

Patta hoiri and Likanantay people: rescuing the knowledge of the land

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RIDES

“The chant invokes the spirit of the hills of the kabures; in Peine seven hills of water that feed our town’s springs are invoked. There are male hills, female hills, the elders know that and they hold the knowledge, they invoke these beings so that they release the water, into the clouds, that bring it to the hill, that catches the water, to mother earth who makes it run through her veins and brings it down to us, and every year we ask to be brought water. For everyone, not just for us, it is for you, for all the people that are to come, for the whole of humanity.”

Account given at community meeting, Séquitor, February 2004.

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1. INTRODUCTION AND SUMMARY

The ‘Human Well Being and Sustainable Management of the Salar de Atacama’ project commenced in San Pedro de Atacama in June 2003, and is due to run for 16 months. Its objective is “to contribute to sustainable management of the ecosystems of the Salar de Atacama for human well being and conservation”.

The objective of the first, recently completed, phase of the project was to set out the base lines for goods and services identified by the project, in order to begin evaluation (stage 2). While these base lines were being defined, efforts were also made to disseminate the project amongst the community and municipal authorities, in order to encourage participation from diverse stakeholders.

This process met with resistance and there were indications that the community this investigation is inserted into possesses certain special characteristics that must be taken into consideration, particularly regarding local knowledge.

The community has developed hostility towards initiatives proposed by foreigners and foreign institutions, due to both saturation by numerous cooperation projects and meetings and previous

negative experience where the results of investigations and projects were never shared with them, and the response to this project proved no exception. Consequently, project dissemination took much longer than planned and community participation strategies and communicating with those in possession of traditional knowledge required a more complex approach.

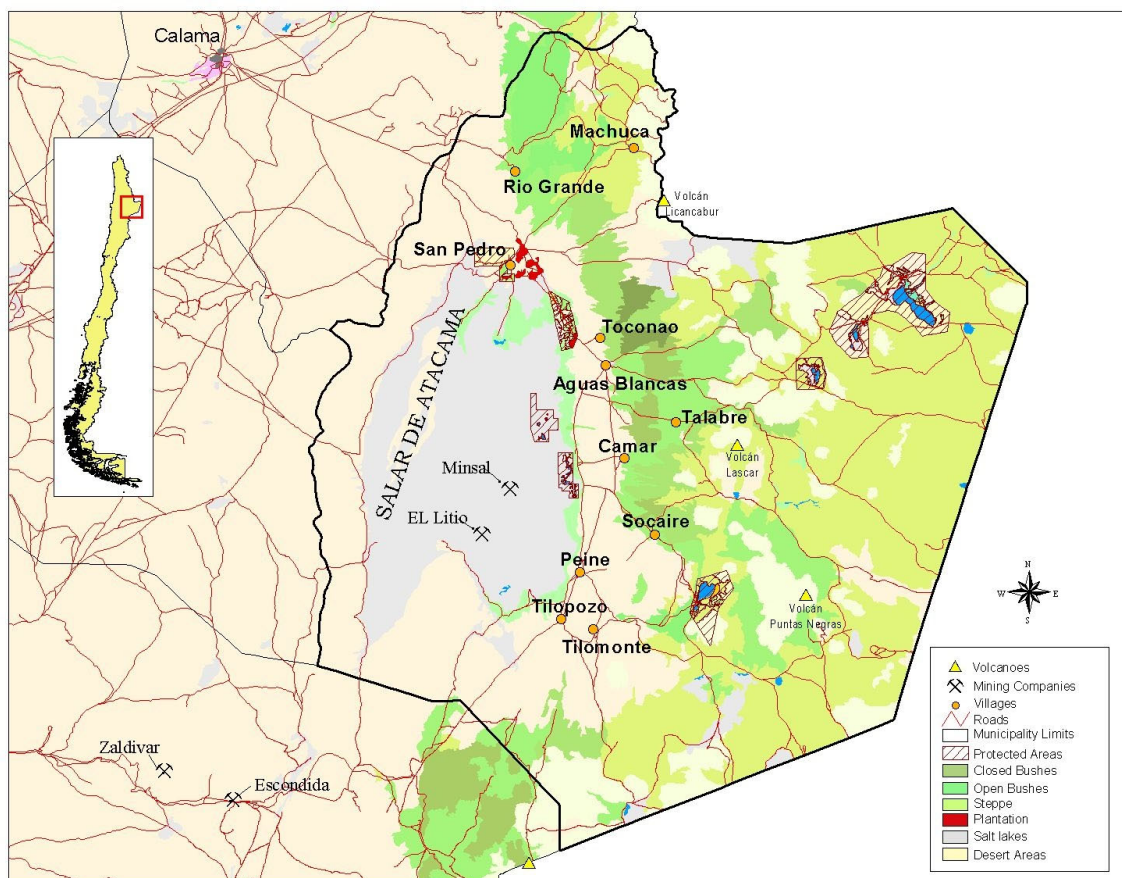
This article intends to review this process and draw out some lessons and annotations on traditional knowledge and participation in millennium ecosystem evaluation in Chile. To this end, it will begin by introducing these very remarkable peoples who have been so interesting to accompany in their process of reappropriation of the cultural patrimony inherited from their ancestors.

