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## ***Shared Mobility in Urban Areas: Towards New Regulations?***

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## 1. Introduction

The world of urban transport is changing, along with its vocabulary. Instead of ‘transport’ we speak about ‘mobility’. Investments in heavy infrastructure (train, metro, tramways etc.) are less and less at the heart of the debate. Mobility is now considered as a service (MAAS) where private initiatives play an important role. Multiple innovations are challenging public policies which have sometimes been established for several decades. Mutations are accelerated by the digital revolution. The eruption of connectivity in mobility services is changing the landscape for taxis but also for the management of bicycles or cars fleets. The development of new apps on smartphones could announce a radical transformation: a more collective use of the automobile. This kind of revolution is at the heart of this new paradigm of shared mobility. But it can only be deployed if the current changes in the organisations and regulations of urban mobility are properly understood. To examine this, we will begin by recalling how the notion of shared mobility challenges old organisational schemes (Section 2). On this basis, we will focus on the new organisation of urban mobility services and its regulatory implications (Section 3).

## 2. The blurring of boundaries between individual and collective transport

Mobility in urban areas is today based on a division of labour between public and private actors, but also between public transport and individual transport. Both are managed independently. Clear borders exist, for example, between public transport vehicles and individual cars. With the concept of shared mobility, borders are partially erased in dense urban areas but this does not mean a lesser role for public authorities (Section 2.1). The border between public and private transport is also disappearing in the peripheries of urban agglomerations. It is another dimension of the revolution that could constitute shared mobility: a reduced role for the individual car in the urban peripheries, where it remains largely dominant (Section 2.2).

### 2.1. Towards a paradoxical extension of the role of public authorities?

In the field of urban mobility it is common to distinguish between public transport and individual transport. Among these, the automobile is often opposed to the soft modes such as cycling and walking, the two-wheeled motorised vehicle occupying an intermediate position. With these well-defined categories, the roles of each actor are clearly defined. The public authorities deal with the organisation of public transport and the management of roads. Users of the latter, including motorists and cyclists make free use of their own vehicle.

Between private and public transport, there are nevertheless interactions, especially in terms of the use of roads. Thus, in order to make public transport more efficient, it was necessary to



create exclusive right-of-way for public transport vehicles. For efficient public transport, it was necessary to extend the action of the public authorities and to regulate more closely the use of roads, including by the pricing of parking and sometimes of traffic (London, Stockholm etc.). To protect the city from the pressure of the car, bike lanes have also been installed. The street space dedicated to the private car has also been reduced by the introduction of pedestrian streets for shoppers. The automobile is thus often presented as the enemy of the city because of its impacts in terms of pollution, congestion or accidents.

The main problem posed by cars in urban areas is their space consumption: 2.5 times more space than a cyclist, 5 times more than a pedestrian and 10 times more than public transport in peak hours. If there is only one person per car, then there is an overconsumption of space. This situation changes with the notion of shared mobility. If the filling rate rises to 2.5 people per car, then space consumption is that of a cyclist. The car is no longer a problem, it becomes a solution. This is what new entrants want to demonstrate in the field of mobility services. Thanks to geolocation software, among other things, smartphones become mobility assistants. They allow, in particular, the sharing of vehicles according to different forms summarised in the four 4 models outlined in the accompanying paper by G. Santos.

Model 4 is potentially the most promising, as shown by studies conducted by the International Transport Forum in Lisbon and Helsinki. Its widespread use could greatly reduce congestion and pollution, and even travel times. But this revolution is not easy because it involves new, unexpected forms of public-private partnership. The new mobility providers have indeed disrupted the old organisation of public transport. With their apps, they question the traditional functioning of taxis, but also the way public transport is managed by public authorities. However, paradoxically, they are not going to replace the public authorities. Shared mobility is a form of public transport, so, like the latter, it assumes that the role of public authorities would be reinforced.

If urban mobility evolves in the direction of a generalisation of ridesharing, it will be necessary to apply certain regulations to it, similar to those used for public transport. For the latter, public authorities think, plan and finance the system. They can delegate management to a private actor but they define the rules of the game and intervene in case of malfunction. Applying the old model of public transport organisation to new mobility services assumes that the public authorities intervene in the organisation of ridesharing for one simple reason: the critical size.

