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EDITORIALE

Selected Papers 5
Rocco Papa

RICERCHE

**Mobilità sostenibile a Lione: dovremmo
impiccare gli automobilisti?** 7
Thomas Buhler

**Qualità urbana vs spostamento individuale: il Personal
Rapid Transit** 13
Carmela Gargiulo

**La risorsa mare per la mobilità di merci e persone nella
Regione Campania** 19
Giuseppe Mazzeo

SPERIMENTAZIONI

**Sono sostenibili le soluzioni di City
Logistics? Il caso di CityPorto (Italia)** 29
Jesus Gonzalez-Feliu, Joëlle Morana

**Verso un sistema di trasporto urbano condiviso per la
coabitazione di passeggeri e merci** 39
Anna Trentini, Nicolas Mahléné

EDITORIAL PREFACE

Selected Papers
Rocco Papa

RESEARCHES

**Sustainable Mobility in Lyon: Should We Hang Private
Car Drivers?**
Thomas Buhler

**Urban Quality vs Single Travel: the Personal Rapid
Transit**
Carmela Gargiulo

**Campania: Territory and City in Front of the
Challenge of Logistics**
Giuseppe Mazzeo

APPLICATIONS

**Are City Logistics Solutions Sustainable? The Case of
Cityporto (Italy)**
Jesus Gonzalez-Feliu, Joëlle Morana

**Toward a Shared Urban Transport System Ensuring
Passengers & Goods Cohabitation**
Anna Trentini, Nicolas Mahléné

CONTRIBUTI

**Andando in giro:
mobilità, destinazione ed esperienza**
Alan Clarke

45

FOCUSES

Going Round in Circles: Mobility, Destination and Experience
Alan Clarke

**Torino Porta Susa, PEC SPINA 2: Stazione
Ferroviaria e Torre Servizi**
Silvio d'Ascia

51

**Turin Porta Susa, PEC SPINA 2 : Gare ferroviaire et
Tour de services**
Silvio d'Ascia

**La città dal filo. Il trasporto a fune per la mobilità
urbana**
Romano Fistola

59

**The City from the Wire the Aerial Cable Transport for
the Urban Mobility**
Romano Fistola

Sustainable Mobility in Lyon: Should We Hang Private Car Drivers?

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ABSTRACT

Incriminated for negative externalities such as both local and global pollution, noise, sealing extension or public space high consumption, private cars have been perceived as a factor of un-sustainable mobility since the early 80's by urban planners and designers. In the new paradigm of the so-called "sustainable city" urban planners and designers target now a modification of social behaviour and particularly social mobility practices. The production of transport alternatives and restrictions to automobiles in city centres through car-parking limitations and fare systems as developed in urban mobility plans (Plans de Déplacements Urbains) are unfortunately too weak to generate a modal shift ripple-effect in French cities. Considering the last issue of the French national institute of statistics and economic studies' survey (Hubert 2009) the modal-share in favour of car-transit remains the same for the period of time between 1994 and 2008 for the biggest French cities, in spite of steady efforts for the development of public transportation alternatives such as the diffusion of the tramway's comeback (from Grenoble 1986, to Dijon 2013). According to a series of relatively recent research papers (Kaufmann 2002, Lefevre & Offner 1990) focused on the "economically irrational" behaviour of the majority of private-car drivers concerning the question of modal shift, a research framework has been developed. This framework specially focuses on the disconnect between the rationalities of resistant car-driver's social mobility practices in the metropolitan space, compared to the rationale of urban mobility masterplans has, assuming that user's "tactics" answer planner's "strategies" (De Certeau 1990). This approach of identifying this disconnect between rationalities in planning and rationalities in social practices in the urban mobility context is aimed to extend to the complex perception of urban environments by car-drivers, to identify new targets of modal-split policies to be structured as new action-levers. This perception will deal with several issues orchestrated through urban design projects such as public spaces, physical distances or parking constraints. The second main issue of this conceptual framework deals with rationalities of user's mobility practices. The axiological rationality (Boudon 1995) seems to be heuristic to question values and practices, searching for the rationale behind the conclusions that users draw when making mobility decisions (for example "the car is faster in my situation"). This justification process needs to be finely analyzed in combination with several concepts, norms and values that "make sense" for the individual. We propose the hypothesis that the combination of perception biases and axiological rationalities could help to explain behaviors defined as "irrational" for urban mobility planners and to delineate the major levers of social acceptance and adoption of so-called sustainable urban environments. The research approach here developed together with the metropolitan Lyon's case is the result of a special partnership between a laboratory of Urban Planning (Environnements & Dispositifs Urbains) of the National Institute of Applied Sciences in Lyon, and a nationwide French company in urban projects and services development (SCET). An urban services development manager (Yannick Maurer) and two urban planning researchers (Jean-Michel Deleuil and Thomas Buhler) lead this research project focused on mobility behaviour in the framework of a general questioning program on the Sustainable-City ("Ville Durable"): from planning issues to usage feedbacks, with both operational and research expectations..