2. WHO ARE THE ATACAMEÑOS?

2.1 Heirs to an ancient tradition

Humans have lived in the Antofagasta region, where the Salar de Atacama lies, for at least eleven thousand years. For over six millennia, the first inhabitants maintained a subsistence lifestyle based on resources provided by the ecosystem, developing strategies to adapt to and make use of the ecological environment, characterised by desert and saline water. With the passage of time, humans settled in almost all the ecological niches apt for life and they began to experiment with animal and plant domestication, adopting an increasingly sedentary lifestyle. Archaeologists use the term “desert tradition” for these groups.

Illustration 1: Map of the District of San Pedro de Atacama



Existing settlements in the Salar de Atacama basin are, from north to south: Río Grande, Machuca, San Pedro de Atacama and its *ayllus*¹, Toconao, Talabre, Cámar, Socaire and Peine (all lying between 2400 and 3000 metres above sea level). Some of these date from prehispanic times, others were born of mining activity or demographic growth processes in the district.

While population was still sparse, each oasis allowed herders to cultivate crops to complement their diet of animal protein with carbohydrates from vegetable produce. The largest oases with better water supplies, such as San Pedro de Atacama and Toconao, offered greater possibilities for the larger scale agriculture needed to support population growth and stable settlement. Here the **San Pedro culture** was conceived, one of the most influential in the area and considered to be the origin of present day peoples in the Salar region.

The main small-scale crops were maize, beans, chilli peppers, gourds and pumpkins. Irrigation systems and channels were used to flood the fields before the water evaporated or filtered down into the subsoil; thus irrigation techniques favoured areas closest to the Salar. The people living in the Salar basin developed and handed down an advanced culture of ecological complementarity based on knowledge of its ecosystem, which lay down rules for all the indigenous peoples, i.e. groups within the Salar and neighbouring territories.

2.2. A people reshaping their past and present

Generally speaking, the inhabitants of the district follow a dispersed system of settlement, which makes best use of resources. The system's logic is to try to diversify and complement the productive resources as much as possible; i.e. they have huts, farms or passing places in different ecological zones and settlements.

My life has been very hard. When I was six, I learned to knit and spin, my mother taught me. And herding, that has been my life, knitting, spinning, herding; herding till I was 30, out in the cold, the wind, the snow, the rain; my life has been hard. And things weren't like they are today. When there were gales and rain there was no one to come and see us. There weren't any shoes; we used sandals that we had woven ourselves.

Elderly Atacameño at a community meeting, Sequitor, February 2004.

The structure of the “Community” as a mechanism for group socio-economic organisation is currently the key to understanding the articulation of social, economic and religious relations between the Salar basin settlements. It is important to note that the district associativity index is higher than both the regional and national figures (51/24/30 respectively); there are more than 45 functional organisations as well as 14 indigenous communities.

The Atacameño community today, like most of the Latin American indigenous community, follows an Andean-Catholic religious cultural model, creating a dual thinking that is applied to diverse aspects of religious and social life. Most of the ritual activities and traditions are thus associated with important religious dates, and each settlement has its own patron saint (San Pedro in San Pedro de Atacama, San Lucas in Toconao, San Roque in Peine, etc.).

The ceremony of the *Talatur*

The *talatur* is a ceremony for the water, still celebrated in villages such as Socaire and Peine; it is a payment to the water; it takes place where the water flows into the channel. It is celebrated on 12th October and 24th November, and all the landowners participate, bringing an offering consisting of a small bottle of *aloha* (liquor made from the algarrobo fruit), with all the grains, quinoa, maize, wheat, all the grains that are sewn converted into flour; they are tied together along with some wing feathers from the underside of the parina flamingos' wings, the offering is put in and given to the *cantal mayor*², that person makes all the domesticated animals we know, lambs, kids, llamas, donkeys and not lizards, toads or snakes; this person gives that in offering, not everyone is there, only those doing the ceremony, they hand over the offering, and then the others people carry on cleaning the channel upstream, and then there is a ceremonial dance called *Talatur*, which is a chant in the kunza language, with ancient music.

¹ These are Indian communes surrounding San Pedro de Atacama where individual families live and grow their own food.

² Cantal Mayor is a designation, a position achieved by those possessing spiritual and medicinal powers.

cencerros³, cow horns, and the clarin⁴.

The chant invokes the spirit of the hills of the *kabures*; in Peine seven hills of water that feed our town's springs are invoked. There are male hills, female hills, the elders know that and they hold the knowledge, they invoke these beings so that they release the water, into the clouds, that bring it to the hill, that catches the water, to mother earth who makes it run through her veins and brings it down to us, and every year we ask to be brought water. For everyone, not just for us, it is for you, for all the people that are to come, for the whole of humanity.

Account given at community meeting, Séquitor, February 2004.

