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Aymara Indians in Chile: Water Use in Ancestral Cultures at Odds with Water Rights in Modern Times

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Abstract

South American Aymara culture, as well as Inca Empire were born high and above, in the vicinity of Titicaca Lake, over one of the highest plateaus on earth, in the nearness of active volcanoes and snowy peak summits. Soon the Indians descended to the valleys, following rivers and streams, fed on Andean ices, building up terraces and carefully channelling the precious liquid in order to irrigate potatoes and quinoa. Whereas the Incas disappeared, Aymaras persevered in Extreme Northern Chile, raising llamas and alpacas, growing vegetables and fruit trees at lower altitudes, even in desert areas where ancestral “canchones” and Spanish adopted “socavones” became common techniques, intended to capture either superficial and subterranean waters from dry pampas and nurture food crops in beautiful oasis. However, water resources are running scarcer these days, for higher return activities developed in port cities, all together with rich copper, nitrates and other sorts of mine enterprises, gave way to a recent water code (1981) that turned the contended liquid into a transacting commodity, totally separated from land or property rights. During 2003 and 2004 hotter summer months, a joint Portuguese-Chilean team, led by the Portuguese Tropical Institute, field researched Aymara Indian communities in extreme northern Chile, a millenary ethnic group still stubbornly inhabiting hard to reach adobe houses settlements, located up the Andes and high oasis valleys, persevering against all odds their nature respectful farming traditions. The paper discusses differences between modern Chilean policies and ancestral Indian ecological practises related to water use and management in the First Region of Tarapacá.

2 Introduction

Chile is one of the narrowest and longest states in the world. Indian populations are numerous from the Aymaras (North) to the Mapuches (South), not forgetting Rapa Nui people from Easter Island. Rules and regulations were as copious as peoples and historic cycles they've known since the Conquerors arrived, but Chile state (1810) managed to create uniform and universal directives for all Indigenous populations by the end of nineteenth century. Economic development, regional demographic dynamics and Aymara cultural assimilation acknowledged seven detached periods in the South American country:

- 1) Internationalization of the Extreme Northern Territory, along with intensive nitrates extraction by foreign companies, was implemented subsequent to Chile expansionism toward previous Peruvian domains (1879). In order to effectively control its long and heterogeneous country, Chilean state not only gave private enterprises generous natural resources exploitation privileges, but also the ability to colonise and “civilise” Indian populations.

2) Chilean repression of differences, known as *chilenization or forced assimilation*, was intended to preserve national cohesion and pacify long lasting border disputes with Peru and Bolivia. This policy was active from the end of nineteenth century onwards but was harder over Aymara Indians in the 1930's, contributing for traditional ethnic societies disintegration by means of political, social and cultural exclusion, even persecution, in specific cases, nearly extermination (CVNT 2003).

3) Economic and political integration of the Extreme Northern areas in Chile, under a republican regime, was achieved via simultaneous military occupation of this mineral rich frontier and was gradually imposed along the first half of the 20th century. As far back as the 1930's and 1940's, Aymara Indians were forced to speak and actively taught how to read and write Spanish language (better say *Castellano* idiom) due to a wide net of public schools, even though some authors stress that Indian communities had already started the process whilst paying private teachers themselves (Gonzalez 2002).

4) The urbanisation and cultural modernisation cycle took place after the Second World War, and was accelerated during the 1960's and early 1970's following Agrarian Reform. Mounting rural exodus or interior-littoral population movements were adamant. Populations of Andean herders were greatly reduced, as less demanding lower valleys farming activities and a quite tempting city pull replaced millenary reciprocity relations and ancestral community trade networks.

5) Submission to neoliberal models was in action particularly during the 1980's, throughout Pinochet dictatorship, inspired in Thatcher's British-Conservative paradigms. Exacerbation of individualism in opposition to traditional community bonds, the need to possess instead of using was imposed to society in general. Agriculture sector modernization was a priority policy that further stimulated rural exodus all over Chile and imposed new ways to Aymara youngsters.

6) Actual globalising patterns became evident from the 1990's onwards, subsequent to democracy restoration, yet they continue being disrespectful of traditional links, ethnic differences and local economies.

