

**Footprints of living Landscapes –a View on  
cultural Diversities from the Andes.**

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## FOOTPRINTS OF LIVING LANDSCAPES – A VIEW ON CULTURAL DIVERSITIES FROM THE ANDES.

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### **Abstract**

The human impact on the environment is of growing preoccupation to be able to understand the formation of the contemporary landscapes and to be able to analyse the various phases of the development of a particular cultural landscape.

The impressive mountain landscapes in the Andean region in South America we observe today are not as pristine and untouched, as one could be tempted to believe but it is only recently being recognized as such.

The arrival the Spaniards in the 16th century changed the landscape with the introduction of new crops, animals and technology. But the Pre-Hispanic cultures had long before altered the landscape. Changes in subsistence strategies, demography, or perception illustrate complex causes that provide important insights into different utilization systems. Examples are taken from the author's fieldwork in the Andes and in the Ceja de Montaña.

**Keywords:** Environmental change, Inca , European impact, case studies, modern village foundations

### **Introduction**

The human impact on the environment is of growing preoccupation to day in order to be able to understand the formation of the contemporary landscapes and to be able to analyse the various phases of the development of the cultural landscapes of a region.

The impressive mountain landscapes in the Andean Cordillera on the western part of South America we observe today are not as pristine and untouched, as one could be tempted to believe but it is only recently being recognized as such. Cultural pressures represent an important factor for comprehending the current geographical pattern. Many biologists are beginning to realize that what they call maintaining an intermediate level of disturbance certain types of human land-use may result in higher levels of biodiversity than would be expected without any human activity (Balée 1994).

The conception of untouched pristine landscapes is still prevailing among many people and there exist a romantic belief in that pre- industrialised communities lived in harmony with nature. In the Andean region Pre-Hispanic cultures altered the landscape significantly after their cultural understanding and cosmology and not always in harmony with nature.

The many centuries of hunting and gathering societies to the stages of agriculture from c. 8500-5500 BC (Olsen Bruhns 1994) in the Andean area reflect the social and economic structure of the societies and change in the resource basis often correspond to changes in the social and economic organisation of the societies. The mountainous region only leaves very limited space for agriculture, why the different societies developed their specific resource management according to their possibilities and perception.

**Aim**

The aim of my investigation has been to illustrate the acculturation processes of the cultural landscape in Peru and analyse the change in culture and ecology caused by the clash of cultures specifically with case studies during fieldwork on the eastern slopes of the Andes. The cultural adaptation has developed several strategies to the different ecological zones in the Andes, where each culture choose different strategies concerning their social-economic developments. The acculturation processes are seen in settlement patterns, agriculture and material culture between the indigenous people and the European invasion in a long time perspective.

**Method**

The study is based on a multidisciplinary research including archaeology, anthropology, botany and geography to analyse the changes of the Andean landscape. Natural resources as basis for civilization are important parameters for the understanding of the physical and social/economic organisation of a society. Local geographic knowledge combined with anthropological fieldwork and archaeological research are instrumental in trying to understand the local conditions compared to the historical documentation. The history of relations between man and his environment is essential in order to interpret the changes and gives knowledge on the processes and the importance of events such as climatic and biological events or political decisions.

**The Natural Setting**

The Andean region consists of three main geographical and climatic zones: la Costa, the dry desert, la Sierra the Andean highlands, and the immense rain forests towards the east, la Selva.

According to contemporary geographic estimations only 6% of the Andean region is suitable for agriculture, however, they exclude large areas, which were cultivated in Pre-Hispanic time.

The Andean region is characterised by a surprising biological diversity and presents all known landscape forms and climatic variations, from tropical heat to freezing cold and snowstorms. Along the western side towards the Pacific Ocean extremely dry grey/brown deserts are interrupted by fertile floodplains with rivers carrying water from the Andes. Thirty to sixty km from the Pacific Ocean towards the east the Andean mountain range rises to altitudes of 6000 m above sea level with deep valleys and snow-covered mountains. Forests are only found in patches in the gorges of the mountains. In the altitude of 4000 meters above sea level large high plateaus between the cordilleras show a barren hilly landscape with yellowish bunch grass and dispersed tree groups and bushes.

