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Anne-Laure Amilhat Szary

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Anne-Laure AMILHAT SZARY
Institut de Géographie Alpine / Laboratoire PACTE-TERRITOIRES UMR5194
Université Joseph Fourier
14 bis avenue Marie Reynoard, 38100 Grenoble, France
anne-laure.amilhat@ujf-grenoble.fr

The impact of growing trans-mountain mobilities : first conclusions of a comparative Alpine / Andean research

ABSTRACT

Traffic flows have little in common in the Western Alps and the tropical Central Andes, However the rhythm of circulation increase, the stress produced by the recent construction of new infrastructures (accelerated in the Andes since the 1990's), the growing concentration of traffic justify bringing together such different worlds in a parallel analysis. Mobilities are here considered as much more than a moving capacity. They are defined as a social relation to movement: transportation therefore appears as only one aspect of mobility analysis. A special emphasis is put on the link between mobilities and mountains because of a complex relation between the existence of an old interaction (mountains are mobile worlds) and new mobility patterns derived from the growing importance of transit traffic. Through this interaction, we question societies' adaptations to the globalised world and the sustainability of their choices. The paper first settles on the recent changes of mobility patterns in mountain areas, insisting on the context of these evolutions (i.e. the opening of borders in an exchange economy favourable to the growth of international freight traffic). After reviewing the adaptation of the transport infrastructures offer in terms, it considers the traffic regulation frame in both the Andean and the Alpine contexts. This crossed analysis allows us to offer an interpretation of the mountain populations' self-consciousness as perceived through the adaptation of their mobility patterns. By evidencing their vulnerability, we also illustrate the difficulties in the implementation of sustainable principles in contexts where they have not been re-appropriated.

KEY WORDS : transportation / connection / regulation / identity / sustainability

Introduction

This paper assesses the results of a comparative study on the impact of growing mobilities in mountain regions, the latter being considered as original, as well as fragile, social and natural environments. If considered on a quantitative basis, the traffic flows have little in common in the Western Alps and the tropical Central Andes, our two study areas. However the stress produced by the recent construction of new infrastructures and the rhythm of circulation increase justify bringing together such different worlds in a parallel analysis. Knowing that mountains have long been very mobile universes, characterized indeed by a multiscalar

movement tradition of their populations, the idea of our research project was to see if this characteristic mobility pattern could be updated and adapted to the globalised world in which mountain areas are now inserted. On one hand, the Alps, standing in the heart of Europe, constituted our reference, defined as mountains *to be crossed* to link the dense markets of the European Union. On the other hand, the southern *altiplano* Andes represented a loosely occupied area, recently under the pressure of its insertion into the MERCOSUR and through which a number of new roads are being launched: classically considered as mountains *to be travelled through*, how would they react to such abrupt changes? The paper first presents the important changes in circulation patterns in the respective studied mountain areas. It then discusses the weight of the political and historical context in the understanding of the two environmental conservation contexts. The demonstration emphasizes the link between social and natural systems, *sine qua non* condition to the implementation of a realistic protection frame for the mountains of the Southern hemisphere.

Is crossing mountains so much easier today? The recent evolution of trans-mountain infrastructures and mobility patterns.

Traditional mobility patterns

Although commonly perceived as closed, hermetic worlds, mountains can interestingly be characterized by the mobility processes that they host. This is true in terms of physical environments (due to the multiple gravity effects, especially erosion) as well as in terms of social organisations. It was put in evidence long ago that the indigenous populations of the Andes organized themselves in order to ensure each community an access to the natural resources offered at different heights, in varied ecosystems or so-called “ecological floors” (Murra 1975; Murra 1985; Murra 1992; Troll 1931). This specific territorial pattern was defined as the “archipelagic” model; its originality was based on the simultaneous control of discontinuous portions of space which are dispersed at various heights and exposed to different expositions.

