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# **Revisiting Urban Mobility Policies**

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## Revisiting Urban Mobility Policies

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## Abstract

It appears obvious to admit the relative failure of traditional policies, both in reducing emissions of air pollution stemming from road traffic and in ensuring the cohabitation of the various modes of travel on our local road system. This linking of air pollution and safety leads us to formulate the problem of urban mobility in a new light, namely in terms of use rights to the public roads and clean air.

Today, ever-increasing mobility is creating a growing demand for the resources air and soil in terms of road surfaces. On the one hand, the excessive emissions of atmospheric pollutants stemming from automobile traffic (in addition to the emissions produced by industry and households) lead to an overexploitation of the natural resource which is still under threat and scarce. At the same time, the increasing number of (private) cars leads to a monopolization of public roads by this means of transport which, in turn, creates conflicts with other road users, the safety of whom is increasingly at risk. Neither road surfaces nor the total quantity of pollutants discharged into the air are expandable. Thus we are confronted with the classical problem of managing scarcity by collective action.

The question is how do we ensure a coherent and simultaneous regulation of the uses of the city roads and air? Under which conditions and by which means are policies able to tackle these road-use conflicts? Which criteria are needed to equitably define and distribute use rights to the road, while simultaneously handling related air use rights?

By jointly mobilizing the contributions of policy analysis and institutional economics within an approach called “institutional regimes”, we demonstrate how it is possible to approach this crucial problem by defining limited use rights to a natural resource (air) and surfaces (public roads).

The objective of this contribution is to read the problem of urban mobility in a new light by incorporating into the analysis first the entire corpus of regulatory mechanisms for the air and the roads, independently of whether they cover protection or exploitation. In order to encompass the relevant use rules in their totality, we propose to analyse all kinds of urban mobility policies, in particular the Law on Road Traffic (LCR) and the legislation for the protection of the air (Opair) as well as all the rules regulating the use of the public domain

including jurisprudence. Viewed together, these rules form institutional regimes which change over time granting more or less use rights to motorists, public transport facilities, cyclists and pedestrians and/or inhabitants using clean air to breathe. In this sense, we follow Ostrom's general assumption (1990) that the overexploitation of the resources comes from a lack of clarification of the use rights attributed to competing user groups. We set out to test this model in the area of mobility.

For the period 1950 to the present, we will show, within the framework of a project financed by the Swiss National Science Foundation (SNF), the changing institutional regimes for urban mobility through case studies of one or two Swiss urban agglomerations. To do this, we analyse urban motorways, comparable in terms of the flow of vehicles and coexisting uses by dwellings, industries and public buildings. This enables us to show clear changes in the regimes as far as their scope (number of controlled uses) and coherence (articulation of public policies and the rights of users) are concerned. It also offers broader lessons in terms of the effects of certain instruments to regulate conflicts between users (for example, response)

Finally, this revisiting of urban mobility policies focused on use rights reveals the importance of distribution and redistribution issues in this field. Indeed it is possible to observe resistance on the part of some mobility actors who use the legal rules to defend “their” use rights against new regulations which threaten the existing distribution patterns. This observation raises the issue of the principles of the social justice, economic efficiency and sustainability of the use of natural resources.

## **Keywords**

Urban mobility – policy – roads – air – traffic – institutions – regimes – use rights

## 1. Introduction

As traffic continues to increase, accentuating problems of air pollution,<sup>1</sup> traffic congestion and road safety,<sup>2</sup> we must admit the relative failure of public urban mobility policies. In order to identify the reasons for this and propose the foundations of new management tools for guiding public policies in this area, the problem of mobility needs to be reformulated in a new light.

Therefore, we will, firstly, focus our attention on the impact of the basic activity of travel on the use of resources.<sup>3</sup> Secondly, this new viewpoint means revisiting the phenomenon as an activity associated with often contradictory and incompatible uses of two resources: air and the public roads, respectively.

Thus, we postulate that mobility policy is intended to coordinate these various use rights, while simultaneously protecting them and ensuring their compatibility. Consequently, the first requirement for a more solidly-based political-administrative management is the study of all of the regulations covering the uses designated by the term "urban mobility institutional regimes".

We will start by situating our approach in the context of current social science research on mobility (Chapter 2) and then detail the theoretical framework on which our approach is based (Chapter 3). We will then analyse the various components of the institutional regime governing mobility, i.e. the policies governing the use and protection of the system, as well as the regulatory elements (the basic use rights order) for both the air and the public roads (Chapter 4). Chapter 5 uses an actual case study of a new traffic management system on two sections of road in Geneva to test the approach in the field. The findings of the case study and our general conclusions are presented in the two chapters (Chapter 5 and Chapter 6).

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<sup>1</sup> In particular, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>10</sub> and CO<sub>2</sub> emissions (Source: Swiss Federal Statistical Office 2004)

<sup>2</sup> Almost 550 people are killed and approx. 6,000 seriously injured on Swiss roads every year, with most of these accidents occurring in large urban areas (Source: Swiss Federal Statistical Office 2003)

<sup>3</sup> Although they are not strictly synonymous and can be used to refer to separate things, in the interests of simplicity we will use the term "resource" with reference also to the roads as a "public good" (part of the resource land).

## 2. Revisiting the problem

Our starting point is that of a new vision of urban mobility as a problem involving the overexploitation of the air and the public roads.<sup>4</sup> In terms of the social science research on the topic of mobility, geographical research has already shown how urban development trends towards an increasingly pronounced sprawl from the centre to the periphery of built-up areas and economic activity represented a new urbanization regime. This regime, which is increasingly heterogeneous and fragmented, is causing an explosion in the number of kilometres travelled (Fouchier 1995). At the same time, most atmospheric pollution stems from this overexploitation of the resource land (Sauvez 2001: 187). For their part, sociologists are interested in the link between the use of the car and how it is rooted in everyday customs, showing that car use follows the increasing flexibility of lifestyles (Meier 1999; Canzler 2000).

From the perspective of policy analysis that we have adopted here, Jouve (2001) points to two background problems generally faced by the authorities: the question of the intersectoral nature of policies to be implemented and the territorial scale of the planning and management of urban travel. Thus, based on examples of various Swiss towns and cities (Klöti et al. 1993, Knoepfel et al. 1995) and towns and cities in other countries (Grant et al. 1999), studies have analysed vertical cooperation from the perspective of the legal, financial and administrative variables in terms of public transport and the environment. They note the extension of the problem of mobility to urban agglomerations and conclude that this issue should be managed at this level. Kaufmann (2000) shows that, in addition to the availability of adequate public transport infrastructure, in terms of mobility policy, two factors in particular stand out when it comes to influencing user behaviour: compact urban development as opposed to urban sprawl and the sufficient limitation of access to city centres for automobile traffic (parking, etc.). A degree of uncertainty remains in terms of explaining the obstacles encountered during the implementation phase of policies involving urban mobility. In this respect, given the irregularity and the number of variables that could explain the rate of progress (Cormon 1994; Imhof 1994, Knoepfel et al. 1995), the question concerning the differences in the progress of the implementation of the air purification measures arising from the Swiss Federal Ordinance on Air Pollution Control (Opair)<sup>5</sup> remains open.

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<sup>4</sup> This approach is currently being researched by Knoepfel P. and Savary, J. 2004 in a study financed by the SNFS, *Gestion politico-administrative de la mobilité urbaine. Une approche nouvelle sous l'angle des droits d'usage sur les voies publiques et sur l'air* (The political-administrative management of urban mobility. A new approach from the perspective of use rights to the public roads and air) (No. 100012-105277/1).