About 15 to 20 years ago evangelical churches began to spread in the region. Over this period these have experienced significant and sustained growth, creating a “fuss” about traditional activities of the community by rejecting cults to saints and prohibiting alcohol consumption, a practise deeply-rooted in local festivities. In this way, these celebrations have been marginalized. Figures from the last census, carried out in 2002, show that 10.8% of the 4969 inhabitants declare themselves Evangelical, and 70.7% Catholic.

The dance was lost for a time, the family broke up over matters of religion, then one family took up the dance again, the Becerra family, and this little dance didn't have anywhere to stay, and as there was a little baby Jesus in my house, I took it in.

Séquitor meeting, February 2004.

The communities traditionally controlled and organised the natural resources such as water and land, but economic market forces have increasingly marginalized these things from their control.

I remember when I was little, my parents went out, they're all dead now, carrying a white lamb, we were little, and they went to the top of the hill, and slaughtered the lamb and offered their payments there, with *coquita*, with alcohol with wine, and they made something like this, like a big clay plate, and they put cotton on it, and filled it with seawater, and then they came down carrying the lamb, and at the bottom they roasted the lamb and ate it.

Séquitor Community Meeting, February 2004.

According to figures from the UNDP (United Nations Development Programme) Human Development study carried out in Chile in 2000, the district of San Pedro de Atacama came 209th (out of 333 districts) with a human development index of 0.667. This index is considered low, and only one other district in the region, Ollagüe (very low, in 331th place) falls below it. It should be noted that both are rural indigenous municipalities in the Antofagasta region, which stands out for the high indices of the rest of its districts (Antofagasta, Mejillones, María Elena, Calama, Tocopilla and Tal Tal).

2.3 Knowledge and use of the desert's biotic resources

A review of the literature and anthropological and ethnobotanical studies carried out on the Atacameño communities confirms the development of knowledge and use of the desert's biotic resources by the communities.

One study by Villagrán, Castro et al. (1998) on the collection and identification of vegetation samples in the Salar de Atacama (from the Salar de Atacama to the Salar de Aguas Calientes at 4500m above sea level), covering the communities of San Pedro de Atacama, Toconao, Talabre, Camar, Socaire and Peine, recorded 416 vernacular names for 173 plant species. Of these 53% came from Spanish, 12% from an indigenous-Spanish combination and of those from indigenous languages: 8% from Atacameño or Kunza, 5% from Quichua and 2% from Aymara.

A second conclusion of the same study is the confirmation of different plant names within the area of study, specifically in the sector lying south of the Salar (Peine, Socaire and Camar).

herbs are found in the hills, there are many there.... kopa kopa, rika rika,.....

³ Cowbells used as a musical instrument

⁴ A musical instrument peculiar to the region.

Other information collected by the study refers to species denomination, which is based on contrasts in morphological and physiognomic characteristics. Regarding the uses of these species, of the 173 examined, 165 had one or more uses: fodder (35%), medicine (24%), alimentation (9%), fuel and firewood (6%), construction and craftwork (6%), decoration (5%), dye (4%), harmful uses (3%), ritual (2%) and other (6%).

The use was also defined by ecological subsystems. While the high Andean regions mainly provide fodder, the puna and pre-puna subsystems provide fodder and medicine. In both cases species providing dye and alimentation are more abundant than in the rest of the area's vegetation. Flora not found in any specific ecological zone, but in gorges, rivers, salt flats and smallholdings have a more diversified use.

This reaffirms the Atacameño community's use of each of the ecological subsystems present in the Salar (see below according to designations of the Atacameño community):

1. Pampa: desert plains or with sparse vegetation
2. Tolar: bushes called *tolas* predominate
3. Pajonal: colder zone, grasses predominate
4. Panizo: hilltops, lacking in vegetation

Each of these landscape units incorporates the topographical features, flora and fauna. It should be noted that the names of these zones vary between communities, in testimony to a complex system of classifications within which the indigenous communities of the Salar basin develop.

The units mentioned can be synthesised according to criteria of socio-economic use, into: farm, field and hill. The first is a cultural unit of its own, connected with the population settlements. The fields are where the pasture activities occur, and the hill is the territory for collecting firewood and plants, also containing the sacred places.

With regard to plant and vegetable taxonomy, they are grouped according to family and appearance. Animal species are organised by a system of complementaries and opposites. All this lies subordinate to a concept of landscape unique to Andean culture. However, these issues and concepts have not been studied in any depth by social sciences.

The hills, according to the few existing investigations, hold special meaning in the Atacameño worldview, relating to the gods and protection. This fact is also manifested in the realisation of various offerings ceremonies and rites made to the hills.

And the people no longer offer payment to the hills?

I do it. Whenever I need to I go, I climb up, I carry my leaves, I light them a *sahumerio* (the burning of aromatic leaves) and I thank them. For example, now with these llama, I have to go and thank my *maikus*.

Conversation with Yatiri of Toconao.

"I cannot remember what month they used to go there to Licancabur, they lit a fire, and from there to Quimal, and to another hill, Chuchu; I was young, I don't remember what month it was or why. That is what they did, they said they had to light a fire to make payment to the earth, then all the hills were paid. They loaded up the mules and lit a fire there, it was to pay the hills. We were children going to nose about. They don't follow these customs anymore."