This model has revealed a very powerful tool of interpretation of mountain environments from a double point of view. On one hand, it has since been shown that the archipelagic complementarity is a common characteristic of mountain areas worldwide (Bourliaud et al. 1990; Fontaine 1993), and on the other, globalisation has generally imposed a reticular approach of territoriality. The research programme on which this article is based aimed to update these two proposals. We sought to show how, through renewed uses of the archipelagic figure, the understanding of mountain spaces could be useful in a much broader geography of territories and networks. This objective could only be completed through the elaboration of a pertinent comparative methodology. Our main object of investigation was thus defined as the evolution of the mobility behaviours in mountain zones.

What we mean by spatial mobility is more than a moving capacity, but “a vast set of practices, knowledges and techniques which aim at reducing the distance friction which characterises all human activities” (Torricelli 2003). Mobility is thus considered in its full social spectrum, product of the interaction between social and individual strategies, as a “social relation to the changing of place” (Lévy 2000). Transportation therefore appears as only one aspect of mobility studies, to be analysed conjointly with development models, technological contexts and political environments. Thus, if mobilities depend on the existing transport system in the studied areas, they cannot be understood without a more global approach. In the same way, their impact needs to be estimated in a quite extensive way, through a social as well as environmental analysis.

As far as mountain environments are concerned, the issues raised by the notion of mobility appear to be very fertile indeed. First of all the assessment of old mobility patterns allow long-term comparisons and tendency studies. Then it appears that mountain mobilities can be divided into two sub-entities which interact through various processes. This scientific object can be sub-divided, distinguishing between intra-massif movements (Cortès 2000; Cortès 2002; Juge 2003), and transit crossing (or so-called “trans-mountain”) mobilities. The first can be mainly understood as the local population’s movement capacity, the second is often defined as a phenomenon imposed on the mountain inhabitants by external actors. In our Westernly centred (mainly built on the Alpine experience) vision, transit traffic is denounced on the basis that the crossed mountain territories suffer more than they benefit from it. In the Andes however, the recent evolutions reveal a more complex inter-relation between local and long-scale mobilities (Juge 2003) which we will develop here.

Recent trends and growing impact of international traffic

As we have suggested, mobility patterns are very linked to the socio-environmental context. Needless to insist on the fact that the process of globalisation of our economies and its consequent boom of commercial exchanges, information circulation and people’s movements has profoundly transformed the problem. The volume of exchanged goods has increased noticeably, inducing larger distance freight transportation. In 2003 for example, 103,9 millions of tons of freight have crossed the Alps along the Mont-Cenis/Fréjus – Brenner itinerary (by road and rail), representing twice as much as the 1980 figure (50,700,000 t). Swiss analysts reveal that this evolution is sustained by the growth of long distance, trans-boundary traffics, based on importation and exportation flows, underlining that transit circulation is bound to follow its rapid progression in the years to come. The ARE (2004) has elaborated three scenarios covering the 2002-2030 period: if the actual growth rhythm persists, the freight traffic will grow of 54%; loosening the pressure to reduce the transit flows, the latter would grow even faster (+78%) whereas a more constraining policy could allow a significant change (+32% only accompanied by a concentration of traffic on the rail rather than on the road). However, these figures are totally linked to the exchange volumes, the latter depending on commercial growth (regional annual growth of 3,6% in 1980-2000) and there are signs of a slow decrease in the period to come. The transportation policies aiming at reducing road traffic in the Alps, especially on Swiss territory¹, could contribute to an inversion of tendencies (cf. Löshberg 2008, St Gothard 2012, Brenner, Lyon-Turin railway projects).

In the central Andes, the rhythm of growth can be compared, although quantities have little in common, for various reasons which we will explain. On the Arica-La Paz road, the traffic from Chile to Bolivia was estimated to 200 000 tons/year in the beginning of the 1990’s and jumped to 350-380 000 tons/year when the road was asphalted in 1996, stabilising itself around 500 000 tons/year in the beginning of the 2000’s. Similarly, the modernisation of the Jama pass between Chile Argentina induced a progression from less than 20 000 tons/ year in the early 90’s to 50-60 000 tons/year when the improvement work started in 1995-96 and up to 95 000 tons in 2003. This evolution is not only due to the improvement of the roads quality, as revealed by the traffic measured at the Colchane customs house, on a dirt road (very partially asphalted) uphill from the big duty free zone of Iquique. At this point, the exportations have grown exponentially: from some tens of thousand of tons in the beginning of the 1990’s they reached 50 000 t in 1993, 90 000 t in 1995-96, 112 000 t in 1998, and, after a sheer drop, fell down to 60 000 t in 2003. In the Andes, the main projects concern road

¹ Railways represent 37,1% of transit across the Alps : 23,6% in France, 27,2% in Austria and 63,2% in Switzerland.

infrastructures, the railway interconnexions being left to private initiative, are only partly maintained (Blanc 2004).