7) In January 2001, Chilean government created "The Commission for Truth and New Approaches to Indigenous Peoples" (*Comisión Verdad y Nuevo Trato de los Indígenas*), aiming pre-Hispanic Amerindians. The Commission has just finished a report that consubstantiates recommendations on differences recognition, new ways to deal with Indians, and respect their ancestral cultures and rights (CVNT 2003). Their role has been merely consultative though and existing National Commission for Indian Affairs (CONADI) might sustain further developments.

3 Chile, an impossible geography and prolific history

From deserts to glaciers the narrow South American country displays all possible hydrological and geological formations, occupies a series of climatic zones, making travelling as difficult in latitude as it is from the Pacific Ocean to the interior. No more than 200 km separate the seaside from border areas with Bolivia or Argentina; to reach them one climbs coastal mountains, traverses dry pampas to scale further inwards to the Andes where volcanoes rise above 6,000 metres. Fragile ecosystems prevail over Chile's extreme northern territories, from Peruvian border (N) till about 27° south of Equator, along the Capricorn high pressures zone, closely associated to precipitation meagreness. Scarce moisture is either sea breeze supported (*camanchaca*) or summer rainfall related, mostly following the annual behaviour of the Inter-Tropical Convergence that brings moisture from the northeast (easterlies), starting in December and finishing in March, phenomenon improperly known as Bolivian winter.

Annual precipitation of 400 mm is registered in the high plateau, a geomorphologic surface characteristic of Central Andes, but lowers as the latitude increases and the altitude diminishes, whereas average maximum temperatures reach 16.8° in April and October in the city of Putre (3,500 m) and minimum temperatures frequently lower -10° Celsius in July (Aceituno 1993, Mendez 1993). High thermal amplitudes are registered year round, freezing nights and winters predominate, dry air and intense solar radiation prevail, oxygen scarcity and vegetation rarity are

all strong limiting factors experienced in the heights, making life harder for both animals and humans, demanding physiological adaptations from the first and slow movement activities and special cares from the second. All the same, Chilean Andes have an interesting number of species able to survive under extreme climatic and nutritional conditions, while lower altitudes experience superseding water scarcity and all associated environmental constraints.

There are appreciable natural resources though, sometimes depredated yet never depreciated. Lakes, lagoons, plateaus and river valleys have legitimated refuge habitats for Aymara Indians, no more than subsistence niches located at different altitudinal steps along the Andes mountains slopes. Activities rang from animal husbandry through mixed animal and vegetable farming, into irrigated agriculture and fishing, all connected through proficient trade networks and cemented by means of good neighbourhood relationships, encouraged by survival needs and not imposed by force. Small Indian communities (*ayllus*) developed distinctive activities in each agro-ecological step from immemorial times, a sort of monumental staircase supported on reciprocity relations, activities developed on each level being complimentary and always linked to strong ethnic and even multiethnic alliances, interdependencies and cultural bonds in a sort of archipelago human geography. Study object will be shrinking spaces existent in Northern Chilean Andes and oasis valleys, increasingly menaced with external cost benefit directives, growing tourism and secluded mineral exploitation, object of depredation by higher and quicker return activities and target of state despise. The omnipresent ethnic group still stubbornly fighting for recognition of cultural identity are Aymara Indians, established in the area 10,000 years before Christian era, whose civilisation was allegedly based at Tiwanaku, city originated in the high plateau in the whereabouts of Titicaca Lake (500-1200 A.D.); later on, they were pacifically assimilated by the renowned Incas (1350-1532), till European colonisers arrival.

Traditionally Aymaras preferred to live in the high plateau (above 3,800 metres above sea level) where along the years they built many villages in support of animal farming, camelids and Castile sheep being customarily fed in the wettest areas of the heights termed *bofedal*. Animals and herders come down to lower altitudes during the winter, namely to the following Pre-Andes mountains level, being traditionally cared via communal cooperation. In that second agro-ecological step potatoes, quinoa (*Chenopodium quinoa*) and oca (*Oxalis tuberosa*) were also cultivated in terraced slopes, replaced by maize and alfalfa these days. As to the third level (2,000-3,000 metres) it is still subsistence agriculture dominated, diversified produce being river fed along the valleys, particularly above 2,000 m, where potatoes, yucca and capsicum were adamant, and vineyards, citrus, fig trees are in charge now.