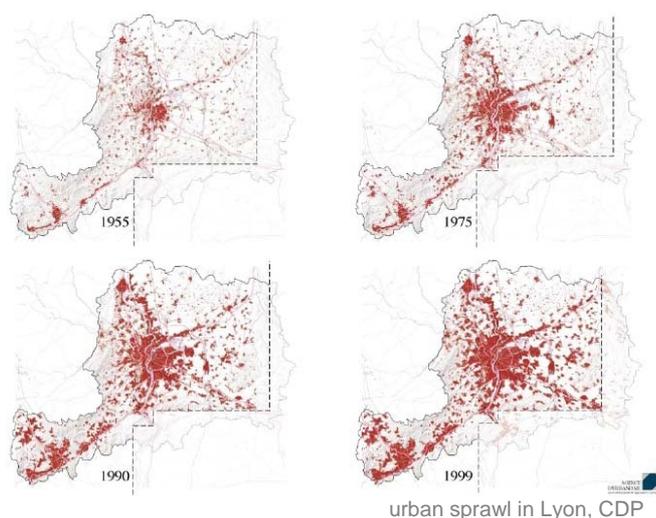
Facing private-car driver's resistance to sustainable mobility policies

Urban mobility cannot historically be taken for granted. Urban land-use conflicts between circulation and dwelling are age-old. For example in the Middle Ages these conflicts were the subject of political struggles between the bourgeoisie and the feudal power.

Its gradual setting up takes part in the emergence of the idea of public space (Haumont 2006). A right-of-way increases thus over the centuries and take effect on ways formerly seized by familial self-organised feudalities. Public space and mobility, and their associated values are social constructions historically linked and built on centuries of power struggles. However they are currently still a controversial issue in certain urban projects such as the

expanding model of the "gated-communities". The debate provoked in France by the opportunity of a congestion charge for Paris and its unconstitutional nature is revealing as well the current relevancy of this issue.

Circulation of goods and people, long thought to be incidental in European cities history, wasn't the purpose of space specialisation until the early seventeenth century¹. Therefore urban mobility isn't just a mean of action but has to be considered as a social and political construction following ideologies. Human mobility has changed during the industrialisation period and has followed the metamorphosis from a mobility-as-transit leaned on a dominant human metabolic energy to a mobility-as-transport relying on heterogeneous forms of energy and objects (Illich 1973a). Nowadays being mobile in metropolitan context in Europe without technical devices and their human organisations has become more and more difficult following what Ivan Illich called a "radical monopole" on mobility (Illich 1973b). For example the increase of mobility in France between the years 60's to the 90's, running from an average of 5 km/day/person to 45 km/day/person (Viard 2006) made possible the land property for a majority of urban households which is a particular pattern of political urban organisation enforcing car-dependency (Héran 2001). These injunctions to mobility and land property in the "landlord society" paradigm were associated to private car transportation possibilities, constituting a real social and technical standard of living and promoting an inflationary process of individual mobility (Kaplan & Marzloff 2009).



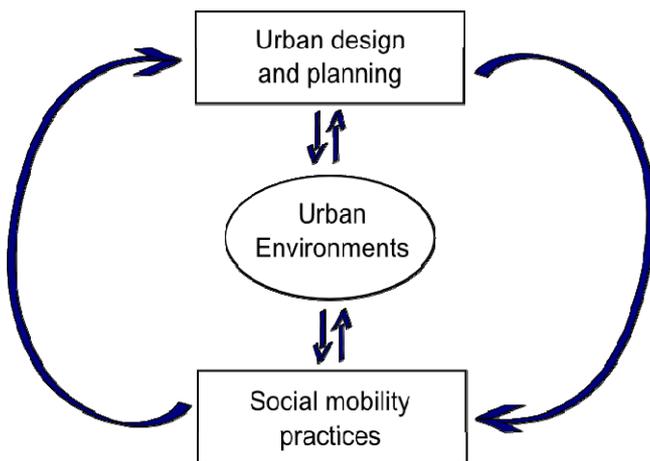
In the new paradigm of the so-called sustainable city, the design of urban environments targets now a modification of social behavior, which is particularly obvious in the field of urban mobility. However urban planners and designers can only prescribe certain uses of the