Along with freight traffic, touristic frequentation has increased inducing another type of long distance passenger circulation. More than ever, it is thought that the structural barrier effect traditionally attributed to mountains can be fought and won.² However, a retrospective outlook allows to qualify this assertion. Although topographic and climatic factors have always made mountain circulations somehow perilous, the history of the Alps teaches us how the existence of politically and economically linked populations in Central, Mediterranean and Western Europe have driven to the building and maintenance of altitude paths, roads and railways (Torricelli 2002). Whenever markets needed to be put into relation, commercial itineraries have crossed the mountains. The situation is quite different in the Andes: their Pacific piedmont concentrate the population since the colonial conquest, with no comparable densities on the eastern slopes, especially at the Amazonian latitudes. However, the demographic heart of the South American continent is located far away from the *Cordillera*, on the Atlantic coast. In the mountain regions, the old commercial routes have traditionally linked regional cost-mountain-forest exchanges and larger distance altiplanic circulations. The Spanish colonisation, followed by the insertion of the nineteenth century-born independent republics in the liberal economy have superimposed extraction flows towards the maritime façades. What withstands from this rapid presentation is that, up to now, although regional links have been very strong up to the past century (Benedetti 2003); Conti 1994; Conti 2000a; Conti 2000b; Conti & Lagos 2002; González Pizarro 2000) no necessary long distance commercial relations existed through out these mountains.

The past decade has witnessed the realisation of a number of new infrastructures in the Central Andes, inducing some interrogations on the evolution of trans-Andean mobilities: has the globalised context been favourable to the emergence of new markets? Is this a consequence of the continental integration dynamics (MERCOSUR). This is certainly what is announced locally, by regional, national and continental stake-holders. All our field work has revealed opposite conclusions: in this case, it is hoped that new roads will induce commercial traffic and be propitious to the constitution of new markets. This quest for development through economical growth is essential in marginalised mountain regions. The impact of the new roads is therefore always presented through this prism, avoiding quasi-systematically the sustainability issues which arise.

Cultural and commercial contexts are different, so are current transport policies... so why thrive to compare Alpine and Andean mobility patterns? Because it seems that they offer two types of answers to a comparable stress, that of the growth of transit traffic in fragile mountain environments. The parallel analysis of the two situations, far from concluding on the necessity to transfer occidental models in other continents, enlightens some of the contradictions of our conservation policies.

Comparative methodology: beyond figures, discourse analysis and morphologic approaches

The article is based on a collective project, which has lead young investigators from Alpine and Andean countries to work together over the past three years. The field work has led to cooperation between geographers, core of the team, with historians, archaeologists and

² Long distance transit movements are not the only type of mobilities that can be considered as characteristic of our globalised world. It can also be assumed that at a regional scale, mobilities have also been affected. What is at stake is no longer the acceleration of the rural exodus towards the aspect cities, which used to generate temporary or definitive migrations from the rural settlements to the regional or national capitals. A reverse movement is now occurring, due to the expansion and changing morphology of urban entities: especially in metropolitan or metropolised areas, pendular movements are increasing, notably affecting the Alpine peri-urban spaces. However, this aspect of the mobilities evolution will not be directly considered here.

economists. As far as first conclusions can be drawn, a diachronic approach appears fundamental in this field.