Pre-Hispanic civilizations living along the coast had plenty of algarroba and guarango trees that made up large forests with a rich flora and fauna and plenty of fish in the sea but now large plantations of sugar cane and asparagus have changed the image of the landscape and the fish have become sparse in the ocean.

The Andean valleys and steep mountain slopes are covered with fields as agriculture is still based on small farming plots. In central Ecuador forests have been recorded up to 4350 m in the cordilleras, and similar forest patches are recorded from the same altitudes in Peru, depending on geographical location, slope, humidity and orientation. These patches of forests in Peru and Ecuador are now considered remains of a previously more extensive forest cover where the altitude represents the true

timberline in the region. The treeless landscapes found in the upper part of the mountains and on the high plateaus would return to the same forest that now only exists in relict form. The Danish botanist Simon Lægaard has proved that all the plant species belonging to these open grass lands have adapted to survive fires which may be due to both natural causes (lightening) and human impact by burning to get fresh grass for the live stock (Lægård 1992). But the perception of people has also influenced the burning of the vegetation. Oral tradition recorded from the central Andean area, tells of the japiñuñu, small demons, who once a year come up from the underworld to make young innocent girls pregnant. So in order to avoid the danger, the fields must be set on fire once a year, because the demons fear heat and fire (Schjellerup 1997).

### *Pre-Hispanic and Historical Background*

In the beginning of the 16<sup>th</sup> century the first invading Spaniards noticed an open bare landscape during their first journey from the northern coast of Peru into the Andean highlands.(Fig. 1)

Diego Trujillo, one of the participants, recalls from the very first journey to the highlands:

” There are many mountains, they are all barren, there is no wood. They burn charcoal which they bring from far away.” (Trujillo in Canilleros 1953) and

“the Spanish camped in the cotton tents they carried, making bonfires to protect themselves against the cold of the mountains.. these great heights, which are bare and covered with grass as short esparto grass... and the water is so cold that it gives men a chill to drink it”.(Jerez 1947).



Fig. 1 Barren landscape in the Andes, Photo Inge Schjellerup

Since the first Paleo-Indians entered the region some 11.000 years ago. (Lynch 1980) the landscape in the Andean region has been modified by human activities. The Paleo-Indians burned parts of the forests to expand the game-rich zone between forest and open land and also to direct game animals in certain zones (Gade 1999). Later burning was necessary for opening land to get new areas for agriculture.

The pollen record indicates that before 4000 years ago the Andean landscape was highly agricultural and essentially cleared of trees as the arboreal pollen are extremely rare (Chepstow-Lusty et al 2000). So when the Spaniards arrived and noticed the barren landscapes many indigenous societies had already placed their footprints on the varied natural landscapes.

The Spaniards encountered the last Pre-Hispanic civilization of the Incas, which was

one of the most important actors of altering the landscape in all three regions of the Andes.

Access to water and therefore to use for irrigation for the cultivation of maize was important to improve the production. Valleys became covered with agricultural terraces used mainly for the cultivation of this crop, which was considered very prestigious used in the ceremonies. With canals supplying the water on the terraces maize could resist frost and drought and yield more than once a year. The Incas developed the most extensive network of terraces that the Andean highland has ever known. Agricultural land was increased by approximately 10% by the construction of stone and earth terracing systems in Tawantinsuyu, the Inca Empire.(Fig. 2)

Many rivers were canalised as the Río Urubamba near the village of Pisac to conserve



Fig. 2 Inca stone terracing systems in Machu Picchu. Photo IS

agricultural land. The Urubamba canalisation with a length of 3.3 km is one of the largest pre-Hispanic canals in the Americas.

One of the main reasons for the lack of timber was that there was an enormous consumption of firewood in the Inca Empire. Daily offerings took place in the main plaza of Cuzco, their capital and at the same time in their administrative centres all over the Tawantinsuyu. Eternal bonfires were burning on the plaza in Cuzco and in the principal administrative centres. Murúa (1946) mentions that the bonfire in Cuzco consumed 23 tons of timber daily, which indicates the importance the Incas paid, to fulfil their obligations towards their gods.