<sup>5</sup> Art 31 ss. of the Federal Ordinance on Air Pollution Control of 16 December 1985 (Opair) (RS 814.318.142.1)

## 2.1 Mobility at the interface of air and road management

No study has been carried out previously that is truly based on the problems posed by the increase in mobility in terms of both the resource air and the segment of the resource land constituted by the roads. On the one hand, excessive emissions of airborne pollutants from cars (together with industrial and household emissions) have led to the overexploitation of the air, while, on the other, the excessive number of cars has tended to monopolize the public roads with this means of transport, leading to conflicts with other road users whose safety can no longer be guaranteed. There is a limit to the amount of road area we can create and the amount of pollutants we can continue to emit into the atmosphere. Therefore, we are now faced with scarcity, which necessitates that we find a way of managing the shortages. Thus, questions arise as the mechanisms that should be put in place to ensure the coherent regulation of the resources land and air by road users, the identification of the conditions and measures at our disposal for the future management of these road-use conflicts and the criteria, on the basis of which, we can achieve an equitable distribution of use rights to the roads.

There is a dual advantage to the definition and distribution of use rights between the users of private motorized transport and other users of the public roads, respectively. Firstly, given that a reduction in the number of vehicles would automatically lead to a reduction in the emission of pollutants into the air, this would enable us to resolve the problem of the overexploitation of the air. Secondly, the adjusting of the balance of means of transport in favour of other road users (in particular, soft mobility) would also contribute to the resolution conflicts on the roads in terms of both safety and congestion. Therefore, action in the area of the management of road space becomes not only imperative, but also sufficient.

The management of the use of the road space must, therefore, form the core of our analysis. Nonetheless, an analysis of the changing uses of the public roads and their regulation, in their respective links with pollution-control policies is currently lacking in the research on mobility problems. This type of general analysis of the corpus of regulations governing road use and the air constitutes what we refer to as the institutional regime governing urban mobility.

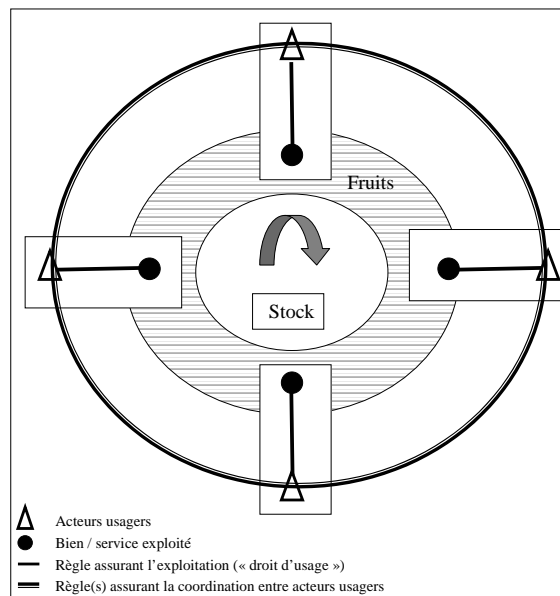
### **3. Theoretical framework, hypothesis and method**

#### **3.1 The theoretical framework of institutional regimes**

The objective of reviewing urban mobility policy from the standpoint of rival uses of the public roads and air means that we are obliged to consider all of the regulatory provisions governing these uses that together constitute the urban mobility institutional regime. Our starting point is Ostrom's (1990) general hypothesis that the overexploitation of resources stems from a lack of clarification regarding the use rights granted to the different groups concerned. The institutional regime includes all of the regulations, i.e. all of the policies, dealing with the protection and exploitation of resources (policy – PP) together with the formal property rights, disposal rights and use rights (regulatory system – RS). These regulatory provisions apply to the services provided by the resources and the public goods which are subject to rival uses by different groups (c.f. Figure 1). In the context of mobility, air is subject to at least five rival uses: the use of the air in the combustion process to run spark-ignition engines, the production of CO<sub>2</sub> as a result of the combustion process, its insulation and climate control function, the absorption of pollutants caused by private motorized transport and citizens' need to breathe air. Rivalry for the use of the road surfaces also exists between private motorized transport, public transport and soft mobility (pedestrians and cyclists).



Figure 1 The regulation of the behaviour of resource users

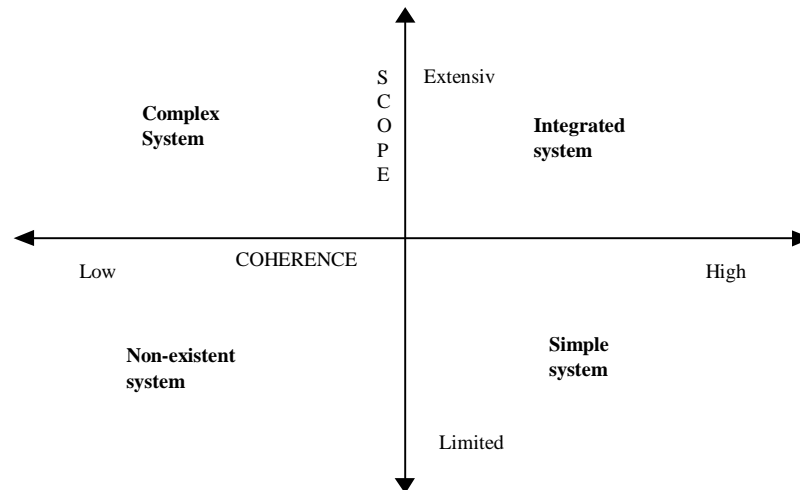


[Actors who use the resource  
 Good/service exploited  
 Rule governing exploitation (“use right”)  
 Rule governing coordination between users]

The concept of an institutional regime analyses these factors from two angles: i.e. those of scope and coherence. Scope represents all of the services specifically regulated by the regime relative to the whole. A limited scope reflects potential overexploitation of the resource, in view of the fact that some uses are not controlled. Coherence involves the degree of coordination between the policy regulation and the regulatory system (this may be further subdivided into the “internal” coherence of policies, the “internal” coherence of the regulatory system and the “external” coherence between PP and the RS) (Knoepfel et al. 2001/2002; Nahrath 2002). A low level of coherence also implies that the resource is not very secure, given that there are contradictions between the various constituent parts of the regime (conflicting policy aims, contradictory rights etc.). Based on these two dimensions of scope and coherence, we can describe the characteristics of the institutional regime based on four regime types (c.f. Figure 2):

- Non-existent regime: no property rights of any kind and no policies
- Simple regime: high level of coherence and limited scope
- Complex regime: low level of coherence and extensive scope
- Integrated regime: high level of coherence and extensive scope

Figure 2 Typology of institutional resource regimes



Source: Knoepfel 2001; Nahrath 2002

### 3.2 Hypothesis and method

We intend to test the general hypothesis that changing the regulations governing use in the area of mobility (i.e. of the public roads and the air) depends not only on developing the regulatory provisions incorporated in policies, but also on another set of rules beyond policy that determine the use rights or protect interests and which we will refer to as the “regulatory system”. The specific hypothesis relating to mobility is that the decision concerning whether or not to change the regulations depends: 1) on the existence of rights, especially constitutional rights, that potentially conflict with the aims of public policies; and 2) on conflicts arising from policies with contradictory aims; and 3) these two factors combined.<sup>6</sup>

More specifically, mobility policy includes both policies governing the exploitation of the public roads, first and foremost the Swiss Federal Law on Road Traffic<sup>7</sup> (LCR) and environmental-protection policies, notably the Federal Ordinance on Air Pollution Control<sup>8</sup> (Opair). To this initial body of legislation, we should add the rules belonging to the regulatory system, which, in the absence of private property rights to the roads and air, refer to legal

<sup>6</sup> Formal property rules are not involved, because no such rights exist to the public roads.

