamans also search for quiet places. Mikkel Gaup, a Sámi shaman and healer, told me in an interview from 1993 that he regularly walks alone in the wilds. An Iglulik shaman, Angakkuq, receives his ability to see while in solitude. An indigenous scientist, Pamela Colorado, claims that Native spirituality and knowledge is connected to quiet places.[25] This allows the unknowable to be present.[26] It is "a free-fall into possibilities that are particularly challenging for a person schooled into complexities and linear mindset of the Western paradigm".[27]

There are different levels and modes of altered states. Dreaming, a type of altered mind state, is one method for gaining shaman knowledge. According to the Sámi tradition, it is very important to pay attention to dreams. For instance, the name of the child was, and is, often received from dreams. Even today, some healers become aware of their abilities, knowledge, and calling through dream states.[28] Hunters and fishermen attain relevant information by dreaming as well. Some Sámi see in dreams which fishhook should be used, where the fish will bite, or where the elk will travel during hunting season. Some traditional singers get songs through dreaming. Dreams tell us about future events, they give guidance and provide answers to questions.

Shamans have an ability to integrate into everyday reality the knowledge learned from lived experiences in altered states. Dreams are also integrated into the ordinary consciousness of daily life. Everyone can do it. Many times people act in the same way as the figures of their dreams: they start following their dreams. When a Sámi handicraft woman, Vigdis Siri dreamed about a wooden eagle with a human carved on it, and a sun made of wood, this dream took her on a journey, a journey that was very modern in its flavor, but still comprised of something old and eternal. She read lots of books and did much thinking until she found an answer that was acceptable to her as a Sámi.[29] Siri´s comment on her own dream is that it showed her, once again, the strength and the richness of her own heritage. [30] The dream, based on an ancient Sámi myth about the eagle and sun as sacred beings, functioned as a hidden place deep inside of her. The truth or knowledge, something to be taken seriously, appeared through the teachings of her dream.

Especially in old days, Sámi shamans had a drum that was used as a vehicle for achieving trance, i.e. ecstasy. Through trance a shaman enters into active relationship with spirits. Many researchers express the idea that Sámi shamans primarily used to gain special shaman knowledge and information while in trance. Consequently, an altered state of mind would be a precondition for shaman knowledge.

But it is evident that shaman knowledge, also in the Sámi context, is not dependent only on the ecstatic experiences held during deep trance. Sámi shamans receive information without drumming and ecstatic activity. Some Sámi make use

of knowledge enhancing 'devices', such as a rock, a ptarmigan paw, a feather or a tree. Sometimes the behavior and the sight of a reindeer, the movement of the morning star or the sound of the boiling fish pot function as an agent of knowledge. The Sámi word for a shaman is 'noaidi.' Noaidi as a concept has a wider content than the concept of 'shaman' as discussed by some Nordic scholars.[31] Probably one reason for a Sámi shaman's constant readiness for extraordinary information is due to an ability to remain ever open to different realms of the surrounding universe as expressed in drum pictures. Berman stresses the shaman's ability to remain in a state of heightened awareness.[32]

According to Cartesian-Kantian thought, man is separated from an objective world, and gives meaning to reality through his mind or ability to think. A large part of a shaman's knowledge is subjectively experienced and felt through intuition. It comes from a source outside the Cartesian-Kantian mind. Many shamans all over the world have explained that the knowledge, song texts, and images just enter the mind when needed: "I don't have to go anywhere to see. The visions are everywhere."[33]

In the Sámi language there is a phrase 'gorus dovdat,' meaning 'to feel in the body, to know/feel intuitively.' A Sámi traditional singer, Inga Juuso, told me in an interview that: "Often I know of things myself, but don't know where the information is coming from. I just have some knowledge and things happen just as I knew they would. I can't explain it in a better way."[34] A Sámi healer from Sweden, Per Simma, talks about knowledge in reference to his ability to heal. He claims that he does not know where his knowledge comes from, but "suddenly all things become clear".[35] Knowledge, like visions, dwells everywhere.