A fourth level includes dazzling oases, market agriculture prosperous, melons, water melons and horticulture being main productions at Pica (S) and corn, mangos and olives in Azapa valley (N). The Northern areas have a domineering European tradition, olive trees and technology having been introduced by Italian immigrants, so bountiful that the Extreme North currently places 3rd in national ranking of olive producers. Drop irrigation is noteworthy, organic fertilisers and chemicals are common inputs in Azapa and Lluta valleys (located near Arica), for modern agriculture practises are the obvious choice in peri-urban areas. As to Southern territories, Matilla and Pica oases, in the whereabouts of Iquique, depend exclusively on irrigation, *canchones* being long cherished techniques dependent on superficial water retention. Vegetable farming (melons and water melons) uses moisture from evaporation on hotter months, following salty layer extraction in the rare oases. Later on, other inputs were introduced, such as extensive galleries built up for liquid transportation from sources to oases, so-called *socavones*, further permitting intensive horticulture in the vicinity of Atacama Desert. Yet the best ever irrigation project in the study area is Azapa, because it dates from the 20th century and gave way to diplomatic incidents with Bolivia. Chilean public investment built a dam up in Chapiquiña (2nd step) making use of international River Lauca waters, a long and voluminous stream fed by glaciers and high plateau rains. Lauca waters were connected through a wide duct to the valley, contributing for Andean *bofedales* irreversible depredation.

4 Water, the most valuable asset

Water has inestimable value for any living creature. One hopes to use this legacy, as freely as pure air for it's supposedly available in copious amounts. In dry and desert areas, however, water has always been such a contending treasure that wars and unending conflicts have made history rich. In Northern Chile, ancestral territories occupied by Aymara and Atacameño Indians have been pressed out a vague of invaders, from the Incas to the Spaniards. While indigenous cultures only previewed rights of usage and not water possession, seen as indivisible, European colonisation introduced new modes to deal with the inestimable good, particularly in dry areas located around the worst desert on Earth, Atacama. Division of water among Spaniards and Indians was regulated as far back as 1557 (Toledo reforms); at Pica oasis, irrigated by means of Quisma waterway, competing interests were further regulated in 1659. Accordingly water rights were inserted in legal papers all together with land ownership intended to provide future generations adequate living conditions. As said by ethno-history expert Carolina Figueroa, first reports of separation between land and water rights date from the seventeenth century, namely in *socavones* or water galleries served areas, where half to one hour water irrigation rights were a concession to Spanish farmers (Figueroa 2003).

Conditions worsened in the subsequent eras, for extractive industry – silver, nitrates or copper – went along with devastative animal and vegetable farming, and strangely depredation practises persisted after independence from Spain and the War of the Pacific, during the nineteenth century. Mining has indeed been disastrous to the slim rivers and streams, like Lluta, Azapa, Vitor, Camarones, Tarapacá or Loa, running west from the high Andean plateau toward the Pacific Ocean. Growing urban populations, concentrated during the twentieth century in port cities, Arica and Iquique, have generated increasing water demands and turned the precious liquid into a scarce commodity.

Iquique is the paradigmatic example of a city with the wrong location for all the right reasons. Originated around the beginning of the eighteenth century, in order to facilitate Huantajaya silver exports by sea, the city boosted up after Peru allowed nitrates to be transported through its port in the year 1828. The governing nation then, Peruvians granted Iquique the honours of provincial capital, title taken away from the old interior town of Tarapacá, together with its stream water in 1878. It had about 10,000 inhabitants when John T. North, British nitrates magnate, developed a salty water distillery, intended to provide the capital city enough potable liquid inexistent within or underneath. After the War of the Pacific (1879-83), Chile annexed all Extreme Northern territories and Iquique became the first between firsts, meaning First Chilean Region capital. Having a beautiful view, nice beaches, and the correct setting for docks, even for a small airfield, the city is dominated by a tall sandy dune, followed by a 500 metres cliff, top off *Pampa de Tamarugal*. Previously populated with tamarugos (*Prosopis tamarugo*), thorny species about 10 metres tall, the unending plane or *pampa* is now quite desert. In matter of fact, the tamarugo is a tree that possesses the ability to feed on water either from subterranean deposits or from *camanchaca* (ocean fog), and it's quite resistant to sandy storms, to goats and sheep, but not to human kind. Used as fuel during guano and nitrate extraction cycles, it has been totally depredated, further contributing for desertification and deep water towels decline. Iquique has 150,000 residents these days and a considerable floating tourism-oriented population.