The Incas also consumed large amounts of firewood in the preparation of chicha, maize beer and in the preparation of food to be distributed among their subjects in Cuzco and in the administrative centres during their monthly feasts. The religious ceremonies contributed to the power and the maintaining of the Incas, as a special supreme class.

The Incas was very much aware of the shortage and there is ethnohistorical evidence of protected forests, controlled use and reforestation in the area around the Inca capital Cuzco in the central highlands as Sherbondy (1986) mentions from her research.

### ***The European Impact***

After the conquest of the Spaniards in 1532 the Inca society collapsed. A contributing factor was that diseases introduced by the Europeans wiped out at least half of the population.

With the European invasion a totally foreign world and conception was brought to the New World. The introduction of new crops and animals together with new technologies in farming, construction, mining and others changed the Andean landscape entirely.

The presence of trees to meet firewood needs and for house construction was, along with water the critical factor in the location of Spanish settlements in the Andes (Gade 1999).

The Spaniards very soon became aware of the shortage of firewood both in the coastal valleys and in the highlands. Already, in 1535 the Town council of Lima ordered each Spaniard to plant 300 sauces (willow trees (*Salix* sp.) and other trees, to stop the deforestation. It does not seem to have been done as the order was repeated the next year. (Rostworowski 1981). Regulations were ordered to restrict the exploitation of wood resources, so essential for fuel (Torres Saldamando in Rostworowski 1981).

A rapid deforestation in the central highlands is shown in the documentary evidence where local lords of the Wanka ethnic group, earlier subdued by the Incas, were forced to give 200.071 split logs to the Spaniards in 1533 but only four years later the amount had decreased to the amount of 17.000. The numbers probably reflect a rapid decline in the available wood resources (Chepstow-Lusty et al 2000).

House construction, brick factories, tile works and charcoal

In pre-Hispanic times, the Inca houses were constructed of stone but common houses were constructed of tapia, a technique using shutter boards, where wet earth mixed with straw and pebbles are compressed or of adobe, sun dried clay bricks with straw roofs. On the dry desert coast, most of the buildings were constructed of adobe, sundried clay bricks.

But the Spaniards wanted their houses made of a more noble material.

Large-scale tile manufactures with big kilns with large employees of brickyard workers were constructed and increased in number during the time, and nearby main towns and smaller enterprises, engaged themselves in producing

bricks. The haciendas in the countryside, the churches and the more important houses in the towns therefore became constructed of bricks. Wooden beams, window frames and floors were new uses of wood introduced by the Spaniards.

By 1555 all the wealthy Spanish houses in the ancient Inca capital Cuzco were covered with red roof tiles. Today most of the peasant communities in the Andean highlands produce roof tiles though it is a decreasing tradition due to the introduction of the tin roofs. Very often it is only one or two families, who specialize in the production of tiles, besides being farmers. A family may burn a couple of times pr year and use approximately 1.2 ton timber for each burning.(Fig. 3)

In the cities and larger towns many tile works are still functioning. The minor tile works burn 10.000 to 30.000 tiles, the middle-sized 30.000 – 50.000 and the large more than 100.000 tiles pr burning.

The amount of timber used for the production of bricks and tiles contributed and contributes to the deforestation everywhere as natural timber is still used.

A large fabrication of charcoal was another big consumer of trees as the Spaniards used it to heat their houses in big braziers. Heating of the houses was not known in the indigenous society before. The Incas knew of charcoal but the Spaniards greatly expanded its production. Spanish regulations were introduced to limit the production:



Fig. 3 The burning of tiles in Morada. Photo IS

### Production of glass and clay receptacles

Another new technique was introduced with the production of glass, which needed large amounts of firewood for the firing besides the traditional pottery making. Various kinds of glass bottles were needed for the introduced wine production, olive oil and aguardiente, distilled spirits. This was bound up with the introduction of new agricultural products, beside the cereals. Sugar cane had been introduced to Spain by the Moors, brought to the Caribbean and from there, to the Andean countries (Ansi3n 1986).