There have been, and are, different categories of shamans among the Sámi. My parents used to categorize the different shaman types in relation to power, knowledge, and morality. They used to talk about 'cáhppes addja', (a dark grandfather) when referring to the evil spirits. According to the Sámi traditional beliefs, there are both benevolent and malevolent spirits. Also shamans are regarded as good or bad. The shamans who can mainly see, are called 'oaidni' in Sámi.[36] The northern Sámi word 'oaidnit' means both to see, for instance reindeer on the mountains, and, to see, the hidden, extraordinary phenomena, for example the reindeer of the spirit world. There are many accounts of the Sámi shamans' ability to see what happens in other places. One Sámi man was asked by a priest named Tornaeus to deliver his drum to him. This Sámi man told Tornaeus that he can see even if he gives his drum away, and told Tornaeus in detail things about Tornaeus' travels.[37]

Another category of shamans is 'diehtti', the one who knows. These days there is not a considerable difference between how people perceive 'diehtti' and 'oaidni'. The northern Sámi word 'diehtit' means to know, both mundane and hidden things. This category of people seems to have an ability and foreknowledge for prediction, for instance about coming weather, lost things, sicknesses to come, etc. The old ones believed, and many still do, that diehtti must be rooted in and know well his or her own natural environment. In the natural environment, he or she is surrounded by the clues and signs that give him or her a frame and confidence to know. And there, he or she will derive wisdom and know-how in a direct way, without a shaman dress, feathers, rattles, drums or ceremonies. A locally famous diehtti type of shaman lived in the early 20th century in Roavvegieddi. His name was Ovllá-Ivvár. Another diehtti from the same place was Márjjá who knew details of all kinds of things that were about to happen. My father, when he was young, used to visit her regularly in order to get learning and to hear the latest 'news'.

Some shamans are regarded as very evil, the 'bora-noaidi,' and may cause much harm to others. Bora-noaidi is the

one who 'eats' (northern Sámi, borrat = to eat; here = to kill) while performing evil deeds. There are stories about these shamans, and some of them existed still, according to folk beliefs, after the Second World War, and bewitched people. For instance, there is a story about a female noaidi, Biretáhkku, who lived in Northern Norway in Finnmark county. People believe that she bewitched a man in the 1960's so that he became ill and passed away. This belief in bora-noaidi has actually prevailed to our days among many Sámi, especially in the north.

A long time ago, there lived a Sámi shaman named Päiviö (the Sun), in Kittilä, North Finland. He was regarded as the most powerful Sámi shaman of his time.[38] He had three sons: Vuolab, Isak and Johan. Fellman has recorded a yoik-song called 'Peivas juoigam' (the yoik of Päiviö). According to the text, Päiviö was so powerful that he could fly in the sky among the stars and move inside the earth under the roots of trees.[39] This type of shaman is regarded as very powerful and in the Northern Sámi language they are called 'girdi noaidi,' a flying shaman. Such a shaman could appear as birds and animals. My parents also used to talk about 'girdi noaidi,' meaning that they are dangerous, rapid in their moves or actions, and prepared to deal with all kind of matters.

Through his powers, Päiviö influenced and changed the course of things. For instance, he could, through his shaman knowledge and technique, get a wild reindeer herd to wander from Inari to Kittilä (both villages are located in Northern Finland).[40] Furthermore, Päiviö and his sons transformed themselves into reindeer, swans or salmon in order to travel long distances or to approach an enemy. Päiviö lived in the 17th century, but people still talk about him and researchers received exact information about him and his relatives during the first part of the 20th century and later.[41]

The spirits who help people or deliver messages show themselves to shamans. Here is one example, though, from the Inuit cultural context. A shaman called Aua tells how he received "the shaman-light of brain and body", an ability to see, to be clairvoyant.[42] This light consists of a brilliant aura visible to spirits, animals and shamans. It makes it possible to see through houses and people, and into the future. Some Inuit shamans have a very bright aura, meaning that they have strong power. Knud Rasmussen met Aua in Iglulik in 1922. Aua explained:

"I would sometimes fall to weeping, and feel unhappy without knowing why. Then, for no reason, all would suddenly be changed, and I felt a great, inexplicable joy, a joy so powerful that I could not restrain it, but had to break into song, a mighty song, with only room for the one word: joy, joy! ... then in the midst of such a fit of mysterious and overwhelming delight I became a shaman, not knowing myself how it came about. But I was a shaman. I could see and hear in a totally different way. I had gained my quamananEq, my enlightenment, the shaman-light of brain and body, and this in such a manner that it was not only I who could see through the darkness of life. But the same light also shone out from me, imperceptible to human beings, but visible to all the spirits of earth and sky and sea, and these now came to me and became my helping spirits.