The innovation consists in avoiding to apply European-centred conclusions to the South American realities or vice-versa. One other important methodological aspect of this project consisted in “exchanging” field applications and questioning mountain socio-environmental relations with an international eye. The Alpine specialists were sent to study Andean terrains and vice-versa, hoping to instigate some sort of the neophyte’s curiosity into the specialist’s analysis. This crossing of experiences has proved very fertile indeed, allowing to set up a debate on the cultural references of planning policies. The central place of the sustainable development debate in the Alps was thus questioned by its absence from the Andean scene.

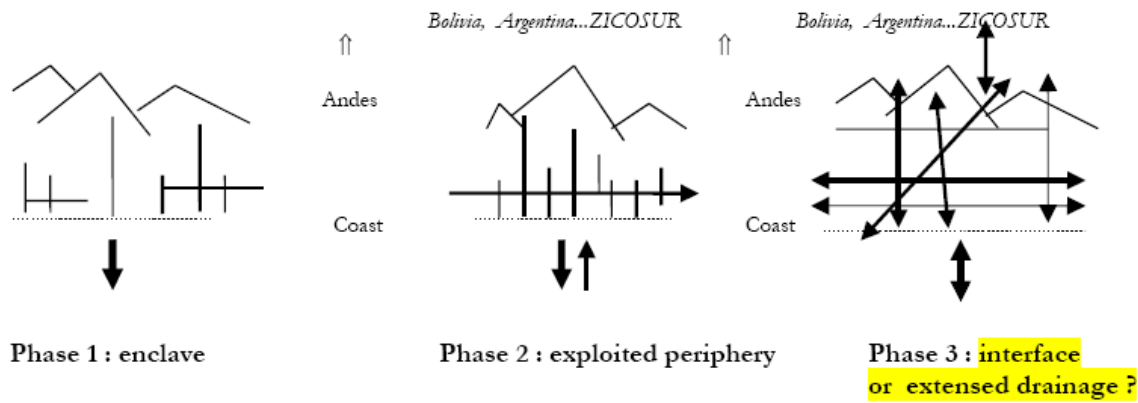
The terms of a comparative research are based on a qualitative methodology since the key figures are very disproportionate. The number of vehicles which crosses *annually* the recently asphalted Jama pass (at the border between Chile and Argentina), which varies annually between 15 000 and 2000, corresponds to a figure that corresponds to a *few days* traffic through Chamonix Mont-Blanc tunnel (3,000 trucks and 2,000 light vehicles daily) or through the Fréjus one (3,000 daily and 2,000 light vehicles). The investigation was thus centred on qualitative investigation, as well as on the establishment of a good mapping of the transport system related to our study zones, inexistent in the Andean zone. The used data consisted mainly in semi-directive interviews archives, local leaflets, press and media analysis. Even the elaboration of a regional mapping of the transport system in the central Andes was based on this approach, since the required information is very dispersed between public and private sources and the statistic series not always corroborating.

Our approach of mobility systems is built on the confrontation of different stakeholders discourses and representation, mainly expert-based vs. inhabitants’ representations. This opposition has been put in evidence in the Andes as well as in the Alps. Interestingly, mobility practices are connected to the integration of an international border in the different stakeholders territorialities.

Results: comparable mobility systems, diverging transportation policies and infrastructure realisations

Morphologic proximities

In spite of all the differences between the Alpine and Andean contexts that we have pointed out, the analysis of the mobility networks in both massifs reveal morphologic homologies. First of all, the globalisation of the economies seems to have induced a strong concentration of flows along a selected number of trunk roads. This is very notable in the Alps where the network is very diversified and branched out. The contemporary conditions of competitiveness (“just-in time” industrial and commercial supplying) impose regular inflows into polarised activity centres. The latter need to be linked efficiently and directly, with no or scarce preoccupation for the intermediate spaces. The combination of flows concentration and exchange growth has led to an unprecedented selection of traffic itineraries. This tendency has a very worrying environmental consequence, since it provokes the concentration of contaminating emissions in a few Alpine valleys where the environmental situation has rapidly deteriorated.