Sequitur Community Meeting, February 2004.

In synthesis, the landscape with its different aspects makes up a meaningful whole that allows its organisation and use. Local space is thus integrated into regional and macro-regional space (towards Bolivia and Argentina)

2.4 A traditional community integrated into one nation..... and then another

The large-scale transmission and socialisation of traditional knowledge in the Atacameño community and their way of inhabiting the land was affected by colonisation, independence and the creation of the Bolivian and Chilean states. This occurred in many different ways and led to the loss of the Kunza language and other traditions of the zone.

Until 1889 the Salar de Atacama region was a political dependent of the Republic of **Bolivia**. The Atacameño communities had a relationship with the Bolivian political regime through the continuation of the colonial system of “indigenous taxes”, which they had to pay to the central administration. These individually charged taxes shattered the indigenous communities’ own communitarian scheme, thus contributing to the invisibilisation of their ethnic category, since they were viewed by the state administration as peasant farmers and assimilated into other social and cultural categories. (Gunderman, 2000)

The indigenous peoples fulfilled numerous roles in the region they lived in: hand over of resources to the treasury and maintenance of post and herding circulation routes, both key roles in the consolidation of the new national states. This political pact was brought to a close by the War of the Pacific fought between Chile, Peru and Bolivia over the mining territories of the Atacama desert.

After the War of the Pacific, the Chilean government seized this territory, so from the end of the 19th century until the mid 20th century the policy of the Chilean state was directed towards homogenising these communities into a single Chilean whole, where they were treated as peasant farmers, miners, artisans, etc., without any indigenous connotation; rather their specific nature was defined by their frontier roles and trade with countries like Peru and Bolivia.

Ever since the inclusion of these indigenous groups within Chilean territory at the close of the 19th century, their identity has been built upon the “us”/”them” dynamic that these communities have developed with the Chilean state.

Based on background information and studies carried out, we can affirm that (even up until 1990) the Chilean state’s integration policy was based upon denial of these communities’ ethnicity, and orientated towards their assimilation (homogenisation) into a Chilean social whole.

The objective of any action proposed was the “development” of the Andean communities, whose situation was considered “backward”, and to this end the state sought to hispanize education, increase territorial integration and urbanisation and promote “forward-thinking” local and sectorial organisations: cooperatives, associations, production committees, neighbourhood groups, etc. The pre-eminence of this new kind of organisation weakened traditional indigenous organisations.

To get the water, we even went to Santiago... the intention was to reach the President himself, but, finally the Minister of Public Works saw us. In that sublime moment, we put to him our concerns and he gave us his commitment to build the channels that would carry the water to Sequitor.....but many people don't know, the effort this required, and how we have struggled to achieve it, because, at the end of the day, we are all Chileans.

Sequitor Community Meeting, February 2004.

Since the 1990s, and after the application of the policy of difference — particularly with the creation of the indigenous law — the fact that existing indigenous communities feel an identity within some of the categories defined by the state shapes both a process of ethnogenesis, i.e. the self-identification of a determined social group as belonging to an ethnic group united by a shared mythical past; and a process of ethnification by the state, i.e. the construction of an indigenous identity by means of a political–legal process (Gunderman, 2000).

2.5 A community making the most of political opportunities.

On account of the above, the public apparatus has begun to include specific lines of action for the circumstances of these groups within their policies and programmes. At the end of the 1980s the indigenous issue made a forceful reappearance on the Chilean political scene with the change of political regime (from dictator to democracy). And so the Acuerdo de Nueva Imperial (1989) committed the ‘concertation’ government to developing an indigenous policy during their term in power (1990 to 1993).

The result of this process, the 1993 Indigenous Law 19.253, recognises the Mapuche, Aymará, Rapa Nui or Pascuenses, the Atacameño communities, Quechuas and Collas of the north, the Kawashkar or Alacalufe communities and the Yamana or Yagan of the southern channels as ethnic groups and roots of the Chilean nation. These groups hold special rights and privileges that must be given by the governmental indigenous institutional organisations. It also includes a series of measures such as the creation of a national corporation to ensure fulfilment of this law, to generate a system to validate and legalise ownership deeds of indigenous land, to set up a land and water fund that supports regularisation of these goods, and to promote respect and diffusion of indigenous culture in schools and society as a whole.

Although the Mapuche issue (the largest indigenous group in Chile, living in the south) has taken the limelight in the public agenda for the last decade, the Atacameños have seen significant developments in their relationship with the state and the private sector. This invisibilisation of their situation is without doubt one of the main complaints they put before the government and the international community (this was made very clear in the meeting held with the United Nations official, which took place in San Pedro de Atacama in July 2003)

Inserted as they are into modernity through their economic activity, the indigenous communities from Northern Chile are using these “new political opportunities” to uncover new meaning to their ethnic identity in the following ways:

- A revaluing of the “mythical past”, filling it with meaning for the present and future.
- Creation of ethnically minded organisations for rights and productivity, shaped by modern structures.
- Local development project management with an ethnic stance, abandoning the passive role of simply receiving support.
- Taking up a new position with respect to “the others”.
- Reclaiming their territory and resources, based on their historical ownership.

