# The Alps: barriers of "physical", but triggers for "intellectual" mobility in Europe 

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#### Abstract

Mobility plays a central role in all sectors of our contemporary societies: Not only global mega-trends in the transportation sector towards more flexibility, but also the special situation in the Alps confronts mobility with new challenges and risks. At the same time, intellectual mobility could significantly increase economic and political potentials.


Keywords: the Alps, physical and intellectual mobility, Alpine transportation and traffic policies

## The Alps and technical mobility

The rapid improvements of transportation infrastructures throughout the last two centuries have changed both Alpine and non-Alpine regions in Europe quite significantly. In the age of railroading, which began in the 19th century, these changes were not as visible as nowadays but still recognisable. Nonetheless, these developments were clearly identifiable at that time. Railroading made up for new opportunities in the realm of mass transportation of manufactured goods and thus fundamentally reorganised both work profiles and job markets. Coachmen, blacksmiths, local small businesses like hammer-mills had increasing difficulties in competing with the emerging, mass production industries located next to the railway stations of industrialised centre regions. On the other side, railroading-induced public transport facilities strengthened tourism and thus created new work opportunities in rural areas too, a trend that culminated in the tourism industries of our times.

## Mega-trends reversing these developments are still possible

High velocities and low costs of new forms of public transport have led to a further strengthening of industrialised centres and corresponding weaknesses of peripheral and rural areas. Almost like a golden rule, though, this basic trend has impacted on Alpine regions too. Most Alpine regions still relatively lose in terms of their population sizes. Nonetheless, some Alpine regions could improve due to marketing innovations in tourism and other, less centre-dependent special industries. And this is exactly the point where intellectual mobility comes into play: In tourism formerly disadvantageous factors such as poor transportation infrastructures or a rough climate in winter seasons could be transformed into positive and profitable strengths. Improved transportation networks in these regions fostered this basic trend, and
economic potentials were transformed into real gains in the global tourism economy. Therefore, a shift in focuses towards intellectual factors like resourcefulness, farsightedness, or active marketing measures was clearly identifiable.

## "Noise" as the downside of technical mobility

In the nineteen-seventies of last century, when the official opening of the Brennermotorway in Tyrol was celebrated, none of the traffic experts imagined that this project could ever face heavy criticism and refusal on the part of the local populations of those villages situated right at this route. The big Europe-bridge was welcomed as an architectonic masterpiece and experts were sure that benefits like less cross-town links clearly outweighed possible downsides in this realm. But right after the official opening traffic developed towards somehow unwanted and unexpected directions, when people realised the inherent noise problem of such a project. And this problem grew as traffic on the Brenner-route increased. Unfortunately, it is not possible to substitute physical basics by transportation policies, because cars inevitably emit not only greenhouse gases but also heavy noise due to rolling of the tires and motor "sounds". This noise, however, spreads differently according to the places roads and motorways are located in. In flatland-locations where buildings and plants hinder its spreading, noise is barely recognised a few hundred meters away from the main roads.

A bit differently, however, is the situation in narrow Alpine valleys: Here the sound levels recognised two kilometres away from emitting vehicles that were quite similar to those of flatland locations in just 400 meters distance of main roads. Additionally, unlike flatland-locations populations of Alpine valleys tend to live close to the main roads and motorways, a fact that further deepens the problem. Hence noise constituted the first problems policy-makers wanted to solve with a set of measures such as installing noise barriers. The once welcomed panorama-motorway was transformed into a tunnel-like track. Nonetheless, these noise barriers do not have positive effects for all citizens due to the fact that some of them live in the hillside situation where noise still prevails. Hence solutions to the problem other than just healing symptoms were provided with greater attention. The basic cause of noise still is velocity. Hence speed limits were implemented on the Brenner-route. Unfortunately, due to the dispersion of more energy, big trucks produce more noise than small cars. Therefore, a thorough way of dealing with this problem would involve speed limits for trucks $50-60 \mathrm{~km} / \mathrm{h}$, if the justification of the $80 \mathrm{~km} / \mathrm{h}$ limit for cars was the aim.