A.L. Amilhat Szary, 1999

Figure 1: Evolution of infrastructure interconnections between Chile's Norte Grande and its Andean hinterland

This situation brings the Alpine situation closer to the Andean one: in south American mountains, the communication network is far from being as tightly woven as in Europe (fig.1). It is somehow difficult to speak of "interconnected" infrastructures in some cases. Most of the modern roads and railways have been opened to serve the draining of the natural resources which were exploited in this region, among which nitrates, copper and other mining products. This explains the primary "backbone" organisation of the infrastructures. Most of the local sections have been linked together as they were also partially united to the national network (through the Panamerican Highway for example, but there is no corresponding train line). The number of new roads has been increasing at a steady rhythm in the past decade, but always according to similar logics, that of an extraction-based economy. The recently opened mining projects being located in high altitude (Doña Inès de Collahuasi is above 4,000 m), the companies which run them have been faced with the necessity of opening quality altitude infrastructures to ensure the exportation of their production. In most cases, the public authorisation is given to the company to build the road on its own budget, but the Chilean government binds to finance the maintenance. Interestingly enough, public documents foresee the possibility to connect these new roads with the main itineraries (cf. the option of joining the Escondida mine's road to the Jama pass complex, figure n°2).

Figure 2 Joining projects :

(<http://www.iirsa.org>)

The possible connection of the Escondida mine road to the Jama Itinerary (Capricorn Tropic "corridor")



The traffic concentration implies important atmosphere degradation (noise and air quality) along the new infrastructures. In the localities which cross these main itineraries, the situation can also degrade itself rapidly. Initially, as shows the Andean contemporary reality, local communities do not denounce the projects but, on the contrary, welcome the change which the new road is supposed to bring them. In remote areas where there used to be no good links to the main cities, transit means connectivity. The flows of goods and passengers which are announced are expected to stop in the villages and therefore to benefit a local service offer (small restaurants and garages, etc.). The touristic Chilean village of San Pedro de Atacama has not done anything to claim for a diversion to make sure that the traffic generated by the recently opened Jama pass road outskirts the picturesque historical centre. On the Argentinean slope of the same pass, Susques has proclaimed itself “gateway to the Andes”... The village pretends to transform itself into a service centre, but at present, the most significant progression is that of prostitution (Benedetti & Argarañaz 2003). Although this configuration may seem very naïve, it must be said that if the perception of the situation is gradually changing in the Alps, the most significant difference in the mobility patterns is the importance of the railway network.