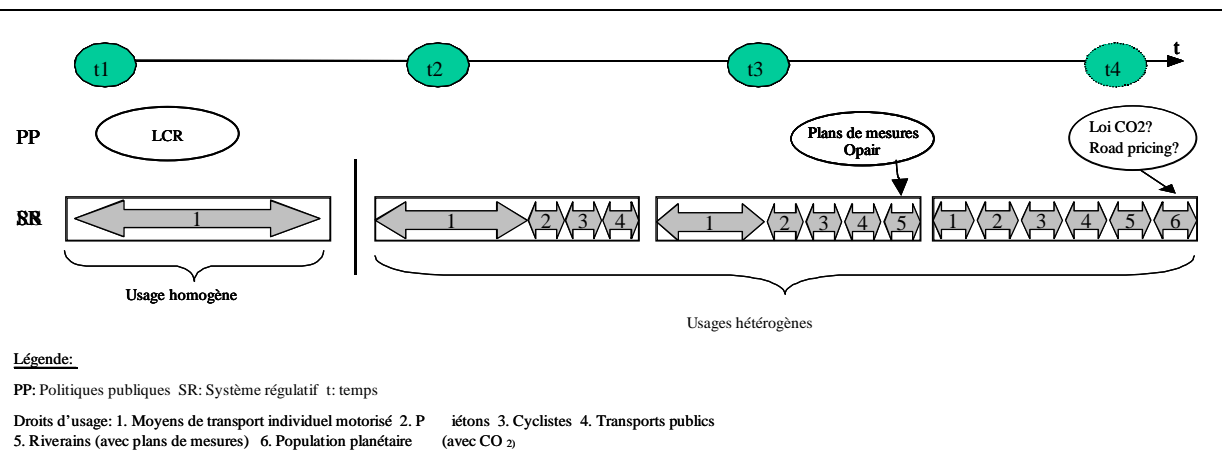
<sup>7</sup> Federal Law on Road Traffic of 19 December 1958 (RS 741.01 – LCR)

<sup>8</sup> Federal Ordinance on Air Pollution Control of 16 December 1985 (RS 814.318.142.1)

doctrine and jurisprudence, based mainly on a series of constitutional rights regarding the definition of common, accreted and private uses of the public roads.

The development of the institutional regime governing mobility may be represented according to the following scenario:

Figure 3 Changes to the institutional regime for mobility



[PP; RS; LCR; Opair response plans; CO<sub>2</sub> law, Road pricing

Homogenous use; Heterogenous use;

Key: PP = Policy; RS = Regulatory System

Use rights: 1. Individual motorized transport; 2. Pedestrians; 3. Cyclists; 4. Public transport 5. Residents (with response plans) 6. Population of the planet (with CO<sub>2</sub>)]

Generally speaking, the assumed development illustrated in this scenario starts from an initial situation of relatively homogenous road use, followed by a situation of increasingly bitter rivalry between users and culminating in the emergence of rivalry for the air. This development reflects a redistribution of rights between road users.

Following this idea, we can assume at least three changes in the period from the end of the 1950s to 2002:

The first change in the regime (from t1 to t2, from the 1950s to the 1980s) covered the “public roads” and the goods and services produced by the land in favour of new users (pedestrians and cyclists). The latter were granted use rights they could actually avail of (e.g. pavements for pedestrians, cycle paths for cyclists etc.); c.f. Figure 1. This regime change corresponds to the extension of the scope of the goods and services regulated. However, the level of coherence remains precarious, as these rights are vague (e.g. there is no separation of use in

the absence of exclusive lanes) and the restrictions imposed by policies remain unclear (very little development of road signs).

The second regime change (from t2 to t3, from the mid-1980s to the mid-1990s) arose because of the emergence of new rivalries for two goods and services provided by the air: as a pollutant sink and a resource necessary for human respiration. In view of the absence of ownership rights to the air, this new rivalry between the use rights of polluters and the rights of those who wish to breathe clean air poses additional regulatory problems. The regulation of the resource is implemented indirectly through the measures specified in OPAIR,<sup>9</sup> and, in particular, through the new provisions covering road signs, spatial planning and alert measures (ban on driving in the event of smog).

The third and, as yet, hypothetical change will come about with the implementation of the law on CO<sub>2</sub> (from t3 to t4, around 2005?) and the general obligation to reduce emissions which will introduce a new rivalry for the resource. The possibility of the exchange of ownership titles or certificates between polluters or producers of CO<sub>2</sub> (industries and motorists, for example) would introduce a new regulation of use rights. Based on a quota system determining the general level of permissible emissions, this would make it possible to improve the regulation's level of coherence. Another emerging type of regulation would involve the setting of new access rights to the public roads in the form of urban tolls (or road pricing). Users pay the toll in return for a ticket allowing them to use certain central city areas.

As a very real outcome of these regime changes, we would see the space reserved for private motorized transport shrink as other uses take over (with traffic lanes included in the changes to the regulatory system).

In terms of method, to ensure that the problem pressure remained constant (comparable levels of risk and airborne pollution), we took two sections of cantonal urban road with a comparable flow of vehicle traffic as the basis for our analysis. Our first case study dealt with the city of Geneva.<sup>10</sup> We made sure of a visible mix between dwellings, industries and public institutions. Each of the road sections is also served by public transport and used by two other types of users: soft mobility (i.e. pedestrians and cyclists) and private motorized transport. To complete this synchronous approach, we conducted a longitudinal analysis over a period of around 50 years (1950-2004).

Practically speaking, we considered the road traffic policy applications as both provisions for the redistribution of the heterogeneous use rights to the roads (as part of the resource land)

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<sup>9</sup> Federal Ordinance on Air Pollution Control (RS 814.318.142.1)

<sup>10</sup> Other sections of road in other towns will be analysed as part of the ongoing SNSF research project mentioned above.

and the air and as creators of use rights in the form of rights to pollute. The study of the institutional regime for the air involved: 1) The inventorying of the outputs of road traffic measures that have an impact on protecting the air (e.g. road signs) and their development over time; this mainly involved documentary research; 2. The identification of the public and private actors responsible for these measures; 3. The identification of the use rights created to the road.

In addition to significant documentary research, the case study included ten semi-directed interviews with actors and analysts.

## 4. Description of the institutional regime governing mobility

The components of the institutional regime governing mobility, i.e. all of the relevant policies and the regulatory system applicable to the air and public roads concerned, are presented below.

### 4.1 Institutional regime governing air

#### 4.1.1 Air protection policy

Prior to 1985 and since the UN Conference in Stockholm in 1972, the Federal Law on Labour (Art. 14) was the chief weapon used in the fight against airborne pollution at federal level to prevent nuisance in places of greatest exposure for the population. Thus, hitherto, the cantons have been mainly active in the clean-up of industrial and small-business sites.

The Federal Law on the Protection of the Environment of 21 October 1972<sup>11</sup> (LPE) (RS 814.01) forms the legislative basis for OPAIR. The LPE is the framework law which harmonized the standards contained in other laws and introduced the fundamental principle of causality or the polluter-pays principle (Art. 2). Article 7 covers noise and air, which moreover should be considered together.<sup>12</sup> The principle of implementing measures the source of pollution (Art. 11, §1) is aimed at limiting emissions wherever possible before falling back on passive measures to deal with immissions (Art. 13). In addition, this legislation includes the obligation to bring non-compliant facilities into line with the standards (Art. 16).<sup>13</sup>

Two strategies for the protection of the air can be identified:

1. A preventive strategy, with measures taken at source (Art. 11 LPE) which are based on the definition of emission limit values.
2. A “therapeutic” strategy: the problem (exceeding the limit values) is dealt with using supplementary measures, mainly the response plans (Art. 31 ss. OPAIR).