urban environment created. The development of social mobility practices won't always intersect with the forecasts. Michel De Certeau worked a lot about these questions of the disconnect or the confrontation between the "strategies" of the planners facing the "tactics" of the inhabitant, the passer-by, the weak who tries to make good use of forces that are unknown to him. He combines heterogeneous elements whose synthesis forms the decision and the way to "jump at the chance". These tactics show how far smartness is intertwined with daily fights and pleasures hinged on in this process whereas strategies hide their links with power under objective calculation (De Certeau 1990). It seems heuristic to observe the diffusion of models of sustainable development and particularly sustainable mobility planning in this scientific framework, where urban environments involve two categories of actions, planning and use. Although indiscriminately used by political and economical organizations and stakeholders so that it sounds nowadays like a magic formula or a creed, the notion of "sustainable development" promoted by the Brundtland Report at the UN in 1987, keeps its relevancy as it underlines the difficulty together with the necessity of simultaneously conciliating several targets: economical development, social progress and protection of cultural and nature heritage. These targets can't be reached separately at the risk of putting themselves in question, and they set up a three-equation system whose variables can be linked. It's a complex thought based on three different rationalities: performance (economy), equity (social) and ethics (environment). We understand that its both practical and theoretical handling is difficult but it's exactly through these arbitrations between contradictory issues that the project's stakeholders give their "own" translation for a sustainable city (Ascher 2004). In this way, extensive use of private cars became the target of numerous urban masterplans, projects or local policies promoting both modal shift and a decrease of car-mobility. Functionally-mixed urban forms, improvement of public transportation system both in quantitative and qualitative aspects, short-distance urbanism and accessibility management have been four levers to lower the use of private car.

Although these policies and projects managed to curb the inflationary process of "auto-mobility" (Dupuy 1995) to reach stagnation, car-oriented individual mobility behaviours remain resistant to sustainable mobility planning and injunction to modal shift. These behaviours even generally run counter to economical rationality based on time-money budgets which is one of the major mean of justification and design of transport infrastructure projects. As developed by French-speaking mobility researchers (Kaufmann 2002; Lefevre & Offner 1990) the question of time is particularly relevant to deal with. By a research paper focused on perceived time by individuals and their choice of transportation mode, Vincent

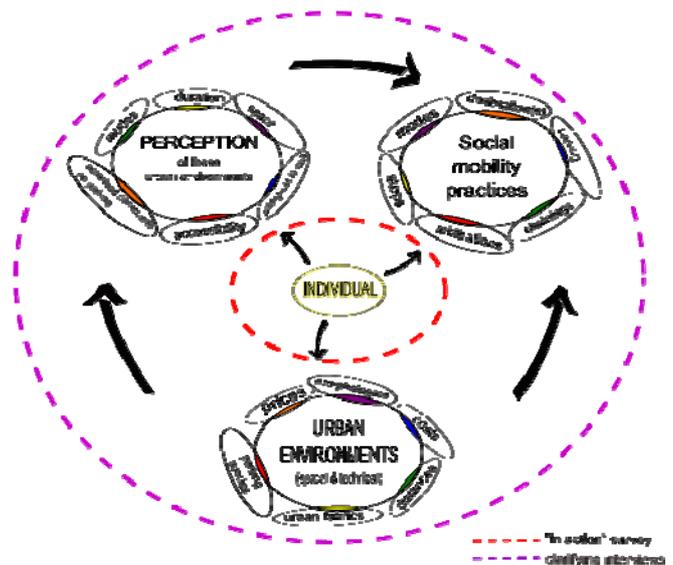
Kaufmann achieved the explanation of non-economically-rational behaviours. For three Swiss and a French cases (Lausanne, Geneva, Bern, Grenoble) he confronted the time-as-perceived (duration) in private-car and public transportation to the "real" time-as-counted (time). He discovers overestimation of time in public transports by their users whereas private car users generally underestimate their travel time in private car. He assumed that comparing "durations" (time-as-perceived instead of time-as-counted) to modal choice bring back behaviour to a mostly economically-rational choice. The value of time is a significant fact throwing light on this phenomenon. The transports systems are developed and justified by "time" whereas individuals behave mainly for "duration" reasons. This discovery allows us to formulate a broader hypothesis on a disconnect between use and design of mobility urban environments. Our first hypothesis refers to the urban environments and their perception by inhabitants. Structured around technical devices leaned on specialized human organizations, urban environments follow logics of ideas (ideo-logy) in its planning, design and operation (Lefebvre, 1968). Even nature in the city (parks, forest, urban ecosystems) became "technical" following the canonic definition assuming that objects are natural as long as their existence remain independent from conservation or maintenance by the human acting (Simondon 1958). We consider here the urban environments as the subject of urban planners and designers practices (broadly referred to as architects, urban planers, elected officials together with engineers) and the frame of social practices (Toussaint 2003).