The final blow to Aymara territory came both with 1979 regulations over communal indigenous land, which liquidated any form of ownership other than private property and 1981 Water Code (Decree n° 1222), all designed and approved during Pinochet dictatorship. The legal frame separated land from water rights, giving anyone the legal possibility of natural resources concession under demand, providing there is enough liquid on the source or basin, which is something unthinkable for indigenous populations. In this way, Indian landownership in Chile gives no property over subsoil, nor subterranean waters, rivers and streams, even less domain over animal species residing there. Resources are segmented – soil, water, biodiversity – and

available for usage on the open market (under state concession and regulation), supposedly for the benefit of all or toward an inclusion policy, in matter of fact driving to repression of social and ethnic groups, marginalizing the ones without proper legal representation and economic power (Gentes 2002).

As a transacting commodity in a neoliberal economy, water rights were easily registered (one should say bought) by the most wealthy, usually mining companies, drinkable water enterprises, and power plants, very few being public enterprises. Agronomy expert José Delatorre concluded recently that the law had devastating effects in the North of Chile, because the First Region (Aymara nuclear territory) has lost about 60% water resources for private ownership, and the Second Region (Antofagasta) has barely 10% free irrigation sources (Delatorre 2004). True is Decree's 1222 article 5 stipulates water to be a national asset for general public usage, yet it awards private owners exploitation rights according to legal norms so far irreversible. Furthering regulations, article 6 clearly determines the utilization of waters to be a private prerogative, and assigns the owner the possibility to dispose the liquid freely, under respect for general legislation (UC 1983).

Chile signed the Rio Convention on Biological Diversity in June 1992. Subscription of the Hague Global Strategy for Plant Conservation, in 2002, recommends the ecosystem approach, meaning, the integrated management of land, water and living resources, toward conservation and sustainable use in an equitable way. It recognises that human beings, with their cultural diversity are an integral component of ecosystems. There is neat contradiction between universal biodiversity conventions assumed and domestic legislation. Ambivalence persists externally and within Chile. Water Code was already controversial and unclear when drawn, may be on purpose. Chile's position with respect to compromises that the country promised to honour remains evasive. The advent of democracy (1991) changed neither the Water Code nor the ambivalent ruling over precious liquid tenure, which was legislated to be both public use asset and private property. Ownership rights are at odds with ancestral uses not because all Aymara Indians are conservationists but for the excessive claim of water demands to local authorities.

4.1. Case studies: Loa River and Pica Oasis

Natural ecosystems and rural environments lack economic sustainability as compared to fast return activities such as mineral extraction, tourism, manufacture and trade. Loa River, a frontier stream located between Aymara and Atacameño territories, is an unfortunate consequence of 1981 Water Code. In conjunction with budding settlements along its course, like the city of Calama (136,739 inhabitants), a wealthy copper mine and nitrates enterprises acquired river water rights. Less than two decades afterwards, exactly the year 2000, River Loa and tributaries were formally decreed exhausted and new water rights solicitations were suspended.