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<sup>11</sup> Art. 12, 13, 16 and 39

<sup>12</sup> Art. 8: Collective and joint evaluation of immissions

<sup>13</sup> Of course, other laws and ordinances play a vital role in protecting the air, including the Federal Law on Spatial Planning of 22 June 1979 (LAT) (RS 700); the Federal Law on Inland Navigation of 3 October 1975 (LNI) (RS 747.201); the Ordinance on Incentive Taxes on Volatile Organic Compounds of 12 November 1997 (OCOV) (RS 814.018); the Federal Law on Aviation of 21 December 1948 (RS 748) and the Federal Law on the Reduction of CO<sub>2</sub> Emissions of 8 October 1999 (RS 641.71).

The cantons are responsible for monitoring the air pollution and changes that occur within their territories, in particular by determining the intensity of immissions (Opair, Art. 27). The response plans (Art 31 ss. Opair) are adopted by the cantons in cases in which it is established or predicted that excessive immissions are being or will be caused by a transport infrastructure or by several stationary facilities, despite the preventive emission limits. 25 cantons (with the exception of Jura) have such a plan. The first second-generation response plans are currently being adopted.

The response plans have the status of an administrative order rather than an administrative decision. This means that the state services are linked to the plan, but under no circumstances can a response plan force a private individual to adopt a particular behaviour. Consequently, the scope of the response plans is, for the most part, limited to pious intentions. In particular, the Confederation is not obliged to approve the terms of these plans or to sanction a canton for presenting an inadequate response plan; thus the response plans evade central control. Furthermore, the immission limit values are not directly restrictive (c.f. the Crissier case in Epiney 1996).

#### **4.1.2 Regulatory system governing air**

Another possible way forward in the attempt to regulate the conflict between uses of the services provided by the roads and air (first and foremost the conflict arising between private motorized transport and the ability to move about and breathe freely) is to provide individuals with rights to these resources (Mariéthoz/Savary 2004). These types of rights are not always explicitly provided in the legislation. However, they frequently emerge at the level of procedural laws, which include legal procedures arising from private law and the rights of appeal established under public law.

Given that the air is not considered to be a thing, Swiss private law<sup>14</sup> does not include formal ownership of the air. However, pursuant to Art. 684 of the Swiss Civil Code (CC), any owner of a plot of land may institute legal proceedings for nuisance caused by air pollution caused by a neighbour (Bianchi 1988: 168 et al). Private property is also protected against damage caused by air pollution (art. 928 CC). Action for damages may also be taken when a construction design or maintenance fault is the source of air pollution.

In the area of mobility, public law assumes more importance than private law with respect to individuals' rights to the air. The key rights here include the rights of appeal allowing people to counter measures on the basis that they violate the legal provisions for the protection of the air. Firstly we have the Administrative Law Appeal (RDA) which is lodged with the Federal

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<sup>14</sup> Civil Code of 10 December 1907 (RS 210)

Supreme Court.<sup>15</sup> The RDA applies in cases of violation of the federal law or of incorrect or incomplete establishment of the relevant facts (Art. 104 OJ). The second option is the Public Law Appeal (RDP) and is available to individuals on a subsidiary basis. This type of appeal can only be formulated when a constitutional right protects a private interest. This is relevant above all to situations in which independent cantonal law conflicts with federal law and in which it is not possible to lodge an RDA. The final legal recourse is the right of appeal granted to environmental protection organizations (EPO), but not to individuals. This confers the “right to sue”, in accordance with Articles 12 LPN<sup>16</sup> and 55 LPE,<sup>17</sup> to national non-profit-making organizations that have existed for 10 years and have the stated aim of protecting nature and the landscape, the conservation of historical monuments or similar. These organizations can lodge an RDA or an administrative appeal (to the Federal Council, i.e. the Swiss government) against any cantonal or federal decision.

Within the competence of private law, the provisions contained in the regulatory system for the air apply in cases of neighbourhood conflict. The public law appeal methods outlined above, which are more relevant to mobility problems, can influence uses when the appellant’s interests are worthy of protection and he has a close and specific relationship with the object of the of the action. The fact that it is not possible to appeal in the public interest greatly restricts the scope of application of these regulatory provisions.<sup>18</sup> Moreover, the appeal may only proceed in cases in which an administrative decision has been made.

#### **4.1.3 Summary of the institutional regime governing air**

Air is subject to a complex institutional regime (c.f. Figure 2) which is characterized by a marked differentiation between protection and use policies; therefore it is not only extensive in scope by also lacking in coherence. This stems from the weakness of the regulatory system, which resides in the current definition and distribution of use rights granted to users, in particular in relation to the two services provided by the air: breathing and pollutant sink. By way of illustration, if those responsible for emissions had to pay for their pollution rights and if each individual could better defend his/her right to clean air, then we would certainly have seen better results emerge from air-pollution-control measures in the area of traffic.

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<sup>15</sup> Federal Law on the Judiciary of 16 December 1943 (RS 173.110)

<sup>16</sup> Federal Law on the Protection of Nature of 1 July 1996 (LPN) (RS 451)

<sup>17</sup> Federal Law on the Protection of the Environment of 21 October 1983 (LPE) (RS 814.01)

<sup>18</sup> With the exception of the environmental protection organizations with the right to appeal, which can appeal in the interests of the law.



## 4.2 Institutional regime governing public roads

### 4.2.1 Road traffic policy

During the 20<sup>th</sup> century, we witnessed a slow trend towards more ecological road traffic policies. The end of the Second World War<sup>19</sup> saw the inception of technical measures in this direction, which continued throughout the second half of the 20<sup>th</sup> Century and culminated with the mandatory use of the catalytic converter in 1986.<sup>20</sup> Today, the Euro 2 (1996), Euro 3 (2001) and Euro 4<sup>21</sup> (2006) standards mark the continuation of these measures

The 1970s saw growing opposition to the increase in private motorized transport motivated by environmental concerns. This took the form of three popular initiatives in the period 1974 to 1975<sup>22</sup> (we note the increasingly frequent use of this direct democracy tool). This decade also marked successive decisions to reduce speed: 1) provisionally for road-safety reasons;<sup>23</sup> 2) due to the petrol crisis, but still provisional;<sup>24</sup> 3) in 1974;<sup>25</sup> and in 1975 following the passing of the amended LCR requiring the Federal Council to limit speeds “on all roads”; this also resulted in the amendment of the OCR of 1976.<sup>26</sup> 1978<sup>27</sup> saw the introduction of the current speed limit of 50km per hour in built-up areas. This was ratified in 1983 with the amendment to the OCR establishing a general maximum speed limit of 50km per hour in built-up areas and, on a provisional basis,<sup>28</sup> of 80km per hour outside built-up areas and 120km per hour on motorways.

The first half of the 1980s was dominated by the theme of *Waldsterben*, i.e. forest dieback, as illustrated by the demonstration of 5 May 1984 when 30,000 people took to the streets of Berne to force the authorities to take appropriate action. The second half of the 1980's saw the launch of several initiatives to slow down the development of road infrastructure or pro-

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<sup>19</sup> The first reduction in the lead content of petrol dates back to 1947.

<sup>20</sup> Catalytic converters reduced emissions almost tenfold.