My first helping spirit was my namesake, a little aua. When it came to me, it was as if the passage and roof of the house were lifted up, and I felt such a power of vision, that I could see right through the house, in through the earth and up into the sky; it was a little aua that brought me all this inward light."[43]

It is evident that because of the shaman-light, shamans within the Sámi cultural context also 'attract' spirits and situations through which shaman images and insights are working on multidimensional levels. Modern research on earth magnetism, electromagnetism, bio-magnetic fields, and body electrics in relation to healing gives certain support to this

view.

4. Healing

A shaman in traditional society had many different tasks- that of priest, healer, teacher, and diviner. But, when time passed, and Sámi society changed after coming in contact with modernity and Christianity, the shaman's tasks changed as well. Winkelman has shown through his research that a shaman is prepared to deliver part of his or her tasks to other practitioners, when the respective society is ready for such a calling. Some become healers, others priests.[44]

In the classical literature on Sámi shamanism, much attention is given to the shaman's drum and its symbolic pictures. Moreover, many stories are told about the magic and deeds shamans from older times have accomplished. Åke Hultkrantz has pointed to a crucial factor concerning the tasks of the Sámi shaman, i.e. healing plays a central role among a shaman's tasks.[45] Specifically, life-threatening sicknesses were treated and cured by shamans using special methods. Famous in literature is 'soul-loss,' that was treated by shamans. Shamans used spirits, trance states, and drums as aiding tools when healing soul-loss and other severe sicknesses.

The shaman sessions of old times were collective events with auditors. In a trance state, the shaman journeyed, fetching back souls stolen by spirits, or otherwise lost. This type of healing was required, because ideas about sickness were based on the belief that a human has two souls: a body soul and a free soul. A free soul, "the person himself in his out-of-body appearance"[46] can take flight when a person is asleep, in other altered states or conducting certain rituals[47]. It is also worth noting that the healing took place in relation to other factors, namely gods, spirits, humans, animals, and the entire natural and universal realms.

The Sámi shaman drum (meavrresgarri, goavddis) is an expression of the Sámi cosmological, cultural and spiritual world picture. There are still old shaman items maintained and protected by Sámi families. The traditional drum is oval in its form and in many cases sun-centered in respect to the symbolic pictures on its membrane. This common pattern is an expression of the life cycle of the Sámi people. Some of the drums express the idea that the world consists of different layers, and have several sections painted on the drum skin. In addition, some traditional drums combine the idea of the world-layers with the heliocentric features. The traditional drum pictures strikingly resonate with the prehistoric rock carvings, for instance those found in Alta, Northern Norway.

One of the functions of a drum is that of a healing tool. Traditionally, the drum has not been a musical instrument *per se*. These days, the popularity of the frame drums has increased and many Sámi are producing their own drums to be used as cultural items, decoration, musical instruments, as gifts, or as commercial objects. However, some Sámi still use drums according to traditional ways.

Folk medicine is used to cure common remedies. Today there are still healers in Sámi society. However, there is almost no schooling, as most of the old tools (drums) were destroyed by the missionaries and church, and there are few families left with living shaman or healing traditions. The healers use herbs, spells, magic, crystals, drums, wands and mind power in healing acts and/or give 'laying-on-of-hands healing,' healing from a distance, they arrange healing circles, give occasional healing, and function as therapists.

Many of the healers claim that they have received their gifts from God or the Great Spirit, or through dreams. Some have learned the healing arts from their parents or other relatives. Mikkel Gaup used to practice healing in his home near Alta, Northern Norway. Some people regarded Gaup as a

shaman (noaidi), and people in the Kautokeino area call him 'guvlár' (one who does magic and heals) or 'dálkkodeaddji' (healer). As already said, I interviewed him in 1993, and he told me that he regularly visits a sacred stone, called a 'sieidi' in the Sámi language.[48] In a room in his home in which he gave healing, he had a Bible with a Sámi silver chain item placed inside. Gaup learned his knowledge within his kinship line. Mikkel Gaup used a lot of time in discussion with a patient about a patient's ailments. Among other things, he practiced hands-on healing and healing from a distance. It is also evident that he was gifted in noaidi science, but I did not ask him about this. As a Sámi, you do not discuss certain things that have to do with spirituality, shamanism and healing, not even with other Sámi.