The Atacameño people demand the right to conserve and foster their **culture** and strengthen their **identity** through recognition, respect and encouragement of their traditions and their historical and cultural patrimony (New Deal for Indigenous communities Commission Report, 2003). This must begin by recognising the cultural and ritual value of the patta hoiri or mother earth, establishing the inviolability of the guardian hills, water sources, lands of economic use to the Atacameños (for grazing, plant collection, etc.) and other sites of sacred or cultural value. Unfortunately the younger generations’ interest in their heritage does not seem to be on the increase.

“I have said to several people that they should learn, because I won’t live forever, look at what I am doing, but they don’t come back. And my daughters, no need to tell you they don’t pay any attention. Maybe my grandchildren.”

“It is no longer done since all the old generation have gone now, and the young don’t do it, they went far away to work, the traditions got left behind.”

The indigenous law includes the creation of Indigenous Development Areas (Áreas de Desarrollo Indígena or ADI), territorial land upon which the state's administrative bodies focus their activity to benefit the harmonious development of the indigenous people and their communities. The district of San Pedro de Atacama contains the ADI of Atacama la Grande (Supreme Decree of 10th March 1997), which looks to serve the development needs of the 14 Atacameño communities living in the Salar de Atacama: San Pedro de Atacama, Coyo, Sequitor, Santiago de Río Grande, Machuca, Solor, Socaire, Peine, Quitar, Talabre, Camar, Larache, Catarpe, and Toconao. This measure seeks to institutionalise the incorporation of ethnicity in the relationship between the state and the Atacameño community.

As of 1999, the government has promoted special programmes ('Programa Orígenes') intended to encourage development and improve economic and cultural conditions of the indigenous communities throughout the country.

In San Pedro de Atacama, the indigenous policy of both the ADI and the 'Orígenes' programme have focused on the development of a support process for communities to generate ecotourism. This is due to the fact that the explosive growth of tourism has led to increasing inequality, with tourism activities being dominated by operators new to the zone in this period while the Atacameño communities are marginalized.

3. THE ROLE OF TRADITIONAL KNOWLEDGE IN THE COMMUNITY'S PAST AND PRESENT

Traditional knowledge has allowed the communities inhabiting the Salar de Atacama to adapt to and maximise use of the natural resources the Salar provides them with. Their knowledge of the territory has created a culture of movement between the different ecological subsystems, where they continue to practise agricultural and pastoral activities that have given them food and shelter for thousands of years. Their knowledge of plants has provided them with medicines and food and supported the rites and practices of their religious ceremonies.

In the case of the community of San Pedro de Atacama, traditional knowledge has a role in their human well being today, giving cohesion and containment to a shared mythical past, bestowing them with dignity as people and providing a spiritual connection to the surroundings they live in.

Although this knowledge has been significantly depleted or lost, it is still cultivated amongst the elders, who are aware of its existence and validity. Traditional knowledge recognises the different uses and medical or nutritional (human and animal) properties of plants and vegetables in the zone, the design and creation of cloths for clothing or art, use of water, and all that allows them to adapt to the harsh living conditions of a desert ecosystem.

3.1. What do we mean by traditional knowledge?

There are three types of knowledge identified in our assessment relevant to ecosystem services:

- (1) **ecological knowledge**, "what is happening in the ecosystems"; involves knowledge of flora and fauna and their diversity as well as ecological dynamics such as processes and functions at various temporal and spatial scales and how these processes are linked across scales.

- (2) **technology and knowledge** of management practices; technology and management practices for maintaining or enhancing the capacity of ecosystems to generate ecosystems services.
- (3) **symbolic knowledge**. Involves knowledge referring to rituals and religious functions of landscape and nature. Also refers to the importance and valuation of nature for local Atacameño culture.

Table 1 gives a synthesis of the types and sources of knowledge identified in San Pedro de Atacama, during the first stage of the project.

Table 1: Categorisation of traditional knowledge present in the Atacameño community.

Source	Category	Content	Distribution	Transmission	Related ecosystem service
Elders	1-2-3	Uses, practices and meaning of nature in Atacameños' traditional lifestyle.	Very few elder people in every small village around the municipality.	Orally to whoever is interested	Support and cultural
Shepherd	1-2	Plants for animal grass feeding, their distribution and life cycle. Placement of water sources and water levels. Landscape and mountain routes. Weather. Fauna species characteristics.	Very few shepherds in some villages.	From families, individuals to whoever is interested Practice and orally	Support regulation
Farmers	1-2	Water irrigation systems, cultivating techniques. Flora species characteristics.	A significant number in every village.	From families, orally to whoever is interested Practice and observance	Support
Healers	1-3	Names, uses and importance of medicinal herbs, geographical distribution and rituals related to its use.	Few individuals.	Orally to selected individuals Practice and observance	Support and cultural
Anthropologist (museum)	1-2-3	Recollection of past and present uses and "state of the art" of different traditional knowledge issues.	Research team.	Papers Seminars Courses (directed at Atacameño people)	Cultural
Individuals	3	Landscape importance, myths and traditions (rituals, dances, festivities).	Young people and adults interested in preserving and continuing traditional lifestyle.	Orally and through practice	Cultural

Source: authors' elaboration

There are currently two mechanisms of knowledge transmission. The first is that established by each family between the elders and the young. Only some families maintain this knowledge and are prepared to transmit it to younger members through practical experience (go to the hill, travel around the landscape, watch and practise). This phenomenon is mainly so for interior settlements, far from the dynamics of formal education.