Large sugar-cane plantations became part of the landscape laid out in the fertile coastal valleys and warm valleys in the Andes. The sugar-cane mill itself is constructed of timber and the wheel drawn by oxen or mules. The very early colonial sugar mill can still be found

out in the rural areas. The cane is squeezed in the mill, and the resulting liquid boiled for several hours, before it is poured into a wooden mould, where it dries as *chancaca*, sugar loaves. Another product is the distilled liquid which gives *aguardiente*. (Fig. 4)

### Shipbuilding

Shipbuilding was another industry, which earlier demanded large amounts of timber. The pre-Hispanic sea transportation consisted of large rafts made of balsa tree. However, the Spaniards were used to quite another style of ships, and the ongoing contact with the mother country, on the other side of the ocean meant, the need of more vessels. (Fig. 5) The dangerous journey on the Pacific Ocean to Panama where the goods were unloaded to be shipped onto the



Fig. 4 Working sugar mill in Chilchos. Photo IS



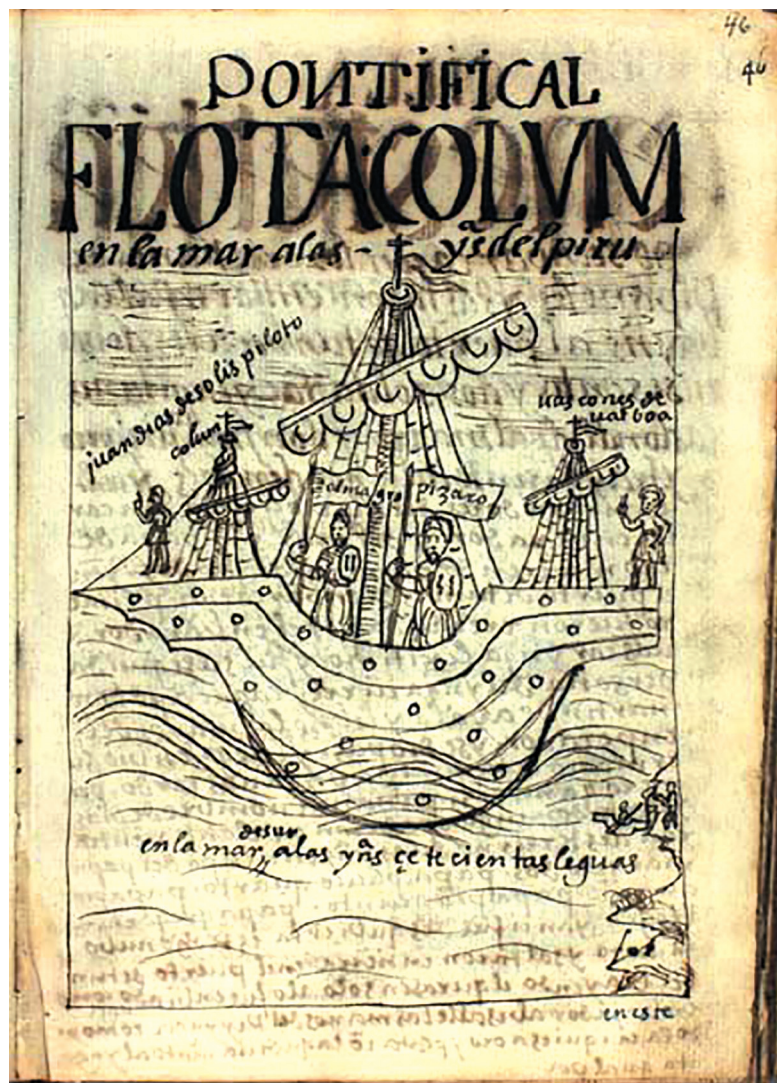


Fig. 5 Spanish ship as depicted in the manuscript of Guaman Poma de Ayala ca. 1615.

Atlantic Ocean also caused great losses of ships. The cutting of the protected forests along the coast changed part of the landscape into larger devastated areas while other parts changed into wine yards and sugar cane plantations.