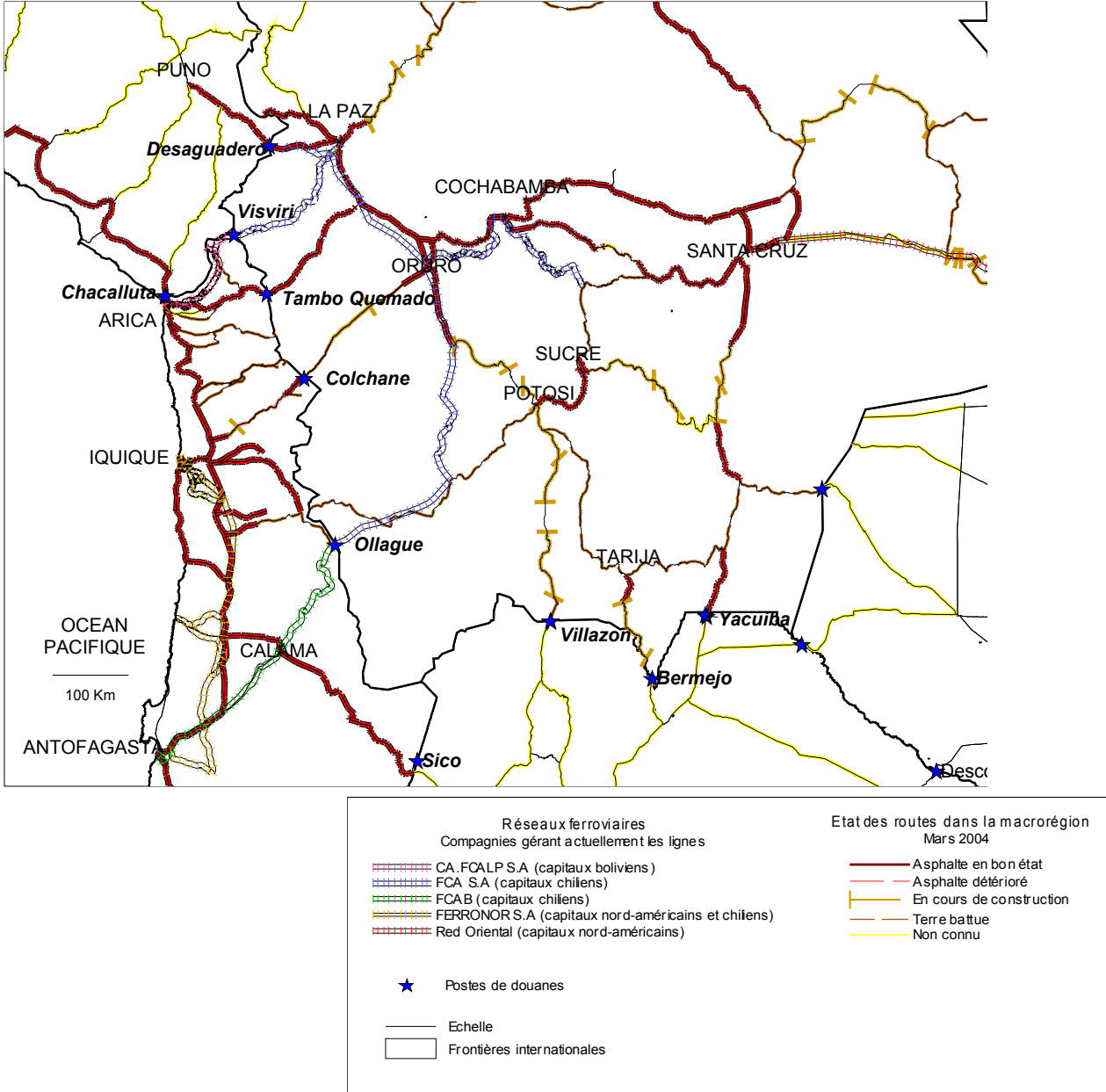


Figure 3: Central Andean networks updated

Network complementarities and transport regulation frameworks

The exceptionality of the Alpine model is the close interrelation between two transportation modalities: although rail and road are often presented as antagonistic, the efficiency of the European Alpine system is based on this multimodal resource (Martin & Chateau 2000). The Andean situation is quite different: a number of railways have been built in the turn of the nineteenth and twentieth centuries, but the company-owned lines present technical and financial interconnection problems (they were designed without this preoccupation). There is a wide range of gauges, but the most represented is the meter one. The main obstacle to the functioning of a continental network is more complex: most of the Bolivian lines work on the same gauge and could facilitate the junction of the different itineraries which connect with the Pacific harbours. Their exploitation is now under private concession. The privatisation was organised respecting the regionally organised pre-existing networks. The Arica-La Paz line (opened in 1913) has been sold in two distinct shares. The Chilean portion has been acquired by a Bolivian company³ whereas the Bolivian segment is controlled by Chilean capital⁴. This line undergoes big difficulties due to the competition with a newly asphalted road (1996), partial destructions due to bad weather (2001) and to the strategy of the Chilean Luksic group. His interest is to operate traffic through the lines he owns, with a tendency to divert the traffic between Bolivia and Chile (including the freight originated in or directed to La Paz) to the Chilean harbours of Antofagasta and Mejillones harbours (which he also partly controls). With a network organisation dispersed between so many private and public stakeholders, it is very difficult to initiate a regional policy aiming at a sectorial regulation effort. Where the State strongly disengages from the railway system, the question of the identification of a superior authority that could guarantee the territorial coherence of transportation networks surges.

In spite of some fundamental differences, the public debate often seems to turn around the same issues in the Andes and in the Alps: international cooperation, integration processes, network interconnection are presented as the key words. An analysis of public discourse must thus ensure that it underlines the respective positioning of the various parties, an element as essential to the global comprehension of the problem as the contents of the message itself. In the Alps, the effort is being put on international cooperation in order to complete national regulation and, in some cases, to overcome what local or national authorities impede. The difficulties in the application of the Alpine Convention road transport dispositions illustrate the complexity of this process. The political debate on the Lyon-Turin line in France is another illustration of these obstacles. When the tools of a more global policy are being discussed in the Alps, working on the improvement of rail traffic for freight, the political context is not as favourable as it seems in the Andes.