Demographic occupation of Loa riverine areas (mostly Aymara) dates from 900 to 1300 of our era, dispersed above 3,000 metres in the so-called *Vegas* or upper valleys; currently no more than 316 humans remain in the municipality of Ollague (INE 2002). Summer rains feed cactus (*Heliantocerus atacamensis*) and small bushes (*tolar*) as well as cultivated fodder, horticulture farming being possible using ancestral *canchones* techniques consisting on terraced soil management by means of superficial water retention. Oases persist amongst 2,000 and 3,000 metres territories, while lower altitudes know total desert conditions due to water meagreness, excessive evaporation and high insulation. Carlos Aldunate studied Turi Vega, located at Salado River, Loa affluent, in the year 1985. Water sources had just been granted to the biggest public copper mine group – Codelco Chile – causing direct damage to an irrigated alfalfa area of 1,500 hectares, where about 2,000 animal fed, namely llamas, goats, horses and sheep, plus about 10 hectares of highly productive maize, wheat, potatoes and horticulture land tended by local indigenous populations (Aldunate 1985). Last census to animal and vegetable farming recorded 1,047 heads, 77% of which were camelids in the whole municipality; mere 2.9 hectares were declared irrigated fodder and scarce 5.4 horticulture areas (INE 1997).

Another example of water depredation in the study area is Quisma valley, Pica municipality, located East of Iquique. Separation of water from land rights was rehearsed there long ago, during the seventeenth century, when Spaniard invaders imposed their laws and regulations, taking away half water sources and uses from Aymara Indians in favour of Spanish haciendas established in the beautiful oasis of Matilla. Eventually both the oasis and Quisma valley became important wine producers within the region presently considered Northern Chile. By the end of nineteenth century the municipality of Iquique demanded water from the wine region for public service in city area. The State of Chile finally expropriated the valley water in favour of urban residents rights of service (1924). As a consequence, Quisma valley and Matilla oasis turned out supreme examples of plant genetic erosion and desertification; from the hundreds of hectares of vineyard formerly irrigated scarce 17 ha remain these days (Nuñez 1985; Delatorre 2004). Lucky them, because desert took about 1000 years to move inward whereas Loa valley was depredated in mere two decades!

4.2. Old ways versus water code

In spite of ancestral sun adoration habits, common to other Indian peoples, the Aymaras perceive themselves as Earth descendents. *Pachamama* (motherland) symbolises fertility, both animal and vegetable, being the source of life and all living things. *Amaru* is her close companion in the quality of rivers and channels god, a calm deity when compared to Aztec Tlaloc. During the summer month of February, when crop festivities are typically celebrated in Northern Chile – *Anata* –, very adequately coinciding with Christian Carnival, Aymaras dance for several days at La Tirana (East of Iquique) praising the ancient gods all along with the Virgin Mary, and exorcizing the devils with body shakes and facial masks. Summer festivals in Chile are rarely that impressive and as far as the Indians are concerned these regional festivities are only exceeded by Oruro festival (located in neighbour Bolivia).

In the surroundings of most villages visited in the Andean slopes, the author examined vestiges of many ancient terraces built up the mountains and not excavated, as elsewhere on Indian land, for according to Aymara cosmic vision one cannot hurt the motherland (Beach et al. 2002). Terracing is a common practise, particularly within the second agro-ecological level (3,000 to 3,800 metres) and a manifestation of intensive agriculture, even though population is no longer as large as it was in old days for migration to less extreme environments has increased in the last half of the 20th century. Terraces occur in perpendicular position to gradient inclination, intended to facilitate water channelling step by step, to slow rain water runoff, to built up planting surfaces in steep slopes, to avoid soil erosion and to maximize soil moisture. Fertilization uses livestock excreta and guano brought from lower valleys and littoral areas, whereas irrigation channels are a classic landscape element, which construction was further encouraged by ruling Chile.

Water and land rights were theoretically recognised to Indian communities before and after the War of the Pacific (1879). In matter of fact, both Spanish viceroy and republican rulers from Peru and Chile legislated in accordance with Aymaras consuetudinary laws yet always guided their jurisprudence by sheer entrepreneurial rationality (Van Kessel, 1985). As a result communal landownership and water rights were soon considered impossible to register and so most Indian properties were individualised whenever and wherever the Aymaras were educated and diligent enough to descend to the port cities and sign down their property rights, whilst unclaimed territories were nationalised (fiscal property). The 1979 regulations in favour of private tenure further penalised the process of family landownership, long rehearsed to mask communal property assumed by some *ayllus*, and eliminated resistance to change. The argument is the Indians prefer to know exactly what they own to prevent conflicts within families and with neighbour Peruvian and Bolivian Aymaras, always keen to have access to higher standards of living, because Chile is the wealthier country in South America.