Faith Fjeld, with a Sámi background, and editor of Baiki-magazine, who lives in the U.S.A. tells about her impressions concerning Sámi spirituality and the healing of today:[49]

"And I was staying in a very small traditional Sámi village with a friend, and her husband was just an ordinary person who fished and practiced hunting and so forth and he did not dress in any special way. Two days into the visit he received a telephone call, and I realized he was talking in a different sort of way to the person at the other end of the line. After a while she told me, well he can cure people by talking to them over the telephone. That's all she said, but that was her way of telling me that this man was also a healer, only he did not make a big deal out of it."

Faith Fjeld tells above about a healer, and the fact that it is not out of the ordinary to be a healer. In the Laestadian context it was common to cover up, or conceal, healing activities. Usually, many healers do not openly announce their abilities. On the contrary, traditional healers try to keep their abilities hidden and adopt a low profile. In spite of extraordinary abilities and insights, a shaman and healer functions within local society as an ordinary citizen. Nils Valle, a Sámi healer from Northern Norway, active in healing during the 1970s and 1980s used to work as a farmer and salmon fisher. Once I visited him with my sister's son who needed palliation for his ailment. Nils Valle was fishing for salmon from a boat in the Tana River. His wife told me to shout to him and ask for help. So we went to the river shore and I waved my hand. Nils Valle stopped his fishing immediately and rowed towards us. He conducted, next to the river where we were standing, without any delay or visible preparations- the sickness was not acute- treatment via laying-on-of-hands. I was allowed to be present.

At my parents' home in Utsjoki, Northern Finland, I have witnessed healing sessions. The healers were Christian Laestadians. It was common to read prayers and texts from the Bible, religious formulae, and in some cases combine them with the laying on of hands. Sometimes, when the healer defines a situation as dangerous, he or she shortens the spells, and gives direct orders for a sickness to leave, or denies the patient's state of illness. Then, for instance, as a shortened blood staunching formula, this can be read: "Cease blood, cease blood, cease blood in the name of Father, Son and the Holy Ghost." Or, the healer may utter these words: "You are not sick!" The voice quality is partly dependent on the healing context. The practice of reading formulae among the Sámi is based on the idea that every condition of body and mind is related to certain sounds and words. The formulae used are believed and expected to invoke the healing powers independent of the patient. The most powerful are those formulae connected with the 'right' sickness, i.e. a sickness that is to be cured with a specific formula. The formulas are combined with many different healing activities, as we already have seen. One of them is plant medicine.

Generally speaking, Sámi traditional medicine is today a complementary procedure to the Western medicinal system. As already indicated in the Sámi case, the world picture is

both earth-bound and cosmic. When you look out of your window you see a spiritual landscape. There is a sacred connection between humans, animals, trees, and herbs; and between these, and gods, and spirits, including the stars and planets. Implicit in this holistic connection, or oneness, is both health and illness. In general terms, health and illness come from the same source. A shaman can tap into and participate in this wholeness and find the cause and cure for an illness there. Also other healers, even in contemporary society, do the same work, at least in principle. People who contact healers share or adopt the concepts of the supernatural world regardless of their religious beliefs, and regardless if they are conscious of it or not. [50]

One benefit of traditional medicine is that it weaves an individual within the individual's respective culture. A contemporary healer's activities reflect the viability of traditional Sámi cultural values and world-view. "Thus every successful healing may have the side effect of strengthening the confidence in Sámi values, confirming the Sámi identity as something valuable." [51]

Many Sámi, especially women, use plants and trees as medicine. I will give below an example of a contemporary plant healing session.[52]

The healing ceremony:

During the summer a healer takes his or her patient to the woods where willows grow. Fresh twigs or stems are taken from willows and these function as fans with which the patient is touched or stroked. The healer reads a spell (formula) that is not revealed to outsiders. But the spells often have a Christian content and are uttered in the name of the Father, the Son, and the Holy Ghost. Many popular formulae are taken from the book of Joshua or the book of Psalms in the Bible.

This healing treatment has cultural, spiritual, and medical significance, and gives immediate relief from aches in the arms, shoulders and back. The number three is important. Many times, in order to ensure or strengthen the effect of a spell, the spell is uttered thrice, and the whole procedure can be conducted three times as well.

(Footnotes)

[1] Joseph Campbell. Myternas makt (The power of myth). Svenska Dagbladet, Borås 1990, pp. 27-28. (Note, that Campbell changed his views concerning the meaning of the myths. Cr. with Joseph Campbell. The Masks of God: Primitive Mythology. New York, The Viking Press, 1959, p. 4.)