### **Mining**

The real motive behind the Spaniards taking up residence in the Andean countries was the gold hunger and fever. The Inca gold was a symbol of the ruler as the son of the Sun, the gold and silver had been obtained from ores in the mountains, where the miners dug minor holes. With the Spaniards arrival, they brought new techniques onto them. The mines required enormous amounts of wood for two

reasons: as firewood for melting and timber for construction support in the long and narrow mineshafts. In the central Andean highlands, in what is now Bolivia, the silver mine of Potosi was discovered in the early Spanish colonial period and in 1650 it was the largest city in the Americas, with a population of 160.000. (Fig.6)

Three thousand natives worked on a daily basis in the famous silver mine at Potosi, Bolivia. The lack of trees on the high plateau and the necessity of firewood entailed an enormous amount of takia, dried llama dung. In the beginning of the 17th century 600.000 loads of takia was brought on llama caravans to Potosi, and firewood for the houses was transported from the eastern slopes of the Andes.



Fig. 6 The Potosi silver mine . Engraved by T. de Bry 1590.

Outside Potosi , an area of 30 km was contaminated by the smokes from the mines and no trees left. The landscapes around the mining industries are even today quite shocking. The waste from the mines is thrown down the barren mountain slopes. The air is filled with metal particles so one can hardly breath and the average age is from ten to twenty years below the national average. The mining centres in Pataz, Cerro de Pasco and Hualgayoq and Yanacocha in Cajamarca have left the landscapes barren and unproductive for centuries to come.

#### **New animals**

The inhabitants were not accustomed to the foreign livestock introduced by the Europeans, as they were only familiar with their domestic indigenous animals as llamas, alpacas, guinea pigs and other rodents. During the colonial period from 1532 to about 1820 the Spaniards brought livestock with swine, sheep, goats and cattle into the New World

The introduced animals had other habits. For example, the swine grubs the soil of the newly sown fields in order to eat the tubers, the sheep with their sharp hooves and voracious appetites take a marked toll on woodland (Gade 1999). The cattle roam go free all year round and do not have to be corralled every night, as do the llamas and alpacas. Viceroy Toledo had to make new regulations and he ordered the judges to make sure that no animals were put into the newly sown fields (Zimmerman 1938).

With all these roaming animals, newly formed bushes and tree seedlings were simply eaten by the livestock.

In the 1560s Viceroy Toledo forced the introduction of the Mediterranean type plough onto the peasant communities.(Fig.7) The wooden plough drawn by horses or oxen creates deeper furrows, thus making the topsoil more vulnerable to erosion, than did the more gentle cultivation techniques of the



Fig. 7 The plowing with the ard in Puno. Photo IS

indigenous people. The pressure on the use of land was considerably higher even taking into consideration the drastic depopulation.

Case studies from Sierra, Ceja de Montaña and Selva

The eastern slope of the eastern Cordillera in the Department of Amazonas, Province of Chachapoyas has always been a marginal region. An inaccessible mountainous terrain with hardly any roads, where all transport is by foot or by mule today is one of the areas, which still show visible remains of ancient abandoned pre-Hispanic agricultural systems that altered the original landscape.

The District of Chuquibamba covers some 32.000 ha from the altitude of 900 m along the Rio Marañon to 4300 m. The Chuquibamba valley runs east-west and has a V-shaped profile with 30-60° slopes. More than two thirds of the district lies over 3000 m. Very few areas are level and agricultural land is scarce (Schjellerup 1989).

Until presently a rich variety of ingenious devices for cultivating land in the rugged mountainous landscape lied unnoticed in the altitude of 3200-3800 meters above sea level witnessing of former generations hard work to get sufficient land for cultivation. Whole mountainsides are terraced with ridged fields and stone terracing. Some of them took advantage of the natural sinkholes in the calcareous mountains and appear as large amphitheatric field systems and concentric raised fields. They are all situated near Pre-Hispanic settlements. The different devices hindered the soil erosion on the eastern slopes, which receive abundant rain from the east from the Amazonia and facilitated drainage in the wet and humid climate. The areas cover several hundred ha and are today only visited by flocks of horses and some cattle (Schjellerup 1986).

Most of the agricultural systems date from the presence of the Chachapoya culture (800 AD-

1470 AD) and the Inca occupation (1470- 1532) (Schjellerup 1997).

Today the Chuquibamba District supports some 2500 farmers. A still stronger population pressure from the other side of the Río Marañon from the Cajamarca and Celendin provinces has made it almost impossible to acquire new land. All land in the productive zones is privately owned today why the landscape in the valley looks like a pattern of a mosaic with dispersed fields surrounded by maguey plants and eucalyptus trees (Fig. 8). (Schjellerup 1989).