The central Andes are marginal to the MERCOSUR construction, since Bolivia, Chile and Peru are only associated members of the great market, Argentina being the latter's only foundation member. However, there is a strong will to develop an international, or better said "inter-regional" process of integration. Most of the mountain regions of the concerned area resent the marginalised position in which the centralised States to which they belong has maintained them, even when an official decentralisation process is operating or in the case of the federal Republic of Argentina. They wish to found an alliance of peripheries, built on the conviction that unity will help them fight their common handicap. In a way, this process opens a vast effort of requalification of mountain areas, especially in Chile and Argentina, countries where the national territory turned its back on the Andes, forgetting their central

³ Empresa de los Ferrocarriles del Estado, owned for 60% by José Saavedra Banzer, nephew of the former president, and for the remaining 40% by the north American « Genesee Wyoming », also owner of the oriental part of the Bolivian network, Ferrocarril Oriental SA (Salas Lopez 2003).

⁴ By one of Chile's major industrial and financial consortiums, the Luksic group, also owner of the major part of the *Ferrocarril Andino* and of the *Ferrocarril de Antofagasta a Bolivia*.

status in the precolombian period. These provinces have been taking contacts and establishing the basis for collaboration over the past twenty years: the initiative was first taken by people thriving to develop international business at a regional scale (multiplication of international fairs) and was then relayed by the regional governments (representing their respective national politics and sometimes taking a step ahead) before being supported by international organisations such as the IIRSA, *Iniciativa para la Integración Regional de Sur América*. This allows constructive contacts even between territories belonging to countries that do not share diplomatic relations such as Bolivia and Chile. The related provinces have self-proclaimed themselves ZICOSUR, *Zona de Integración del Centro del Cono Sur* but the difficulties in the implementation of their initiative questions the necessary status of the State in continental integration processes.

We tried to measure the impact of these joint political efforts on mobility patterns. The conclusions are far from being homogeneous. The desire for integration has certainly influenced the funding of new infrastructures, but only road trunks. The rail system cannot be integrated to this common effort, due to the global privatisation of the networks and to the importance of the needed investments to build some missing junctions which could ensure a better connectivity at the continental scale. The balance of the ultimate decade is thus an improvement of the transit capacity in the central Andes (new roads, gaz pipelines and high tension electric lines) but a much slower evolution of the mobility patterns.

We clearly face an opposite evolution. In the Alps, we probably testify the beginning of a diminution in the transit rhythm of progression, due to a very active political will to face the environmental impact of such mobility. On the contrary, in the Andes, we face a claim for traffic growth perceived as the vector of economic development, regardless of the environmental and social impact of trans-mountain transit. In the second case, it seems essential to the regional populations to attract flows towards themselves to prove their existence whereas in the first one it was vital to reject them to live... But exist as what, as a community with a claimed mountain identity, an ethnic basis, a regional identification, a common sense of economic development, a territorial project ?

Mobility argumentation and practises: the status of traditional mountain populations

The presentation of the networks and the updating of knowledge on the Andean area was a necessary step in the process of understanding the mobility patterns in the Alps and the Andes. These appear as preliminary elements in the study of territorial practises. What does mobility represent today in the life of mountain inhabitants ? Is its importance due to intense movements throughout the massifs or to the opinion and arguments that these people develop around the mobility issues? In other terms, how do local movements articulate themselves with transit circulations and how do they interact with one another ?