<sup>21</sup> The passing of the Euro 3 and Euro 4 standards have seen emissions cut by half.

<sup>22</sup> Initiatives: "Against the airborne pollution caused by motor vehicles"; "No motor vehicles or aeroplanes for twelve Sundays in the year"; "Against road noise". The first two were rejected in 1977 and 1978 and the last one withdrawn in 1979.

<sup>23</sup> Federal Council Decree (ACF) of 1972: 100km per hour outside of built-up areas, except on motorways, and expressways; the cantons are authorized to increase this speed limit to 120km per hour on well-developed roads. The LCR (Art. 32 al. 2) of 1958 already provided for a speed limit of 60km per hour in built-up areas.

<sup>24</sup> ACF, 1973: 100km per hour on motorways and non-built-up areas

<sup>25</sup> ACF, 1974: Limited to 130km per hour as a trial on motorways.

<sup>26</sup> Art. 4a Setting the maximum speed limits: 60km per hour in built-up areas, 100km per hour outside built-up areas and 130km per hour on motorways

<sup>27</sup> Federal Council Order of 8 November 1978 (effective on 1 January 1980)

<sup>28</sup> The speed limits of 80km per hour outside of built-up areas and 120km per hour on motorways only became definitive in 1989.

motorist developments.<sup>29</sup> As transport policy became increasingly polarized, there was a sharp drop in consensus. The 1980s saw a rapprochement between road traffic and environmental policies. On the one hand, the first amendment of the LCR relative to the environment was passed. This covers the so-called functional prescriptions (Art. 3, §4 LCR; in force since 1 August 1984) allowing the cantons to implement traffic-control measures to protect the environment. On the other hand, the adoption of Opair, requiring the cantons to draw up response plans (Art. 31 ss.) in cases where immission limit values were exceeded corresponded with the inception of a true environmental policy in the area of traffic management. The end of the decade also saw the appearance of signage by zone (40 and 30km per hour).

The 1990s heralded a strengthening of existing provisions, as well as the introduction of new economic weapons, such as the heavy vehicles levy and the future CO<sub>2</sub> tax. During this decade, legislative initiatives in favour of environmental measures slowed down somewhat, a trend that may be explained by shifting priorities on the political agenda stemming from the deteriorating economic climate and the crisis in the public finances, the end result of which was to relegate environmental concerns to the background.

From our point of view, policies on road traffic and the protection of the air form the first strand of the mobility institutional regime. To-date, these have been only partially coordinated, and very tardily. Having reviewed the policy situation, we will now turn our attention to the second strand of mobility management: the regulatory system.

#### **4.2.2 Regulatory system governing the public roads**

Roads are part of the public domain, which includes state assets allocated to a general purpose rather than a specific one. They are therefore open to all. In its Civil Code (Art. 644 I), Swiss federal private law states that “derelict goods and goods belonging to the public domain are subject to the state *haute police* in the territory wherein they are located.”

- **Common, accreted and private uses of the public domain**

Whereas the Swiss Civil Code (Art. 664) mentions only common use to designate the possible use of the public domain, legal doctrine and jurisprudence distinguished three types of land

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<sup>29</sup> In particular, the initiative “for the protection of Alpine regions against transit traffic”, crowned with success in 1994.

use, meeting increasingly restrictive regulatory criteria for the user, for the settlement of conflicts between rival uses: common, accreted and private use.

The first criterion adopted by legal doctrine and jurisprudence is simultaneity, that is “when a use is regularly accessible on a continuous basis, in general, to an undetermined number of people” (Moor 1992: 283). The second is conformity to the allocated purpose. Accreted and private uses can be regrouped according to the three conditions they share, i.e.: “the requirement of a prior legal title, the obligation to pay a tax and the absence of equal access” (Moor 1992: 286).

- **The principles of freedom, gratuitousness and equality in the common use regime**

Each person has the fundamental right to be able to exercise a common use in the public domain in accordance with its allocated purpose, which can be interpreted as a direct and unwritten constitutional right. The principles of freedom, gratuitousness and equality underlie the normal use regime for the public domain (Moor 1992: 290 ss.). Only the last two principles are essentially problematic in the area of road traffic.

According to the common use regime, firstly, the principle of freedom means that each and every person has access to the public domain, in general, and to the roads, in particular, without the requirement of any legal title. Secondly, the principle of gratuitousness guarantees that no taxes can be levied for the exercising of a common use. As stipulated in the Swiss Constitution (CST, Art. 82, §3) Swiss roads must remain free to use, without exception. The principle of equality, which is intimately linked with that of free access, aims to ensure that everyone has the right to use the public domain of the roads under the same conditions. This creates problematic and conflicting situations for road traffic.

- **Restrictions to common use**

Any restriction to common use must be justified in minute detail. There are two ways to proceed: firstly by “the economy of the public domain” which aims to protect the various common uses (in our terms this is tantamount to regulating rival uses of the same space); and, secondly, in “the general interest”. For the roads, the most frequent cases arising relative to the first category concern restrictions on traffic caused by all kinds of temporary events (in particular markets and demonstrations). In the second category, we have seen various types of parking prohibitions, for example, to protect the plane trees from asphyxiation,<sup>30</sup> to preserve historical monuments<sup>31</sup> and to limit noise.<sup>32</sup>

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<sup>30</sup> C.f. JAAC 1989, No. 27 CF

<sup>31</sup> C.f. JAAC 1982 No. 36

<sup>32</sup> C.f. ATF 99 Ia 504, X

- **The principles of accreted and private uses**

Unlike normal use, which is dependent on a subjective right, the Federal Supreme Court has long considered that public freedoms were not applicable to accreted and private uses. Jurisprudence has evolved nonetheless, taking some of the criticisms into consideration (Saxer 1988: 86 ss.). According to Moor (1992: 298), jurisprudence is open to two interpretations:<sup>33</sup> “According to the first, we should define common use according to public freedoms: this leads to a conception of the public domain as a space normally open to the exercise of constitutional rights, or at least some of them. According to the second, public freedoms give the right to accreted uses, or at least to some forms of accreted use”.

In summary, whereas the Civil Code only decides between the areas subject to private property and the public domain, the criteria for determining the separation between common, accreted and private use belong to legal doctrine and court decisions and therefore evade political discussion. Furthermore, whereas non-compliant uses outside of the intended use of the roads, that is for mobility needs, are subject to clearly established rules, within the category of mobility, these uses remain largely undifferentiated under the general label of common use.

#### **4.2.3 Summary of the institutional regime for public roads**

As a specific segment of the resource land, like the air, the public roads are regulated by a complex institutional regime. While wide-ranging (all uses are regulated), the system is marked by a low level of coherence. Uses which do not comply with the purpose the roads, i.e. non-travel uses, are subject to clearly established rules and uses within the same category of mobility remain undifferentiated under the general label of common use. This lack of clarification explains why the distribution of rights frequently tends to favour unfairly one group of users – motorists – who have appropriated the public domain in these situations.