During the month of August the Chuquibamba valley is often covered in smoke and small pieces of ash from the burning trees, bushes and grass fall down upon the fields. The reason is that people often lose control of the fire so the fire is being spread to a much larger area than intended.

The yearly burning of the vegetation in the jalca or the puna, the two ecological zones of the upper part of the Andean mountains, which is an open grassland with forest patches, take place, because the peasants want new green grass for the cattle as mentioned above. The cattle, which wander freely about in these parts of the mountains, are not taken down to the villages, except for milking.

One of the most disturbing factors is that the burning of the vegetation in these zones does not allow any new growths of trees – a problem for the maintaining of ground water and for the danger of erosion.

The hamlet La Morada is a typical example of a settlement founded in the Ceja de Montaña as late as 1985 by one family, who originally came from the highlands. The family left Chuquibamba because land was scarce and



Fig. 8 Contemporary fields in the bottom of the Chuquibamba Valley. Photo IS

poor. They crossed the cordillera and settled down in several places in the forest where they lived for many years. As the terrain was very rugged and difficult they settled down where land was more or less level and where they could make some fields. These places were in fact earlier pre-Hispanic sites. The area was heavily inhabited more than five hundred years ago and then abandoned because of a drastic population decline caused by European diseases introduced by the Spaniards in the 16th century as mentioned above. Finally they settled down on a location, which they called La Morada, where stone terraces witness of earlier Pre-Hispanic agriculture. The village was named after the presence of many violet (Morada) flowers.

For many years the family grew and lived alone with a few pieces of cattle. Having founded the new village or rather hamlet they called their relatives and friends in the highlands and distributed new land to them without any legal rights. In the 1990s they had several hundred pieces of cattle spread all over a large territory where all the trees had been cut.

During the first years of colonisation the inhabitants were not concerned with the results of the cutting of the trees and sowing pasture for the cattle. Little by little they accumulated experience about the impact of their resource management practises, though they still relied very much on their experiences and knowledge from the highland. Now two of the sons of the former founder of La Morada are founding new hamlets in the fragile environment of the forest. It is frightening to see the speed of deforestation very few people are able to carry out within a very short time. Our latest research in the Huambo valley has shown the degree of deforestation in certain years reached a maximum of 2.7%. The grassland areas have

expanded substantially, primarily on relatively steep slopes. This is a serious threat to the ecological balance in the areas due to increased erosion and land degradation (Schjellerup et al. 2003).

In the Pre-Hispanic period preceding 1532, many indigenous groups speaking different languages of which only very few are left inhabited the Selva Alta, the upper lowlands. Most of them lived in small, independent communities or in dispersed settlements with slash and burn cultivation and hunting and fishing that allowed for a greater mobility. The Spanish colonial policy forced some of the groups to live together in nuclear settlements for Christianisation and collection of tribute. At this time the environmental changes in the forests were moderate. However, in this century dramatic changes have influenced the region severely and altered the environment from a dense forest to a more open savannah like landscape, with scattered forested areas.

In the 1970s the process of the agrarian reform encouraged people from the highland departments of La Libertad, Amazonas and Cajamarca to migrate into the Amazonía to raise cattle and grow rice, sugarcane and coffee. The so-called colonos were given free lands and cheap loans to settle down in the new areas to be colonized. The politicians created the myth of a land of milk and honey in the Ceja de Selva and the Selva with an abundance of productive land and good possibilities for cattle holdings. A high degree of deforestation has taken place during the last fifty years especially to promote cattle ranching in the Amazonía (c. 4 mill. ha) the actual coverage of pasture is some 500,000 ha with 350,000 head of cattle (Brack 1997).

The 1980s saw the appearance of several Non Governmental Organisations (NGO's). Many of them had the best intentions for the

rational exploitation of the natural resources, a higher standard of living for the inhabitants, and to stabilize an ecological equilibrium. Unfortunately, most of them came with knowledge and ideas from other geographical regions, and no thorough study of the social and biological conditions were carried out before their words were put into action. They expanded the agricultural area, to "push forward the agricultural frontier" as this "development" has been called. The result has been a further impoverishment of the soil, low productivity in agriculture and further introduction of large numbers of cattle, which are the cause of the major destruction of the soil. In fact the only result of the work in the 1980s was the disappearance of large forested areas for agriculture and cattle. Large timber companies cleared other parts of the forest to extract valued timber for furniture and house construction, for national and international markets (Brack 1997).