## ...but also the emissions

At the end of the 1970 s, a new problem that none of the experts at that time were expecting appeared: that of forest dieback. It wasn't noise, but the emissions of cars that provoked this new problem. These greenhouse-gases threatened tree popula-
tions and thus changed the outlooks of Alpine forest dramatically. As a matter of fact, emissions of cars in usual road-traffic are similar in intensity to those of industrial plants. However, these chemical compounds are cannonaded by the photons of sunbeams, a process that makes other forms of chemical compounds possible. The air movements in Alpine valleys are sometimes weak and are not sufficient enough to carry away contaminated air. Hence these contaminations are not carried away and thus intensify in concentration in the locations concerned.

Lead compounds as additives to normal fuel were not only found in plants, but also in the milk of the cows of Alpine regions. Investigations in the Tyrol finally led to the result that even human beings and among them most prominently children suffer from these forms of polluted air. The invisible, odourless, unrecognisable exhaust gases significantly threatened life in the Alps. Therefore, Alpine populations face a dilemma: Among each other, inhabitants of Alpine communities want to travel by car without intervention while people from other countries should not be allowed to do so.

## Market-forgery in the traffic system and its consequences

Right until the official opening of the Brenner motorway, commercial transport on both main-roads and rails developed in Europe to equal extents. However, from that moment onwards things changed quite dramatically. All big carriers expanded their carrying capacities by investing into new trucks and with this more goods were transported on the main roads. This trend finds evidence in the total numbers of goods carried within this time-period, which continuously increased since 1972. Until the time speaking, all attempts to stop if not reverse this basic have not brought any significant results. Against all declarations of intent of collaborating nationally and Europe-wide in shifting freight services from trucks to rails, current trends are heading towards opposite directions.

If systems do not respond to the interventions of those who want to control them, then only the following possibilities exist:
a) One does not know the system well enough to positively influence its behaviour and actions.
b) One's unwilling to enforce system changes because interests on its preservation outweigh possible needs for change. Or:
c) One takes on its possible disadvantages, thereby ignoring the needs of those concerned.

In the case of complex systems such as the European transportation network or the traffic situation in the Alps effects may occur due to the fact that thorough analysis calls for the application of a set of analytical skills.

## Users and persons concerned are not of the same category

If the users of alpine roads have their residences far away from these pieces of transportation infrastructure, they may want the retention of the status quo as long as possible instead of actually changing the system. Empathy on the part of national states is not yet well-established, and it not even exists at the local level. Hence quantitatively the population of the villages concerned lacks size and thus would not pose much of a threat to unpopular decisions in this realm. For decision-makers in the outer-Alpine lowlands it's sometimes impossible thinking oneself into the lives of the Alpine population. Because of this situation, however, experts from the outside use purely quantitative data to convince objecting Alpine populations of their decisions. They thereby often claim that the situation in the Netherlands should be a lot worse due to more traffic on this country's main roads. Such argumentation lacks two things:
a) Comparability: situations between Alpine communities and towns in the Netherlands are not comparable in a number of respects. And:
b) Dependency on context: the situation in Alpine communities and towns in the Netherlands constitute different physical contexts that need to be acknowledged too.

## Knowing about mechanisms of action

Transportation networks can only have economic effects in locations where they can stop and the unloading of goods becomes possible. This was one of the factors that Alpine populations could profit from in the last centuries. An advantage that ceased existing since railroad and motorway facilities were built into mountain regions too. Former locations of recreation such as regional centres are now situated outside of the big streams of goods and money. The higher velocities reached with modern transportation infrastructure make constant stops obsolete and thus only serve the big economic centres. Hence the beneficiaries of these developments are the big harbour-cities like Rotterdam or Hamburg where goods have to transferred from one kind of transportation vehicle to another one (truck to boat, or boat to truck). Unfortunately, the profits gained in these locations are not distributed to those who suffer from negative effects of transportation networks in their neighbourhoods. Analysed from an economic standpoint, however, populations alongside traffic systems also profit from this trend according to their consternation to reach a balance of gains and burdens in this regard.