For a ridesharing system to work, the number of participants in the system must be high. Today, most operators fail to achieve critical mass. Their activity remains marginal. Often, their business model is not viable as evidenced by the high number of bankruptcies. Should the authorities then create a monopoly of ridesharing, just as they imposed a monopoly on public transport? On the other hand, given the respective competencies of public and private actors, is it up to public authorities to develop apps, to buy and manage fleets of shared vehicles, which would ultimately be autonomous vehicles? These questions will be further addressed in Section 3.



First, we must remember that the development of ridesharing also concerns peripheral urban areas where public transport is poorly developed.

## 2.2. Urban outskirts and ridesharing

Public transport is relevant in densely populated areas. Thanks to the policies implemented by public authorities, the share of public transport and soft modes is now very high in city centres. Automobile traffic is tending to regress in the central parts of cities like Paris, London, Barcelona or Amsterdam. The situation is different in the peripheries of urban agglomerations. The car remains a dominant mode of transport and the number of cars continues to grow, as shown by the example of the Paris region. The number of cars owned by people living within the city of Paris has been stable for nearly 40 years: 500,000 vehicles (-7% from 2001 to 2010). But where population dynamics are strongest, the ownership rate is rising (82% in 2010). The inhabitants of the inner suburbs have 1.65 million (+ 5% from 2001 to 2010) of vehicles and those in the second quarter 2.6 million (+ 10%).

There is therefore a structural effect that leads to the passenger car maintaining or increasing its share of motorised travel. While the car is less prevalent downtown, it provides 90% of motorised trips in the outskirts.

For the Paris region as a whole, it represents 15.5 million trips per day (compared to 8.3 million for PT), half of which is for peripheral trips alone. The result is that the urban peripheries have become major places of traffic congestion. INRIX has calculated the number of hours lost each year in traffic jams in a number of European countries. In 2015, the list is as follows: Netherlands 44 hours/inhabitant; Belgium 39; Germany 38; Luxembourg 33; Switzerland and United Kingdom 30; France 28. It should be noted that at the top of this list are countries which are known for the quality of their collective transport.

The road congestion and the pollution that accompanies passenger cars are therefore structural problems that cannot be solved either by the construction of new infrastructure ensuring more fluid traffic, or by the development of traditional public transport. In low density areas, these are expensive and inefficient because of very low rate of occupancy. More specifically, while it is possible to develop public transport on the radial links between the periphery and the centre, trips originating from and arriving at the periphery are outside the area of relevance of public transport. Can this situation change with the development of ridesharing and shared mobility?

The question must be given greater attention, not least because mobility at the periphery is often neglected by public policies. These peripheral areas represent a large part of the mobility dynamic, and are also important source of emissions of pollutants and greenhouse gases. To reduce these external costs, a better load factor of cars is, here as elsewhere, an attractive solution. But the question is to know the cost of such a solution.

### 3. New challenges for public authorities

The issue of costs is an important factor, as it concerns both public authorities and households. For the former, public transport is a burden because the revenues from users are lower than expenditures. Public subsidies are therefore necessary. For this reason, it is not possible to develop traditional public transport services everywhere. Section 3.1 will examine if ridesharing change the game.

For households the question of cost also arises, in terms of generalised cost which adds the cost of travel time to the monetary cost. This is important as, contrary to what the new mobility providers sometimes claim, shared mobility can sometimes result in an inefficient use of time. Ridesharing can extend travel times, compared to the individual car. Section 3.2 will look at this this issue can be addressed.

#### 3.1. Can we apply the public transport model to ridesharing?

If shared mobility leads to the transformation of the individual car into a public transport vehicle, should public transport methods be applied to it? Before answering this question, let us recall the main lines of the organisation of public transport. Even if it is a rather reductive way to present things, or rather because of this, we will summarise in four basic questions the set of choices facing organisations dedicated to the delivery of public transport services.