[2] A Sioux Medicin man Lame Deer explains: "Only human beings have come to a point where they no longer know why they exist." See; John Fire & Richard Erdoes. Lame Deer, Sioux Medicine Man. London, Quartet Book, 1980, p. 157.

[3] John G. Neihardt, Black Elk Speaks. University of Nebraska Press, 1972, p. 4.

[4] Johan Turi. Muitalus samiid birra. The Book on Lapland. 1931.

[5] Anna-Leena Siikala. Suomalainen samanismi-mielikuvien historiaa. Suomalaisen Kirjallisuuden Seuran Toimituksia 565, Helsinki 1992, p. 278.

[6] Jens Andreas Friis. Lappisk Mythologi, Eventyr og Folkesagn. Christiania 1871.

[7] Biret Maret Kallio. Noaidi, The One Who Sees. In: ReVision. A Journal Of Consciousness And Transformation. Winter 1997. Vol 19, nr 3, pp. 37-41, see p. 38.

[8] Jurgen Kremer has kindly reminded me of the fact that "mythology is fundamentally the invention of white men" as part of their national activities and politics. Myths are "stressful creations" of ethnographers and anthropologists. I recommend the reader to become acquainted with the writings of Kremer, see <http://www.sonic.net/~riva/>. See also Tony Stigliano´s article 'Fascism´s Mythologist: Mircea Eliade and the Politics of Myth'. In: ReVision. A Journal Of Consciousness And Transformation. Winter 2002. Vol 24, nr 3.

[9] See Elina Helander & Kaarina Kailo, No beginning, no end. The Sámi speak up. Circumpolar Research Series No. 5. Canadian Circumpolar Institute, 1998.

[10] Janice Acoose. Post halfbreed: Indigenous writers as authors of their own realities. In: Jeannette Amstrong (ed.). Looking at the Words of our People. First Nations Analysis of Literature. Theytus Books Ltd. Penticton, British Columbia 1993, pp. 27-44, see p. 35.

[11] Mircea Eliade. Myth and reality. New York: Harper Torchbooks, 1963, pp.13-14.

[12] Sápmi is a Sámi word meaning Samiland.

[13] Cr. Alberto Villoldo and Stanley Krippner. Healing States. A journey into the world of spiritual healing and shamanism. Simon and Schuster, Inc., New York 1986, p. 163.

[14] Helander & Kailo 1998, pp. 87-102.

[15] See for instance, Nils-Aslak Valkeapää. Greetings from Lappland. The Sámi –Europe´s Forgotten People. Zed Press, London 1983.

[16] Starhawk. Dreaming The Dark. Magic, Sex and Politics. Beacon Press, Boston 1982,

xxviii.

[17] F. David Peat. Lightning The Seventh Fire. The spiritual ways, healing and science of the Native American. Birch Lane Press, New York 1994, p. 312.

[18] Jurgen W. Kremer. Looking For Dame Yggdrasil. Falkenflug Press, Red Bluff, CA, 1994.

[19] Kaarina Kailo. Technology and Globalisation. The threats to ecological balance. In: International Conference. Towards Holistic Well-Being Conference Proceedings. Oulu Polytecnic. August 29-September 1, 2000. Oulu, pp. 75-89, see p. 86.

[20] Kremer 1994, p. 159.

[21] Kremer 1994, p. 40.

[22] Kremer has in his later articles used other terms, such as 'recovery of indigenous mind', 'nurturing conversation', 'coming to presence' and 'decolonization'.

[23] Siikala 1994, p. 4.

[24] To make this story more intelligable, I give her the name Saava. Her real name is forgotten.

[25] Pamela Colorado. Indigenous Science. In: ReVision. A Journal of Consciousness and Transformation. Winter 1996. Vol 18. Nr 3, pp.6-10; see especially page 7.

[26] Kimmy Karen Johnson. On the Path of the Ancestors. Kinship with Place as a Path of Recovery. California Institute of Integral Studies. December, 2001.

[27] Johnson 2001, p. 25.

[28] Hans Sande & Sigrun Winterfeldt. Four Sámi healers. A preliminary interview study. Nordic Journal of Psychiatry 47/1, 1993. 41-51.

[29] Vigdis Siri. Dreaming with the First Shaman (Noaidi). In: ReVision. A Journal of Consciousness and Transformation. Summer 1998, Vol 21, Number 1, pp. 34-39.