## The absurd question of cost transparency

From the perspective of science theory, the search for ultimate truth is a senseless task, because it either ends in questions of belief or in an endless regress in the observation of systems. If measuring prices as regulators for a current problem was
the aim, then central questions have to touch on cost effectiveness, and not on cost transparency. Cost effectiveness means that for a practical solution to a certain problem a central aim needs to be externally declared first. For the Alps, however, these goals are fundamentally determined by environmental conditions and thus derive from the measuring of air quality and noise levels too. The first value is in force the entire day, the second one perhaps only at night-times. Limits for both these polluters need to be determined and thus met. If the regulation functions on the basis of price, then this tool needs to be enlarged to an extent that produces results which ultimately proves its effectiveness.

Prices have the advantage that they provide for the implementation of short-term adjustments and thus may function as modulators in this regard. Unfortunately, the ideology of the European Union obstructs the appliance of this modulator due to its incomprehensible dogmatism in the realm of transportation systems, which merely favours trucks instead of rail-cargo-infrastructures. Indeed, the European Union itself obstructs fundamental values that evolved in our societies which basically hold that factors like health are basic human needs and thus need to be considered too.

## Flexibility instead of solidification

In the long run, living systems can only survive once they are able to flexibly react to reappearing problems. For Alpine regions this would imply that they are provided with full authority over their own affairs to successfully sustain the lifestyles of its populations. The only price they would have to pay is a corresponding flexibility and an intellectual mobility in the realm of transportation. Technical transportation systems of our time have the advantage that they can adjust immediately to new challenges and thus reduce the volatility towards possible constraints deriving from inflexible information systems designed for reporting possible difficulties on the routes chosen. Hence inflexible pieces of law are not necessary anymore. These information systems are currently available and are able to report the current traffic situation on all routes and even tell about prices and other pieces of regulations on them to the navigation systems aboard of all trucks.

The opportunity of choosing the right means of travel exists in both cargo and passenger transportation. Goods can - except for very few exceptions - be transported either on roads or on rails, but also barges or offshore-boats are an option in this regard. Hence a degree of freedom exists in terms of transportation modes. A second degree of freedom comes into play in the disguise of route choices, and a third one through the inherent time-shifts. Consequently, a spectre of solutions opens up that is not yet thoroughly discussed by science and/or businesses. However, this would involve tackling mobility from scientific, transportation policy and administrative levels. What may sound provoking is not of that kind in reality. Regrettably, a number of significant errors occur in the course of attempting to solve this problem:

1. One sticks to symptoms instead of tackling the causes. This becomes evident in the form of demand-oriented regulation of traffic and the demand-oriented cutting of supply in the realm of railroad services.
2. Problems can only be solved once concrete goals are formulated from the outside and then put upon the table. This is not the case in transportation: One takes difficulties from within the system according to advices from Brussels and then only treats them as a symptom.
3. Indicators are used that do not exist in the transportation system. Gains and/or losses of time in this realm are not possible because in the meantime mobilitytime grabs so much space. The goals aimed at by the European Union and national governments thereby lead to the implementation of according measures of this kind which have subsequently proven to constitute the basis for deeper understanding in this regard.

## Popular resistance: a starting point for improvements

Improvements in the understanding of systems usually occur when resistance in a certain process creates a necessity for change. Seen this way, however, the Alps would have the enormous advantage to deal with the difficulties identified earlier on in such a way as to minimise their negative effects for the years to come. Nevertheless, this requires a sensitive and open-minded style of dealing with those concerned, who do not have an interest in seriously harming the European Political Economy. This is a matter of real concern which needs to be dealt with in the context of a civilised and cultivated society, and which not only leads to a gain for those concerned, but also to a minimisation of possible damage. Regrettably, experts from science have so far abstained from actually analysing the involvement of the population, although it would have been their biggest obligation to do so.

The complaints of the citizens, their evident difficulties and torts subsequently prove the capacity overload of the material "buman being" quite remarkably. No structural engineer would be able to keep his licence when he starts ignoring material damages in his buildings so consistently as do experts with damages to human beings in the context of traffic in the Alps.

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