1. **Who plans?** As a network industry, public transport is characterised by increasing returns. It is therefore a local natural monopoly that requires public action upstream of the offer itself: definition of the network, type of service, frequencies, etc.
2. **Who operates?** The public transport sector has a long history of very diverse forms of public-private partnerships (PPPs) designed in particular to reduce operating costs. Public operators have very often been replaced by concessions or by public service obligations (PSO), in order to benefit from the competences of firms specialised in mobility services.
3. **Who finances?** The forms of financing public transport are varied (pricing, taxation, cross-subsidies etc.). Public transport is a provider of positive externalities for users, but also for employers and landowners. It is therefore logical that the indirect beneficiaries of the transport system should contribute.
4. **Who uses?** In smaller communities, the users of public transport are generally captive to this mode. These are people who do not have a car, such as teenagers, students or seniors. The clientele is much more diversified in the big cities.

These four questions remain relevant in the world of shared mobility and ridesharing. In each case, new mobility providers are playing an active role in answering the question; however, we also see that issues of regulation remain central.



1. **Who plans?** Shared mobility needs a global plan of the supply by including long-term car-pooling based on autonomous vehicles. This is a major design change, but it would be naïve to believe that this will be done by spontaneous generation. It will be necessary to define safety standards for vehicles, the rules for the use of public space, regulations for stopping points, loading and unloading points, etc. Only public authorities can assume these missions. They will have to do this in partnership with new and old mobility providers, but coherent planning of the architecture of the system will certainly be required.
2. **Who operates?** Here again, the new mobility services are changing the rules of the game. It is likely that we will be faced with a multiplicity of vehicle operators, as is now seen for taxis since they were deregulated. As in this sector, care must be taken to avoid any barriers to entry. It is not impossible that the digital revolution will lead to a monopoly on the exploitation of shared vehicles, but is it desirable?
3. **Who finances?** New mobility services are most often built on the basis of self-financing by users. If that were to be confirmed, it would be good news for public finances. But this does not seem very realistic unless we consider that the new mobility services will remain a niche activity.
4. **Who uses?** The answer to this question is crucial. Are the new mobility services intended to remain marginal compared to current practices dominated by public transport and the private car? Many of the current self-services such as bicycles, scooters or cars fall into this category. Do we want to make shared vehicles a major aspect of urban mobility? In this case, it is necessary to set up targeted incentive systems, focusing in particular on the regulation of the use of urban roads.

## 4.1. New regulations for the use of urban roads

New mobility services and related apps are often presented in ways that appeal to potential users. For this reason, the promoters of these tools insist on the potential time savings that can be provided through services such as real-time information on traffic or the availability of parking spaces. In the case of the autonomous car, it is often said that it should reduce the time lost in traffic jams. However, the reality is not so simple.

The vision of the individuals is often biased because they reason according to the resource which is for them the rarest, namely: time. However, they are usually faced with the fact that other transport users make the same choice as them. Thus, an approach promising individual time savings does not make it possible to understand what is at stake from the point of view of the collective interest. The latter involves reasoning about what is the rarest resource for the community, namely: space. On this basis, we can again draw parallels with public transport. The development of shared mobility will only take place if the rules for the use of roads are oriented in the sense of incentives to ridesharing and disincentives for the individual car. As long as the latter can move freely and on the same roads as shared vehicles, it is unlikely that shared mobility will be successful.



If the goal is to reduce congestion and pollution thanks to the massive development of shared mobility, the regulation of access to the city must change dramatically. It is obvious that until now, constraints on the use of cars remain low. Urban tolls exist only in a few European cities. It therefore appears that in order to evaluate the chances of success of shared mobility, it is necessary to focus attention not on vehicles (size, motorisation, ownership etc.) but on the uses of the public space that we wish to develop (or not). As such, we can conclude with some questions to public authorities, who hold the key to the problem.

- Are they ready to reserve certain parts of the road space (roads, car parks, stopping points etc.) to the ridesharing users?
- Are they ready to invest in these spaces to adapt them to the development of shared mobility?
- Are they ready to reduce access to the city's for individual car users, and to what extent?
- Are they ready to set up a congestion charge taking into account the load factor of cars?