out the research position to the whole diversity of environment's perception. Costs, constraints, distances and time are part of the urban environments planned, designed and negotiated by planners with elected officials and neighbourhood communities. These created environments follow logics of ideas projected on the urban plan and planning rationales. We assume that these "environments-as-perceived" are heuristic to understand the non-economically-rational behaviors of resistance to sustainable mobility plans. A short survey we undertook in spring 2009 around three public parking lots in center Lyon2 showed an interesting fact that people coming out from parking their car and going to their office couldn't estimate as a majority (and among other questions) their time of walking to their destination, answering more about the qualities or shortages of public spaces around the parking lot. We assumed this perception of direct environment affects deeply mobility practices. The second main issue of this conceptual framework deals with rationalities of user's mobility practices. The axiological rationality (Boudon 1995) seems to be heuristic to question values and practices, searching for the rationale behind the conclusions that users draw when making mobility decisions (for example, "the car is faster"). This justification process needs to be finely analyzed in combination with several concepts, norms and values that "make sense" for the individual. We don't trust in embodied values that would drive the individual through his choices. We rather assume that values exist as a collection of ways to justify an action that make sense. We propose the hypothesis that the combination of perception biases and axiological rationalities could helps to explain behaviors defined as "irrational" for urban mobility planners.



Design & Practices

The disconnect between sustainable planning's promises and real social mobility practices could settle on a disconnect between environment and its perception that affects more individual choices. Following the approach developed by Kaufmann (idem) we spread



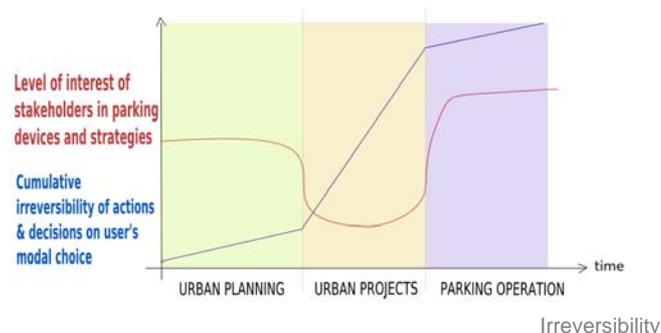
Three circles

In this conceptual framework we will put the focus on parking policies development in French cities case in different levels of urban action to lighten up the historical context sustainable mobility planning is integrated in. Focusing on policy-making helps to understand the logics of ideas that promote certain urban environments. In the early sixties parking planning emerge as a solution to the brand-new issue of congestion on public spaces and road networks (Mathon 2008). The first objectives were the facilitation and the organisation of maximal urban accessibility for private cars while creating supplementary parking spaces following logics of equipment, facing situations of shortage. Successively appeared quotas of minimum number of parking places per housing, and logics of filling empty spaces. Since the emergence of the urban transportation planning, in the late eighties for the French case, parking policies structure themselves as action-lever on modal split and private-car mobility through the planning of parking constraints in some areas following the opportunity to play on private cars immobility, as they remain motionless, twenty three hours per day. As parking planning had to face the real practices, their temporality and their relative regularity, usage becomes the "problem" of parking management. French parking policies followed a division of the public through three general categories to comprehend the future practices. "Commuter", "shopper/visitor" or "resident" are standardized categories which recommend specific needs of service (duration of parking, willingness to pay, willingness to park in off-street garages, importance of proximity to destination). To achieve this differentiated car-accessibility system, stakeholders of parking policies use four special categories of parking devices: on-street parking, public and private off-street parking together with park-and-ride systems. By consensus between major actors of planning through enabling legislation³, commuters are pointed out as people who were more likely to make a modal shift, and parking policies should dissuade them from taking their car to go downtown. Although fare system, time limitation and improvement of payment control have been done to avoid commuters to take regularly their car, a phenomenon of high resistance has been noticed. Except the Parisian case where overcongestion limits the use of private-car, it's significant to underline the relatively high modal share of private-car for daily commuters when those commuters declare not to have any parking availability at destination (Orfeuill, 2000). Of course, special individual access to parking spaces brings higher modal share to the profit of private-car, which emphasize on the emergency of a regulation of private parking spaces. Anyway in all urban contexts except Paris, 45% and more of commuters still take their cars every day, developing tactics ("informal" park-and-ride, forbidden parking,