Field work has put into evidence that the more mobile are not no longer those whose culture used to integrate the movement tradition that we described above. It is paradoxally demonstrated that the opening of an international border does not imply an immediate growth of crossing movement: on the contrary the populations living close-by often reduce their trans-boundary movements. Every thing occurs as if depriving this practise of its norm transgression aspect takes a good part of its meaning away. This does not mean that the populations who live in altitude have forgotten these "patrimonial" practises. Some of them invert in this heritage to ensure their economic survival in the piedmont cities. L. Juge (2004) has shown that some of the tradesmen who take in charge the consumption goods imports from the duty free

zone of Iquique into Bolivia (Oruro, Cochabamba) belong to families whose roots are communities originally located around the boundary line : the historical know-how accumulated through centuries of lama caravans traffic has been reinvested in truck driving on the new international roads. However this is no longer the main activity of the community members.

Those who live closer to the border, within the mountain zone, are not necessarily those who are the most mobile although some of them use the old schemes in the new transit schemes. The investigation reveals that experts and dominant stakeholders as well as inhabitants, talk a lot about mobility and transboundary crossing. Town dwellers (among whom emerge the political and economical regional elites) have on the contrary appropriated themselves this aspect of mountain patrimony. Their discourse not only integrates mobility and trans-mountain crossing but gives a central place to these arguments, as if they were able to substantiate their territorial basis. The latter do not need to experiment personally the mobility practises to make a political instrument out of them. Their instrumentation of mobility is transformed into a territorial argumentation, susceptible to enable them to extend their power over the mountain hinterland which they are mostly ignorant of. The present day mobility patterns bring together those who practise movement and those who instrumentalise it.

This paradox illustrates the difficulty to integrate the cultural patrimony of the ancient mountain groups into the contemporary territorial projects which are designed to sustain the development of mountain zones. It also puts into light another incoherence of the contemporary planning orientations dictated by the international organisation. Aiming at the reducing inequalities, they have induced a global effort to finance the “accessibility” of remote territories. This has been raised as a dogma which power reveals in the Andean case. The idea is not only to allow all population a capacity of movement (which in this case they already managed) but to ensure the growth of markets by the extension of the goods circulation perimeter. Sustainable development appears in a very second position, as a corrective value rather than as a prior principle. Since the same international organisations often fund both orientations, new projects usually contain a good degree of contradiction in their meaning. On the field in less developed countries, it often appears that the impact studies are seldom carried out by neutral experts and that development overtakes sustainability.

Conclusion : is conservation possible in politically vulnerable environments ?

In a certain way, the sustainability discourse and the conservation measures it recommends could be interpreted through the prism we were able to put into light through this study of mobility patterns. Stakeholders who pretend to extend their influence on the mountain areas may be using sustainability as a form of territorialisation. Local populations who would be the first to benefit the environmental bettering take a lot more time to react favourably to environmentally friendly predictions. This often surprises the observer who often arrives with a pre-established conception of the original mountain population's tradition of living in cultural and environmental harmony with their universe. In the Andes, the indigenous habitants still offer a symbolic part of their meal to the *Pacha Mama* (Mother Earth), but they do no longer rely on ecological mobilities for a living; those who survive are

the ones who have managed to catch on the globalisation process, sometimes by selling lamas to buy a truck. In other words, the sustainable development seems to be valid only in two types of mountain contexts. It concerns on one hand the remote areas where the culture equilibrium has not been damaged and where the traditional lifestyles are in harmony with nature and do not question the ecosystem reproduction. And on the second hand it can be applied to mountains which are integrated with their urban environments. There, the dominant stakeholders look out for correctives to the globalisation process and its correlated environmental and social damages. In the intermediary phase, recommending sustainability has little sense, since the populations that are newly connected to the occidental way of life first perceive its power of attraction, and often devaluation correspondingly their traditional values. Through its review of the evolution of the transport sector in the Andes, the article has also shown that environmental conservation requires a good level of political regulation. Even before entering the top-down or bottom-up debate, the public stakeholders' lack of intervention means questions the possibility of a local mobilisation around the design of a territorial project. Some conservation projects are emerging in the Andean regions we studied, due to the effort to classify Chungara lake as an UNESCO world patrimony area which lead to the opening of a national park which limits are set, on the northern side, on the international Arica-La Paz road: a transborder park is under study, incorporating Bolivian and Chilean territories. But sustainable cannot be limited to localised conservation measures which appear as a corrective of the general tendencies revealed by the mobility analysis.

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