I don't know how to read
not a single letter
but I'm a good *artesana*
I spin wool from the llama

to use for crafts and knitting
to sell to the tourists in San Pedro de Atacama.

Poem by Señora Evangelista Soza, Sequitor Community Meeting, February 2004.

I learnt by myself; my mother only knew how to sort out babies when they were breeched, I used to watch her, then I left, from then on I learnt by myself, about a break, how to fix it, I think about it, and I do it, and cripples too, and others with stomach pains, here we call it the “*padrón*”, some come and there’s nothing there, then I send them to the hospital, because it’s not for me, it’s not like that, and if they are send back to me by the hospital, that they are already ill, that they need an operation, that it’s a tumour, and it’s a *pata*, I still fix them, I sort them out. And some are *corridos de la matriz*⁵, the doctors say they have to go to Calama, they put them on a drip, I go to their house and fix them and all’s well, the baby rights itself, sometimes it’s the *padrón*, others say it’s a *vago*, several opt for a *vago*, they’re nerve spasms...⁶

I’ve done all this in my time, but I taught myself, and I touch them with my hands, nothing more, and I know and say to myself that this is there and that there, and it’s just my thoughts, but by touching; likewise with the remedies, because there are *mountains* (medicinal herbs called by locals *montecitos*) that are remedies for one thing, others for another, and you have to know that to do it.

Sequitor Community Meeting, February 2004.

The second mechanism is that promoted by social institutions such as the indigenous communities and government programmes (‘Orígenes’). The latter is an attempt to collect, systematise and re-implant traditional knowledge lost to most and remaining only in the memories of some elders. This more institutional route follows the line of debate set down by the ethnogenesis process initiated in the 1990s. It is viewed as the reinvention of knowledge, with modern components useful to the communities’ political posture that homogenise the diverse circumstances between communities.

3.2. Atacameños appreciations on scientific knowledge

Some experiences in anthropology and archaeology are contributing to processes of revaluing and strengthening of the Atacameño culture. One example is the Escuela Andina⁷. This process faces the challenge of generating trust and a common language to bring both sides together in order to consolidate this exchange as a valid opportunity to allow information to flow in both directions. It is a challenge for local knowledge to systematise recovered knowledge in order to facilitate its dissemination amongst the new generations.

Some experiences in ethnobotanics also show that it is possible to deepen knowledge on local flora through collaboration with local farmers and herders who still know the original names of many plants as well as their different uses. The challenge is to cover the large expanse of territory and different ecological subsystems in the municipality.

Traditional knowledge exists, and it is impressive. We have travelled around mapping the zone, identifying flora and fauna. They taught us a great deal in Chinchilla, and even in Pular they have given us insights into the flamingos, since it is hard for us to access the zone, so we have little information about it, and we have discovered surprising details about the nesting habits of the flamingos with what the communities have taught us.

JP Contreras, CONAF (national forestry agency) Regional Director. Personal communication, February 2004.

Hard-line science shows no sign as yet of taking concrete steps to exchange and generate synergies with local knowledge. Therefore, the challenge is to call upon scientists from basic disciplines to develop bridges, integration and exchange mechanisms.

The cultural pressure transmitted by the nation through the existence of a precise form of knowledge, adjusted by science to proven and replicable fact, places other traditional sources under doubt, creating tension within the community between the illiterate and

⁵ Term used by the healer to describe displacement of the baby into the uterus.

⁶ “*pardon*”, “*pata*” and “*vago*” are all terms used by the indigenous healers for different afflictions and illnesses.

⁷ Since two years ago, the Universidad Católica del Norte, through the Museo e Instituto de Investigaciones Antropológicas (Museum and Institute of Anthropological Research), has held the “Escuela Andina” (Andean School) to teach young Atacameños about their people’s history and culture, in order to contribute to the process of coming to know their roots again, as well as giving them the opportunity to work as expert guides in community tourism initiatives.

literate generations; between vernacular-traditional knowledge rooted in the practical observation of nature, and knowledge from books about things that are not understood but set down as truth.

Maria de los Angeles Villaseca. "Dos historias, un paisaje: transformación y persistencia en el Alto Loa" (*Two histories, one landscape: transformation and persistence in the Alto Loa*). 2000.