collective control of payment verbalization) to reach their destination without changing transportation mode.

During a series of half-guiding interviews with several decision makers in parking policies in three major French cities⁴ we asked the polled stakeholders - among other questions - to tell what is problematical, according to them, in the current context of urban private-car parking and what could be done to reach an ideal sustainable parking system. We analyse their answer considering the four main action-levers in parking planning (on-street, off-street, private and park-and-ride), and the place given to each "standardized user" (commuter / shopper / resident) in their "ideal" sustainable parking project. We also underlined the behaviour changes as imagined and the advocated actions to achieve this. Due to a really small sample of actors, summarization of "sustainable strategies" in three action categories (namely operators / local authorities / developers) was relatively simple as ideas were mainly convergent.

The "quintessence" of this strategy lays in the reservation of on-street parking spaces to residents and a gradual reduction of the number of such spaces to promote pedestrian public spaces. Other private-car users have to move to other solutions developed for them (commuters to P+R and visitors to off-streets public parks). For urban developers the ideal sustainable parking system is the exact opposite of the previous one. Gather all the residential demand for parking in a few characterised public (or collective) parks seems to be a satisfactory solution, letting few on-streets parking for short-time needs (shopping or visiting). Some individual parking places for offices seems to be important for the viability of projects and compensate a park-and-ride-oriented solution for commuters. For parking operators (both private and public) the high confidence in off-street parks (they operate) is significant. On-street parking is perceived as a hardly manageable object whereas car-parks offer broader opportunities of monitoring usage and of incitation to modal change. Individual parking places are a serious risk to a global parking management and should be immediately strongly regulate.



This chart in relative and hypothetical values shows the vision of the current situation of parking planning by the actors themselves. The biggest and more irreversible choices are taken during the urban projects' development stage. Throughout this period of time the parking issue seems to be incidental in the broader debate on sustainable urban forms. Contradictory strategies to operators and local authorities can be developed although they do a disservice to a global action on parking. Following the example of commuters, this "planning model" of an ideal sustainable parking system will put a slant on creating irreversible off-street individual (mainly infrastructure) parking places together with special access to on-street parking for residents promoted by local authorities. In this context it's understandable for commuter to get on regularly with private-car as they can easily "squat" residents or colleagues' places. Contradictions in planning lead to opportunity for harder resilient behaviours. Although it brought a complex thought and a new framework for action, the emergence of sustainability and its polysemy allowed contradictory strategies for different stakeholders in the field of parking planning. All of them can be justified by the argument of sustainability (ecological, social or economical). Virtuous circles between stakeholders, their favourite parking objects and selected users can be assembling without ever being in confrontation, creating successive, irreversible and counter-productive contradictions. For example, local authorities could reserve on-street parking to residents who will strengthen them through local elections whereas parking operators will promote off-street public car-parks where high turnover of visitors is needed to complete their business-models and strengthen them. Regarding developers, creation of individual parking will give their project more economic value, in a context of shortage. Sustainability and its flexibility of usage allow such "virtuous circles" to co-exist and do a disservice of the action on parking at a metropolitan scale.