Regarding the water, the new code (1981) was of course dramatic. The Extreme Northern territories are mineral rich; Nitrate, copper and other mining companies continuously pressure

natural resources and easily get usufruct over the precious liquid, as proved. The reinstatement of democracy, initiated in the 1990's, reviewed norms and customs traditionally applied to indigenous territories, long forgotten yet frequent sources of local and regional conflict. In 1993, Congress ratified the Indigenous Peoples Law and CONADI (National Commission for Indian Affairs) was legally established. The aims would be water rights regularisation, by means of technical, judicial and economic support to Indian communities, as well as ascription of financial aid to water and land concessions.

In most cases it was too late, too little. The only way to see Supreme Court of Justice ratify Indian claims is to search out a renowned Lawyer Firm interested in taking the case, as making proof the plaintiff Aymara community has been using that same stream or water source for ages, thus qualifying to get usage of a certain portion (e.g. 100 litres per second, as ruled to Atacameños in March 2004) under consuetudinary practises, providing the litigant doesn't attest the area under judgement to have been bought to any individual sometime in the past. Three main consequences are the outcome of laws and regulations as well as jurisprudence in modern Chile: i) land accumulation in the hands of just a few Indian families and utmost the State of Chile; ii) slow death of high plateau and pre-Andes *bofedales* (wet pastures), together with irrigation water scarcity in terraced slopes used for subsistence agriculture; iii) extermination of skilfully farmed oases at lower altitudes because water deposits are deeper and shrank; iv) last but not least, the growing destruction of ancestral alliances, communal cooperation and reciprocity relations.

First the Indians were *civilised*; then forced to speak Spanish and subsequently assimilated into being Chileans; after that, communal property became illegal and most of it was taken away; Aymara ancestral farming practises were not encouraged officially for subsistence farming is incompatible with modernity; Indians were granted subsidies to build houses in port cities, so they were motivated to descend from the Andes to lower valleys and urban centres where they would be easily controlled; and finally high plateau land became national park, while alien military and public forestry officers were put in charge. When water they left behind was taken away either, because all streams and rivers had their sources high up the mountains, Aymara Indians felt orphans. All they seek is life in harmony (*Suma Qamaña*) with each other and la *Pachamama*. About 48,000 people were recorded in the last Census under this ethnic designation (INE 2002), two thirds of which are urban dwellers.

5 Conclusions

A joint Portuguese Chilean team, coordinated by Portuguese Tropical Institute, has been researching Aymara culture and farming practises in Northern Chile and Bolivia. Fieldwork included photo, film records, enquiries to animal and vegetable farmers, sample research in pueblos and riverine settlements, following itineraries over the First Region of Chile, known as Tarapacá, and neighbouring Bolivian villages, cities and rural landowners so far covering an extension of 6,362 kilometres. Interviews to representative community leaders, Aymara Indian associations, local and regional authorities, planning cabinets, indigenous population commissions, mine enterprises representatives were added in order to permit wider data collection and full documentation of contending parts involved with land and water disputes under examination. Research results are thus far quite rich and linkage with water code contents, land tenure regulations, ancestral customs, and documentation of Supreme Court jurisprudence over specific Indian communities demands have given course to reflection and nurtured concerns. Water is the source of life. Is it acceptable to submit water to private tenure and free trade games? Fact: urban residents in general and increasingly rural settled populations already pay for pure water consumption and for treatment and recycling plants all over the globe. Rivers and oceans are thus far considered public welfare and national assets. Hence one can hope that countries possessing sources of international rivers might honour bilateral and international treaties, regarding the preservation of certain capacity. What if water becomes a private business within several nations? Who would have the political power or the ability to make international

agreements respected? Would they continue to be honoured? Oil companies and single potentates already control world energy market. Oil issue is increasingly a private affair that enriches a bunch of people yet affects and ravages millions of humans. How close is Chile from having water magnates? Will the rest of the globe follow that example?

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