3.3 Challenges for integration

Changes in labour opportunities have determined the loss of traditional knowledge. Mining and tourism are now the main sources of jobs for the local population; both leave no time for agricultural or pastoral activities, forcing traditional ways of life to be abandoned. Mining activity is dominated by big companies and tourism is led by "outsiders". With regard to grazing, rather than speaking of incompatibility we can use the words marginality and displacement; that is, since mining and tourism now occupy more space, agricultural and pastoral activities occur around more isolated settlements in the Salar. Also, agriculture has become concentrated in smaller areas with less varieties of produce, forcing growers to use modern techniques. In the words of one inhabitant of the zone:

"Now trickle irrigation is the fashion, so the agricultural engineer comes with a project and says: we need pvc, pvc trickler, engines, sulphates, etc. and estimates production over five years. Of course you get big fruit the first year, but by the fifth the soil is no good, it is exhausted. The engineer leaves after the five years are over."

Toconao farmer.

Some experiences regarding this integration are the one carried out by the health department of the local Municipality, who is willing to introduce traditional knowledge into their programmes, but lack resources and capacity for full implementation. They are starting the process by recommending natural herbal treatments and visiting local healers to some patients. Parallel to that, the Atacameño People's Council is developing a programme to demand formal recognition of their traditional healers. Some teachers and schools are also introducing landscape and environment as a source of learning.

Another recent experience is the one of CONAF (National Forestry Agency) and local communities. CONAF is the entity responsible for the conservation and preservation of protected natural areas. For the last two years it has maintained a cooperation and associativity programme with the Atacameño communities in the zone, where one of the objectives is: to recognise the collective knowledge of indigenous communities on the natural resources and their use as the foundation for planning the use and management of the territories involved. Starting from the conviction that indigenous communities are key players in the process of conservation and sustainable use of the protected territories, CONAF has promoted partnership agreements that hand over the administration of protected sites to the communities. In this process they must together set out an operative conservation plan. The incorporation of traditional knowledge into the conservation management plan is identified as an objective. However, the process is very new and still at the stage of administrative and technical transfer, so neither CONAF nor the communities have the capacities to achieve this effectively. Only in 2002 did indigenous communities start to manage a few natural protected areas; so far, however, they have not introduced any formal traditional knowledge into this activity. It is expected that in the years to come more communities will take on the management of new archaeological or natural sites, and maybe some traditional costumes will thus be revitalized.

There are three ways that traditional knowledge is integrated into the management of protected natural areas: 1. signing, they define the form and content of signs placed on the footpaths and sites under protection. 2. infrastructure, the uses and designs are carried out with traditional materials by artisans on their terms. 3. we are training people from the communities in biology so they can take on monitoring and follow-up tasks that must be carried out at the sites.

Some government programmes to promote Atacameño culture currently promote the integration of traditional medicinal knowledge with healthcare provided by the municipal department of health. This experiment, still in its early stages, seeks the complementarity of the two streams of curative knowledge, particularly in more isolated locations where professional medical attention is sporadic. However, the initiative has faced financial and coordination problems hindering its effective implementation, relying more on the individual will of participants.

As mentioned before, since two years ago, the Universidad Católica del Norte, through the Museo e Instituto de Investigaciones Antropológicas (Museum and Institute of Anthropological Research), has held the “*Escuela Andina*” (Andean School) to teach young Atacameños about their people’s history and culture, in order to contribute to the process of coming to know their roots again, as well as giving them the opportunity to work as expert guides in community tourism initiatives.

A cooperation agreement was recently signed between the Chajnantor Astronomical Observatory, which is under construction in municipality territory, and the communities. A series of cooperation mechanisms are established in the agreement but these mainly focus on financial aid for local development and tourism. The zone has one of the cleanest skies on the planet for the development of astronomical activity, so it would be interesting to identify what opportunities there might be for this scientific activity to incorporate traditional or local knowledge or the community.

4. WHAT HAVE WE DONE?

In view of the panorama described above, the project ‘Human Well Being and Sustainable Management of the Salar de Atacama’ opted to get to know and accompany the community in an attempt to incorporate traditional knowledge into the evaluation process.

Initially, work concentrated on identifying “knowledge coordinates”, i.e. what kind of knowledge was still alive, who held it, how it could be approached, when it was manifested and how we could incorporate it into this project.

As mentioned in the preceding pages, the reply to *what* is very broad yet at the same time very specific. However there is knowledge that can be incorporated when evaluating the state of the ecosystem, a stage due to start any time now in Chile.

With regard to *who*, it became clear to us that we needed to approach the older generations and this was no easy task, since they showed greater reticence to participate in “non-Atacameño” projects and activities.

Therefore, *how* was a key point to resolve over the last few months, and it was resolved in the following ways:

- a. Ongoing trips to the district. In these, attempts are made to approach older people or leaders who are prepared to speak to us. It is a slow, non-linear process, and often we had to reinitiate contacts when the time lapse between visits impeded greater continuity.
- b. Approach to and conversations with key persons. Once in the zone, more in-depth contact was achieved with older people and adults who were prepared to share their worldview. However, these conversations are always “off the record”, and as such we see them as a further way to build up trust in ourselves and in the project.