Today cattle grazing are considered the worst threat against the forests in the Andean highlands and in the Amazonian lowlands. Cattle grazing are responsible for maintaining open grasslands as the natural replacement, as the resprouting of tree trunks and seedlings is not possible. In the Andes patches of forests are only seen in the inaccessible gorges and untouched places.

For many years population pressure and deterioration of the local environment have been the reason why many highland peasants have tried to find new lands on the eastern slopes of the Andes and in the rain forest areas of the Amazon. This is seen as an adaptive response to a changing environment but also a solution promoted by the national society.

In the Selva the Lamistas, a native Quechua speaking group in the upper lowlands of the Amazonía of the Amazonas were established

during the Spanish Colonial Period as an ethnic group, that have maintained their culture and identity despite many changes in the Amazonian environment the last forty years. In the 17th century they were forced to live in the village of Lamas but the settlement and land-tenure patterns changed throughout the area during the last centuries and new villages have been founded on both sides of the Río Mayo, where large forested areas were still available for hunting and new fields. The recent story of the Lamas people is a tale of many changes and opportunism due to the strong influences on the national and international levels. The region was known to be a hiding place for terrorists who along with the local people, had organized a network of information exchange and trade with drug dealers as the land is very suitable for coca growing. However the Lamistas have maintained their principal subsistence activity as peasants supplemented with some hunting. They do not engage in cattle breeding as the mestizos. Surrounded and pressed as they are by the colonos they still practise slash and burn agriculture but with greater emphasis on growing crops for the market such as coffee, bananas, beans and peanuts but they are still considered specialists in hunting. The pressure forces them to find new land each day further away from their present villages and Lamas town now into the now protected forested areas, as has recently been observed (Schjellerup et al. 2001). The area, which was earlier, covered by dense forests with the presence of dispersed native groups practising slash and burn agriculture that moved around each 3- 4 years is now left as an open bare landscape.

The movement of highland agriculturalists from the west to the east is seen all over the eastern flanks of the Andes. They all have their specific historical background, but the outcome

is the same. The destruction of the forest, unknown vegetation and archaeological sites (Schjellerup et al. 2003).

### **Conclusion and summary**

The daily human interaction with the local environment has developed agricultural systems and social and economic networks in the Andes in the demand of different products which have shaped the landscapes. The search for basic resources developed major trade routes from the highlands to the coast and to the lowlands and vice versa. This required mobility from the productive unit, and dynamic interactions between local groups in different ecological zones to minimise the risk of a simultaneous loss with severe hunger as the result.

Constraint situations with long drought periods or periods with excessive amounts of rain have thus developed various strategies for survival. Peasants are always aware of their resources and have to correspond to changes in their environment in a never static situation. People in each region had to adapt to different problems.

The Andean landscapes have been altering during the last 12.000 years. During the Spanish colonial period the Pre-Hispanic landscapes changed tremendously. There was a drastic reduction of forests both along the coast and in the highlands. The Spaniards already saw the Andean highlands as barren, but planting of trees and control of forests had been part of the Incas policy. Due to the introduction of new techniques in farming, building and mining the consumption of trees accelerated, even when a drastic population decline is taken into account. The Spaniards soon became aware of the problems and regulations were put into practise but when they were accomplished this was only on a very little scale. There was no serious

management of the forests for centuries. The results are seen in the highlands today, and this was the reason for introducing the eucalyptus tree in the last century.

The eucalypts are seen all over the Andean landscape and if one did not know better, one would consider it as a native tree. Unfortunately it is the worst possible tree for reforestation, as it impoverishes the soil and gives hardly any life conditions for wild life. Even today many foreign reforestation programs include eucalyptus as the most important tree because it is fast growing. One can only hope, that with the present knowledge on native species, much more effort will be put into the reforestation of the native species.

A principal key to understand landscape change is that environment and culture interact in many ways and on many levels, which tell the stories of the living cultural landscapes.

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