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<sup>33</sup> C.f. ATF 100 Ia 392, 396, cited above

## 5. Studies of urban highways: the case of Geneva

We now present an empirical case to illustrate our starting problem and test our theoretical instruments. The case in question involves an analysis of the development of mobility on two urban highways in the city of Geneva: the *rue de Lausanne* and the *route des Acacias*. For each section of road, we first of all identified:

- The groups of actors and their use rights to the public roads
- Conflicts between identified uses and between users (regulatory system)
- Policy outputs in terms of regulating the use of the road and the target groups, the beneficiary groups and the public actors – in the traditional manner of policy analysis (road signage, road markings)
- Public and para-public actors who participated in producing these outputs.
- Modes of cooperation, coordination and conflict between the public policy actors in question (especially LCR and Opair)

The cantonal capital with 432,000 inhabitants,<sup>34</sup> Geneva is geographically confined between the end of Lake Geneva to the east and the belt formed by the French border along the Jura mountain chain to the north, the Vauche and Mount Sion to the west, the Salève and the Voirons to the south. This topographical characteristic, which gives Geneva the appearance of a “basin”, is doubly interesting when it comes to the examination of mobility-related issues. Firstly, there is the negative aspect of retaining airborne pollutants, evidenced by the frequent periods of smog in both winter and summer, and particularly prominent up to the end of the 1980’s. Secondly, this cul-de-sac configuration slowed the development of public transport around the agglomeration, in particular in the provision of links between the Swiss and French railway lines, until the idea, still in the project stage, was re-launched recently.<sup>35</sup>

The situation in Geneva is characterized by long-standing and extreme rivalries between road users and is illustrated by the city’s very worrying air quality and the congestion of the road space which are experienced by all motorists travelling on that city’s roads as they wait in interminable lines of stationary vehicles.

Geneva has also been the scene of very significant historic developments in mobility. On a symbolic level, Geneva hosted the first motor shows, a tradition carried on to the present day with the annual Geneva Motor Show taking place in March each year. On an industrial level, the beginning of the 20<sup>th</sup> century was synonymous with intense automotive production of both four-wheel and two-wheel vehicles. Thus, private motorized transport is profoundly

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<sup>34</sup> Office cantonal de la statistique (Cantonal Statistics Office) OCSTAT 2000

<sup>35</sup> The CEVA railway line (Cornavin-Eaux-Vives-Annemasse) planned for 2008-2010.

embedded in the city's economic and social history. In terms of road management, this strong tradition in the area of private motorized vehicles led to the dismantling of the public transport infrastructure, consisting of a large tramway network (over 100km at the beginning of the century) during the 1920s in favour of planning measures aimed almost exclusively at the benefit of motorists.<sup>36</sup> It wasn't until the 1990s that new sections of inter-urban rail links saw the light of day.

Apart from a slight drop in the early 1990s, the volume of cars in the city has risen steadily since the early 1980s (up 40%). Public transport use rose sharply during the 1980s (up 70%), but has declined slightly since then. Finally, an explosion in the number of scooters (up 260%) has been observed at the cost of motorcycles.

## 5.1 Development of the mobility regime at cantonal and municipal level (1950-2004)

Mobility policy in Geneva can be broken down into two phases: while the car reigned almost absolutely in the city during the period prior to 1985, the pace of change has accelerated from the latter half of the 1980s to the 1990s. According to Kaufmann (2003: 50-51), transport policy in the canton of Geneva can be summarized, as equivalent to "three innovations":

- "an institutional innovation: the creation of a central body for the state of Geneva with responsibility for transport and the formulation of a concerted policy.<sup>37</sup> The main purpose of this innovation was to develop an overall urban mobility policy, in view of the impossibility of formulating such a policy against an institutional backdrop of dispersed decision-making authority;
- a procedural innovation: institution of a participative approach based around transport plans, either public or private, to avoid legal battles between opposing groups and recourse to direct democracy (initiatives or referendum) to counter the plans;
- a technical innovation: the joint development of a traffic plan aimed at reducing car traffic in the city and a public transport development plan. This method uses totally new concepts, which will be adopted in several French cities, especially in the context of "Local Traffic Access Plans".

Pursuant to federal regulations, an initial response plan was drawn up in Geneva in 1991. It was subsequently updated for the first time in 2000 and followed by a second plan in 2003.

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<sup>36</sup> Only 10km of tramway remained from the 1960s to the 1990s.

<sup>37</sup> The Cantonal Transport and Traffic Office (OTC) established in 1990.

The 2000 update remarked on the “very relative success of the recommended measures compared to the expected outcomes”.

Geneva’s regulatory system is particular in that the legislation covering the public domain is included in three laws: the law on the public domain, the road laws and the water law (Hottelier M. 2002). The first of these relates primarily to mobility.

## **5.2 Case study of an urban highway: the *rue de Lausanne***

### **5.2.1 The process of reorganizing uses in the period 1940 to 2004**

The period we chose to analyse changing uses and their regulation extends from the 1940s to the present day. It falls into two main phases, firstly from 1940 to the mid-1990s and from 1993 to 2003, reflecting a period of accelerated change.

During the first period (1940-1993), the increased volume of private motorized traffic forced local actors to request a widening of the road in response to the needs and expectations in relation to mobility and comfort of the time, especially those of businesses and their customers. The 1950s saw the firm establishment of the idea that car travel should predominate, which, in turn, culminated in a further widening of the road and the subordination of various interests to that of car traffic. The 1960s confirmed the function of the *rue de Lausanne* as a through road for car traffic. The 1980s saw facilities granted to cyclists (at the expense of pedestrians), on the one hand, and buses, on the other, (at the expense of car traffic). This tentative start to the reorganization of the space and the rights reserved for different uses of the *rue de Lausanne* was set to accelerate during the 1990s, starting in 1993 when the state of Geneva (Planning, Infrastructure and Housing Department, DAEL) and Geneva Public Transport (TPG) applied to the Swiss Confederation for a concession for a new tramline running from *place des Nations* to *Cornavin station*. The lengthy approval procedure for the plans included an appeal in 1995 by the Swiss Automobile Touring Club (TCS), the Association Feu Vert (Green Light association, a pro-motorist group) and from nine other parties to the Federal Department of Environment, Transport, Energy and Communications (DETEC), followed by appeals to the Federal Council (June 2000). They claimed that the partial approval procedure for the plans violated the principles governing partial approval of plans and that, based on inaccurate facts, it contravened a whole series of federal law and violated individual and economic freedoms. The appeal was rejected by the Federal Council in May 2001 and the new tramway became operational in December 2003.

### **Actors**

The first group consists of the project “drivers” for the tramline plan as it was submitted to the OFT, including a mixed tram–car way entering the city (especially, OFT, the Council of State and the TPGs). On the opposite side, the coalition of “opponents” were not in favour of reducing the road area dedicated to motorists for the benefit of public transport, cyclists and pedestrians (TCS, Taxis, Association Feu Vert). Finally we have a group whose position is markedly more ambiguous in both form and content. These are actors who, while not formally opposing the plans, nonetheless suggested – in vain – a mediation between the opposing groups in early 2001, proposing a compromise closer to the viewpoint of the appellant parties (City of Geneva Planning Department, Left Alliance Party and the Radical Party).

### 5.3 Case study of an urban highway: the *route des Acacias*

#### 5.3.1 The process of reorganizing uses in the period 1987 to 2004

Dissecting the industrial zone and the working class neighbourhood of the same name, linking the *carrefour de l'étoile* to the south and the *boulevard du Pont d'Arve* to the north, the *route des Acacias* is a main urban highway leading to the centre of the city. One could say that this road was given over exclusively to motor traffic until the late 1980s. Therefore, this case study does not lend itself to division into clear periods like that of the *rue de Lausanne*. It was not until the early-2000s, with the introduction of a tramline inaugurated in December 2004, that the road underwent substantial changes with significant outcomes for the redistribution of uses between the mobility actors present in this space.