Lessons from metropolitan Lyon's case

Taking advantage on its crossroad location between alpine Europe together with northern and southern Europe (with both main roads and rivers convergence), Lyon has always had a strong relationship with transportation issues. His particular development history based on a relatively high-rate of industrial production together with regional and trans-national commercial linkages lead Louis Pradel's municipality (1957-1976) to plan and build highway network connecting the city-center to the majority of Lyon's build-up area. This policy required high infrastructure investment due to the hilly topography of Lyon's region (Bonnevillie 1997). The current municipal policies targeting on a reduction of car-transit are still tributary of this

period of Lyon's history. The social consensus of promotion of automobiles in Lyon's city centre has started to turn into a consensus for reducing auto travels and car consumption of public space in the late 80's and has started to be accepted in consultation meetings during the 2000's (Vareilles 2006). As this member of the metropolitan Lyon's planning board says, "I remember the time - not so far away - it was almost impossible to make the people accept even a tiny improvement of priority for pedestrians at crossroads. In consultation meeting people said it will slow down the automobiles stream. I'm speaking about situation no older than ten years ago. Nowadays in our project consultation meetings, if somebody shows his reservations on a parking lot lowering policies or a parking ratemaking he will be booed by the majority of people. Just look at the Confluence project. In the consultation for the second phase people are developing projects of almost car-free neighbourhoods". The Confluence neighbourhood, as a former industrial and logistics zone, became last decade a brownfield at the door of the city center, southern to one of the two main train stations, between the two rivers crossing in Lyon, Saône and Rhône. The project has been projected by the municipal planning board to develop a whole neighbourhood in this area following principles of sustainable neighbourhoods. The first phase project currently finishing finally appeared with fewer results in car-use-lowering than expected and social demand is thus stronger for the second phase taking place on the former wholesale market buildings displaced in the south of the metropolis. Although perceived as a consensual issue by planners and neighbourhood communities, sustainable mobility project achievement seems problematic. At the metropolitan Lyon scale these resistances to injunctions to change in social mobility practices remain strong. The last household-transport survey (enquête ménages-déplacements) showed a stabilized phase for the metropolis in terms of modal split and mobility in spite of the steady efforts in land-use and mobility planning (CERTU 2009). Perceived as the "star pupil" of French proactive metropolises (with Grenoble and Nantes), Lyon has developed an ambitious mobility policy in parallel with the public space re-appropriation strategy, launched in 1989. The mobility urban plan from Lyon (PDU, Plans de Déplacements Urbains) dated 1997 and reviewed twice (in 2003 and 2005) give the priority to public transportation through the development of public transportation's strong lines ("lignes fortes") through the development of tramway connections, trolley-buses rolling stock and service renewal to Bus Rapid Transit systems (BRT), development of the first public bicycle rental scheme (public private project developed with the advertising company JC Decaux). In spite of these strong and steady efforts the mobility of the inhabitants of Lyon follow a stagnation line, explainable by the cross effect of a decline of the number of trips combined with a growth of their average length.

Conclusion

In spite of several volunteer policies for car-transit lowering including both incentive and restrictive injunctions to mobility behavior change, metropolitan Lyon still undergo its former policies and plans from the 60's and 70's that generate a certain inertia of practices. Although car-mobility has been curbed for the first time since the 30's, in the year 2006, a massive modal shift in favor of public transportation and cycling still seems unrealistic for planners. We particularly want to focus on individuals with exclusive private-car mobility practices in a daily-life analyze observation as these people are the target of mobility policies and projects. Assuming that the best experts in use are the users themselves, we developed a user-oriented methodology for the most important field-work survey of this research program.

This survey will be organized in three phases and will follow the key-issues and concerns of 50 individuals throughout metropolitan Lyon. An "in action" survey starts the protocol giving hand held recorders to private-car drivers to describe their urban environments and their choices during their mobility practices, following an intention grid presented before the recordings. After the synthesis and analyze of these mobility practices, half-guiding clarifying interviews with drivers will follow, finishing with comparison to "real" environments (price, distances, time...) and their planning rationale.

This survey started in the beginning of March 2010, letting us planning a global presentation of first results during the second semester 2010.

The objective will be to focus on the role of "parking" and "sustainability" in the axiological register of justification by resilient drivers to identify action-levers to modal split and to save them from hanging.

Notes

¹ An example of this constant urban-use diversity is the "Pont-Neuf" which was the first non-inhabited bridge in the history of Paris in 1606 [Choay, 1998]. This long-time high diversity and proximity of urban functions was due to vernacular organisation methods based on strong bonds between humans and their grounds and heavy social fabric, together with the lack of Soil and Labour Market [Polanyi, 1944].

² Namely the St-Georges, Fosse-aux-Ours and Cordeliers operated by LPA the public-private company for parking operation in Lyon

³ Such as the SRU law (literally "solidarity and urban renewal") passed in 2000.

⁴ Namely Lyon, Strasbourg and Montpellier.

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