- c. Educational activities. In November 2003, with the district's department of education and with the support of the mining companies present in the area, we took 7 of the 8 schools in the district on a visit to Laguna Chaxa, part of the Reserva Nacional Los Flamencos, where guides from the Toconao community received the children and told them about the area, from the "biological" (flora and fauna) to the "cultural" (meaning and significance for them as people of the Salar and its landscape). This activity went down well with the schools, the indigenous communities and the mining companies. It opened many doors for us to the community due to their recognition that our work had educational aims in support of their cultural recovery process.
- d. Meeting with older members of the community. During one of our trips to the district, conversations with leaders and others gave birth to the idea of holding a meeting with older members of the community where they could tell their life experiences and knowledge of the Salar, which would be recorded audiovisually and then used as an educative support in the district's schools. Once again, education was transformed into a powerful way to gain access to older members of the community and their knowledge. This meeting took place in February 2004 and was organised by the community, while we were invited and responsible for the audiovisual record. When we arrived at the event we found out it was the first such meeting of this kind to be recorded, and while no secrets or rites were revealed, it did allow impressions of the community and the elders concerning this process of recovery and transmission of knowledge to be recognised. A second meeting has been proposed for next April in the Toconao community, neighbouring San Pedro.
- e. Participation in religious activities of the community. We attended at least one festival for the villages' patron saints and other events of traditional significance for the community. This created a closer connection with the community through showing interest and respect for remaining traditions and customs.

5. LESSONS FOR THE EVALUATION.

Knowledge is one of the most valued resources in modern society. Without it people are condemned to poverty and discontent. In the modern information age, knowledge is power. Unfortunately, not all knowledge is equal, nor derives in the same power.

Traditional Atacameño knowledge is power, but a power that holds no market value. One reaches it, not through academic study, but through the emotions, by recognising it as the inheritance of an ancient tradition that gives meaning to the life and struggles of a marginalized people.

Therefore, the revaluing of traditional knowledge being experienced by the Atacameño communities, has given the opportunity to recreate a shared ethos, but it is also a clear sign that the community no longer shares one vision. The main enemy to traditional Atacameño knowledge is not "western" knowledge, but the heirs themselves, who have not managed to preserve it, and the older generations see with concern how the young have no interest in keeping it alive.

Efforts to recover the knowledge have come from recognition of its economic or political uses, moulding it into a "market" logic of value and use, in contradiction with the community dynamic in which it was pre-eminent in the past.

The will to teach and transmit this knowledge manifested by the older members of these communities contradicts individualistic logic. Arising out of work for mining companies or tourism enterprises, traditional knowledge represents a slow path to tread, of learning through doing, of an individual responsibility to learn, but also a community responsibility, since such knowledge must

be used to benefit everyone. Thus the challenge to retransmit and record it is a path to be inserted into modern codes of society, where the market and the new indigenous identity play a significant role.

In this respect, it is very valid for indigenous communities to use this knowledge, something so truly theirs, to achieve better economic development and so overcome their condition of poverty or marginality. For the Atacameños, this is still only a hope for the future, since it is impossible to be sure how much the communities can benefit from their knowledge, especially when many of them have not learned to value its true dimensions themselves. The authorities are also concerned about intellectual copyright for this kind of knowledge as in Chile there are no laws to protect it.

In this scenario, where powerful synergies are reshaping the relationship of the Atacameños to their knowledge, past, present, and even their ecosystem, what role can the project 'Human Well Being and Sustainable Management of the Salar de Atacama' play?

A first lesson to be learnt from the experience mentioned above is that this project has helped generate and strengthen the bridges needed for the older generations to bring their experience and knowledge closer to the young. From this perspective, the direct benefits go not to the MILLENNIUM ASSESSMENT project, but rather to the community and its process of patrimonial recovery.

A second lesson is that the languages needed to bring the traditional community closer to the Millennium project deserve more in-depth study. The conceptualisation worked out for the global methodological framework loses meaning when it faces the logic of local everyday situations. We believe that we should make added effort during the evaluation stage to integrate the contributions of traditional knowledge clearly and opportunely.

A third lesson on the contribution this project can make in this scenario relates to the possibility to reveal and highlight the processes by which traditional knowledge can be incorporated into local decision-making processes. The mechanisms by means of which this knowledge will be included in the evaluation must be defined in greater detail, be it in the Advisory Group (GA), or in parallel meetings and validations.

Lastly, it must be revealed that the key to reaching all knowledge is to trust in the great "teachers". The project 'Human Well Being and Sustainable Management of the Salar de Atacama', has allowed us to identify some Atacameño "teachers", and we would like to end with their words:

*" I want to tell the young,
to try to learn
I'm telling you, I've a bad memory, I forget
Like the old woman used to say, I'm very stupid !
I cannot sing,
I go to sing, I forget,
I'm singing, I forget,
I don't like to listen
But I cannot sing,
I forget"*

*"They tell me to sing
Knowing I know nothing
With many singers of different songs
All sing because they know
I sing to learn*

*I'm flooded with the memory.
Of what I cannot recall"*

Folksongs and 'payas', Sequitor Community Meeting, February 2004.

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