On 24 March 1987, the Geneva public authorities submitted a planning permission application to the head of the cantonal Public Works Department (DTP) for the construction of a storm drain and a cycle path on a section of the *route des Acacias*. The vague attempts to redevelop the road were temporarily suspended to make way for public transport studies (TC 2000) examining the option of a tramline on this road. From that time and up to the road works on the road, the “*groupe de réflexion pour l'amélioration du cadre de vie aux Acacias (Y'ACA)*” (“Think tank group for the improvement of the Acacias environment), with the support of the neighbourhood Community Centre in particular, requested the authorities, especially the City of Geneva, to introduce traffic calming measures on the *rue de Lausanne* and in the neighbourhood in general. The process of re-introducing a tramline on the *route des Acacias* precipitated events. The plan included the introduction of two tramways with exclusive right of way.

The Federal Transport Office granted the concession requested by the state of Geneva (DAEL) and the TPG in March 1996, following which these bodies submitted an application for approval of the plans (18 January 1999). The approval process kicked off within eight months (on 17 September 1999). During the public consultation process (held from 11



October to 10 November 1999) there was opposition from three organizations: the Transport and Environment Group (pro-environment), the TCS and the Association Feu Vert (promotorist). The OFT's reaction was to immediately launch conciliation procedures (28 August 2000) which culminated in the establishment of two memorandums of understanding between the state of Geneva and the ASPIC (19 September 2000) on the one hand, and the Transport and Environment coordination on the other (1 November 2000). The agreement between the state of Geneva and the TCS, the GTE and the Green Light association followed (23 April 2001).

The agreement covered the following main points: the central position of the tramlines was maintained to enable it to serve the local streets and the "*Ecole de medicine*" option was abandoned as being too costly (reconstruction of a bridge and raising of the carriageway). This conciliation procedure was a success because the OFT announced its decision to approve the plans on 25 January 2002 and the works commenced immediately. Work is scheduled for completion at end of 2004.

### **Actors**

The coalitions of actors in the case of the reorganization of the *route des Acacias* can once again be divided into two groups: a group of opponents (GTE, TCS, Green Light) on one side and the environmental and neighbourhood organizations, forming the Transport Coordination (CT) on the other. These actors behaved in a completely different way to their counterparts in the previous case study of the *rue de Lausanne*. Instead of taking up conflicting positions, they formed a consultation group on the initiative of the OFT and the state of Geneva. Within a short time frame, the group produced an agreement between those involved with plans for the tramlines. The next section analyses the reasons for these differences.

## 6. Results and analysis

The significant changes<sup>38</sup> in the physical layout of both urban highways (1950 - 2004), i.e. the *rue de Lausanne* and the *route des Acacias*, occurred extremely late relative to developments in other Swiss cities (early 2000). While the *route des Acacias* remained practically unchanged for 50 years and continues to serve its function as an urban highway for private motorized transport, the *rue de Lausanne* has changed gradually. The 1950s saw pedestrians disadvantaged (pavements reduced and the removal of public transport, including the tramlines). After a long period to the mid-1980s, this trend was then gradually reversed, as bus lanes with exclusive right of way were introduced (going towards the city), reducing the road space given over to cars and trucks to three lanes. Apart from the introduction of a cycle path on a limited section on the northern part of the road (the widest), no other concessions were made to accommodate pedestrians (who remained confined to pavements no wider than two metres) and cyclists, the majority of whom deserted this extremely busy road. Nonetheless, significant changes did take place late in the day:

- Private motorized transport is now restricted to two lanes, one shared with the tram entering the city.
- Naturally, this new tramline improves public transport as it has exclusive right of way leaving the city.
- Cyclists can now avail of the cycle path provided over almost the entire road. The breaks in the path correspond to the tram stops with traffic calming measures.<sup>39</sup>
- Pedestrians saw the area allocated to pavements almost doubled, although some sections are shared with loading spaces.

The redevelopment of the *route des Acacias* is also due to extending the tram network. The new tramlines on the road, inaugurated in December 2004, means a significant reduction in the space given to private motorized transport (two lanes), the introduction of two tramlines with exclusive right of way, improved facilities for cyclists (two paths) and wider pavements.

If we analyse these developments from the viewpoint of the institutional regime for mobility, we arrive at some very interesting information. Taken alone, the air regime has evolved, after a long period, from having limited scope (little regulation of pollutant emission) to extensive scope as the environmental legislation was fleshed out (adoption of the federal legislation for

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<sup>38</sup> By “significant” we mean “reorganization affecting all user groups”.

<sup>39</sup> The provision of “Viennese” stops raising the carriageway to the height of the tram stop to slow down the traffic.

the protection of the air). However, in the absence of a mechanism to limit overall emissions, the number of new car registrations increased during the 1990s, causing a further deterioration in the regime's coherence. The institutional regime for public roads displayed a marked lack of coherence during in the 1950s and 1950s. As new road uses other than car traffic were introduced, the regime's coherence improved. Starting with the reduction of the authorized speed limit, measures included the promotion of public transport (introduction of exclusive bus lanes in the 1980s) and the complete revamp of the layout when tramlines were introduced on two sections of the *rue de Lausanne* and the *route des Acacias* under consideration.

Consequently, we can infer that the mobility regime (viewed jointly with the air and public roads regimes) is changing from a simple to a complex regime, characterized by wide-ranging scope and a low level of coherence. These two dimensions have developed in opposing directions: from limited scope at the outset (1950) to extensive scope, for which all the uses are regulated. On the other hand, the strong level of coherence at the outset has steadily decreased. The regime still lacks coherence between the regulatory provisions. Despite having re-allocated the road surface on the two sections (increased coherence in the regime for the public roads), a mechanism to limit the overall number of air polluters is still lacking (reduced coherence of the air regime). Nonetheless, these two examples show a trend towards the creation of new mechanisms for the allocation of uses: e.g. extensive redistribution of space with quotas being defined for the use of space and the introduction of time quotas whereby the traffic lights give priority to the tram and oblige motorists to wait until the way is clear. These changes do not yet constitute actual quotas which by setting quotas for the numbers of new vehicles registered, would make it possible to control both the regulation of the public road space (control of congestion problems) and the resource air (excessive pollution).

Certain mechanisms help to provide an explanation for this marked change. The pace at which Geneva's mobility policy has changed is supported first of all by the transformation of federal policy for dealing with the problem of the overexploitation of the air by motorized transport. This will also have significant repercussions also at canton level. The new traffic policy in Geneva can be more or less directly attributed to the Federal Law on the Protection of the Environment (LPE) of 1983, the Federal Ordinance on Air Pollution Control (Opair) of 1985 and the Federal Ordinance on Noise Abatement (OPB) of 1986. Undoubtedly, an undeniably important outcome of the adoption of Opair for Geneva was its function as a catalyst for the local authorities with responsibility for traffic and transport management. In terms of this new ordinance, of particular importance for Geneva are the delayed outcomes of a new regulatory provision at federal level.