[30] Siri 1998, p. 39.

[31] Thomas P. Larsson (ed.) Schamaner. Essäer om religiösa mästare. Bokförlaget Nya Doxa, Falun 2000.

[32] M. Berman. Wandering God: A study in nomadic spirituality. Albany. State University of New York Press, 2000.

[33] George Quasha. Aufzeicnung einer Rede von Essie Parrish. Alcheringa, 1975,1.

[34] Helander & Kailo 1998, p. 13.

[35] Elina Helander. Noidat ja parantajat ennen ja nyt-saamelaisista parannusmenetelmistä. In: Siiddastallan. Siidoista kyliiin. Pohjoinen, 2000, p.242.

[36] Louise Bäckman & Åke Hultkrantz. Studies in Lapp Shamanism. Acta Universitatis Stockholmiensis. Stockholm Studies in Comparative Religion. Almqvist & Wiksell International, Stockholm 1978, p. 70.

[37] Johannes Tornaeus. Berättelse om Lapmarckerna och Deras Tillstånd. Bidrag till kännedom om de svenska landsmålen och svenskt folkliv. XVII.3. Uppsala. I have taken this example from: Juha Pentikäinen. Saamelaiset. Pohjoisen kansan mytologia. Suomalaisen Kirjan Seura, 1995, p. 186.

[38] The writer of this chapter is the direct descendant of the Päiviö/Vuolab sun-clan.

[39] Jacob Fellman. Anteckningar under min vistelse i Lappmarken, II. Helsinki 1906, p. 21.

[40] T.I. Itkonen. Der "Zweikampf" Der Lappischen Zauberer (Noai´di) Um Eine Wildrentierherde. Suomalais-Ugrilainen Seura. Helsinki 1960, p. 15.

[41] Itkonen 1960.

[42] Halifax, 1979, p. 119. Knud Rasmussen. The Intellectual Culture of the Iglulik Eskimos. Report of the Fifth Thule Expedition. 1921-24. Vol 7, Copenhagen 1929.

[43] The little aua is a shore spirit.

[44] Villoldo & Krippner 1986, p. 164-166.

[45] Åke Hultkrantz. The Healing Methods of the Lapps. Some aspect from the point of view of comparative religion. In: ARV. Tidskrift för Nordisk Folkminnesforskning. Vol 18-19, 1962-63, pp. 325-351.

[46] Åke Hultkrantz. Shamanism. A Religious Phenomenon. In: Gary Doore (ed.): Shaman´s path. Shambala, London 1988, p. 36.

[47] Jens Rosing. Sagn og Saga fra Angmagssalik. Nationalmuseet og Det Grönlandske Selskab. Forlaget Rhodos, Köbenhavn 1963.

[48] Elina Helander. Saamelaiset noidat ja parantajat ennen ja nyt. In: Siiddastallan, Siidoista kyliin. Pohjoinen, 2000. p. 241.

[49] Helander & Kailo 1998, p. 159.

[50] Stein R. Mathiesen. Faith Healing and Concepts of Illness. An Example from Northern Norway. In: Tenemos. Studies in Comparative Religion 25. Helsinki 1989, pp. 41-68.

[51] Hans Sande & Sigrun Winterfeldt. Four Sámi healers. A preliminary inteview study. Nord. J Psychiatry 1993; 47, pp. 41-51, see p.48.

[52] Elina Helander. Sámi plant medicine, Báiki 2002, issue 24, p. 6ff.

spirit world
spirit world
the other sun
the other sun
the other moon
the other earth
spirit man
spirit tent
spirit mother
spirit father
spirit person
spirit hearth
sacred law

spirit sister
spirit brother
spirit wife
spirit husband
spirit joy
sacred song

spirit world
spirit sun

the other life
spirit bear
spirit child
spirit voice
a different home
the second spirit
spirit heart

spirit world
spirit world
the other sun
the other sun
second drum
spirit language
spirit fish-trap

spirit noaidi
spirit mountain
sacred earth

spirit mountain spur
spirit healing star
spirit dawn
spirit reindeer

spirit beloved
spirit shelter
spirit trembling
sacred text

spirit world
the other sun

second awakening
spirit journey
spirit fish trap opening

the other foot path
the other outcome
the other woman herd
the other wrist sinew


Dreams


Snows