The re-introduction of tramlines, in conjunction with the new bypass highway by way of compensation to motorists, was a second direct trigger for the actual reorganization of the

roads under consideration. The revival of the tram in Geneva is a direct result of the legislation of 1988 extending the public transport network.<sup>40</sup> This law requires the Council of State to draw up a master plan for the network and provides the legal basis for the extension of sections of tramlines on these two roads.<sup>41</sup>

Thus, we can refer to two factors driving the change in use rights to the public roads in our case studies. Firstly, the introduction of the LPE and OPAIR at federal level established the legal framework providing legal and political legitimacy for modifying or sharing the road between users. Secondly, the changes to the regime at cantonal level provided the conditions necessary for actually triggering the shake-up of the regulation of the public roads. Thus, for Geneva, the latter part of the 1980s saw a mobilization of the regulations governing air and the public roads in the same direction, giving rise to a new concept of city-centre traffic.<sup>42</sup>

Another driving force for change could have stemmed from a change in the actor configuration. We should stress that whereas we witnessed a profound shake-up in traffic policy, the political and social actors present did not fundamentally change in the second half of the 1980s due to the socialist magistrate municipal responsible for the dicastery (local government administrative division) at the time. The polarization pitted the pro-environmental organizations under the umbrella of the Transport Coordination (CT) against the pro-motorist organizations structured around the all-powerful TCS. Following the *rue de Lausanne* case and the appeal submitted by the TCS to the Federal Council, these same actors (the TCS coalition versus the ATE coalition) would finally bury the hatchet in the conciliation group, which reached an agreement concerning the redevelopment of the *route des Acacias*. Two factors undoubtedly played a decisive role in this transformation from a situation of open conflict to a process of consultation. On the one hand, the Federal Council's decision denying the TCS's right to take a case signalled that other appeals on similar bases would have very little chance of success. At the same time, underlying the conflict concerning the reorganization of the *rue de Lausanne* was the very function of the road, that is, whether through traffic would still be allowed or, as it turned out in the end, whether the road should serve as a neighbourhood thoroughfare on which traffic should be reduced. The idea of keeping the tram in a non-reserved lane (mixed with cars, thereby slowing them down) was part of this aim. In the case of the *route des Acacias*, there was consensus on not changing the role of the road as an urban motorway entering the city from the southwest. The plan for exclusive tramlines in both directions was in line with this aim.

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<sup>40</sup> Federal Law on the Public Transport Network of 17 March 1988 (RSG H 1 50).

<sup>41</sup> As it includes the principle of a budgetary allocation of CHF 30 million, renewed each year for 15 years, this law forced all opponents of the redeployment of the trams to undertake legal action because the cantonal budget cannot be challenged by referendum.

<sup>42</sup> Another merit of the OPAIR plan was the fact that it acted as the lever for a new concept of traffic management in Geneva.

For this reason, the default strategy of the actors in the TCS focused on defending their rights to use the public roads through the formulation of an appeal against the planned tram on the *rue de Lausanne*. It is understandable, that having lost the first round of parliamentary initiatives and direct democracy processes, the opponents invoked the defence of their fundamental rights and compliance with the rules of procedure to further their cause. The fact that they lost on the substantive aspects forced them to play on the institutional aspects, which the institutional regime allows, in a last ditch attempt to avoid failure. The culminating point of this phase of transformation was the Federal Council's decision to reject the appellants specifically on the basis of invoking their personal and economic freedoms and, in particular, as regards the TCS's take a case. In the end, a change in a crucial point of procedure and the regulatory system mechanism unblocked the redevelopment of the *rue de Lausanne* and, by a ripple effect, the *route des Acacias*.

## 7. Conclusion

The evolution of the mobility regime, which covers a number of resources, is of interest in terms of both its scope and coherence. The scope of the regime for the period under consideration (1950 to 2004) expanded continuously, gradually regulating new uses. On the other hand, the regime's coherence followed a more meandering course: the period 1950 to 1970 saw a drop in coherence, arising from the fact that the regime had no mechanism to limit the numbers of permissible uses of the two resources, that is to say neither an overall quota (limit immission value/limit emission value; road space) nor individual quotas. The 1980s saw coherence improve with new use rights granted to residents by the LPE and Opair; however the non-restrictive immission limit values mean that the regulation of the public roads remains incoherent, given the almost unlimited rights retained by motorists. Finally, we can evaluate the period spanning the 1990s and early-2000 as a period of stagnation in terms of regime's coherence. Despite the redistribution of the traffic areas on both road sections (increased coherence of the public roads regime), there is still no mechanism to limit the overall number of air polluters (reduced coherence of the air regime).

However, it is clear that the urban agglomeration is the most appropriate scale for examining the air regime, while sections of road prove most relevant for the application of public roads regime. The problem of urban mobility has as much impact on the former as the latter; therefore it is relevant to take these two resources into consideration jointly. In order to guard against any misunderstanding, we thought it wise to protect our approach against one possible criticism, i.e. that it suffers from the ideological bias of individualism. With a reading of use rights as our starting point and by adopting the general hypothesis that the overexploitation of resources stems from a lack of clarification as regards the rights allocated to different user groups, it is possible to believe that the underlying idea is to individualize the rights at any cost or to somehow "privatize" access to these assets. It is important to remember a fundamental characteristic of any research, which is the separation between the subject of the study (what is) and the researcher's wishes relative to what he observes (what should be). We have restricted ourselves to observing a phenomenon of appropriation of road surfaces and air, in fact or in law, by various groups involved in urban mobility. This does not come down to asserting a plea for management by individualization or privatization. On the contrary, our research of these appropriation phenomena could lead to finding ways to give back to the "public" what has been taken by the few.

This new reading of the management of urban mobility with a focus on use enables us to illustrate how some mobility actors attempt to resist change by mobilizing the rules, which in our paradigm belong to the regulatory system category (appeal procedure, invoking of constitutional rights), to defend their rights against changes that go against their interests. This

confirms Ostrom's hypothesis: the overexploitation of resources does not stem solely from a lack of clarification regarding the use rights granted to the various actors involved, but also from the contradictions in the allocation of rights legitimating or guaranteeing these uses. Therefore, it is important not only to clarify, but also to ensure compatibility between the rules and the criteria for use of the public roads through the concepts of common, accreted and private uses. Today, in the majority of cases, common use means – at least temporarily – accreted use or even the exclusive use of private motorized transport.<sup>43</sup>

Our perspective opens the door to the establishment of a new research agenda. This initial research clearly reveals the obvious need for the implementation of other studies based on hypotheses that combine the explanatory variables, i.e. the actors, resources and institutions. In this we are in line with the conclusions reached by several previous studies in the area of policy analysis (Knoepfel et al. 2001b) or , more broadly, based on neo-institutionalist approaches.<sup>44</sup>

Furthermore, our approach opens up a debate on the issue of sustainability. It is possible to predict that a given stage in the regime (simple, complex or integrated) corresponds to a more or less high level of sustainability. The hypothesis that the more integrated the regime, the more responsive it is to the requirements of sustainability in all three of its dimensions (ecological, social and economic) has already been tested several times for the resources soil (Nahrath 2002), forest, water (Knoepfel et al. 2003, Bressers/Kuks 2004) and the landscape (Rodewald et al. 2005) and merits renewed confirmation.<sup>45</sup>

This review from the perspective of the regulation of uses also highlights the social dimension of the research in terms of sustainability, inasmuch as managing mobility is also a question of redistributing shares of the public roads between the various actors. This perspective could be revisited through the major trends in social justice, each of which aims to achieve the optimum method for dividing goods and benefits on the basis of different principles and criteria (Van Parijs, 1991). By (re-) opening this type of debate from the standpoint of an analysis focussed on uses and their regulation, it is possible to envisage finding new policy instruments (space quotas, time quotas, exchangeable rights, access rights through urban tolls etc.) in response to the crucial problem still facing us, i.e. that of managing mobility.

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<sup>43</sup> In many cases, the increase in car traffic does not allow other road users to use the public roads; therefore the criterion of simultaneity, which defines the notion of common use amongst others, is not met.

<sup>44</sup> The neo-institutionalist trend places the interaction between actors and institutions at the centre of the analysis (Hall/Taylor 1996).

<sup>45</sup> In reality, this type of hypothesis formed part of this research. However, the absence of data because of the lack of a historical perspective relative to our case study (changes occurred in 2003 and 2004) prevented us from carrying out this type of test for now.

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