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Figueroa, Maria J.

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Sharing Space as Social Innovation Re-embedding Social Values into Public Space

Maria Josefina Figueroa,

CBS Center for Civil Society Studies, Department of Business and Politics

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Abstract:

One of the most pressing contemporary challenges is the need for inclusion of vast number of people in urban innovation processes and societal systemic solutions to tackle sustainability inequality climate change and other major challenges. But there is little understanding of what role civil society organizations (CSO) can play to sustain, help propagate and preserve gains from these solutions and how increasing market commodification and governing interventions may affect these efforts. One result of this lack of understanding is reflected in the expectation that entrepreneurs will solve environmental problems in cities. This paper contributes knowledge to the emerging literature on the impact of social innovation with a comparative qualitative empirical case analysis in the field of promotion of sharing space for bicycle use in four European cities. The analysis demonstrates a strong relationship between the presence, vitality and variety of CSO social innovation and the cities' success in promoting greater social inclusion in the use of public space for bicycling. It is concluded that in the field of sharing space and promotion of bicycle use social innovation has a strong role to play. Over time, it can open venues for collective meaning formation, and help in propagation and preservation of values and ideas that can lend support to scaling up opportunities for these solutions. Scaling up bicycle use will require unabated support to civil society's social innovation capabilities with emphasis of equal measure to those given today to commercial, planning and legislative actions.

Key words: social innovation, urban environment, bicycle use, sharing space

1. Introduction

Solving societal critical challenges require inclusion of the potential for civic engagement and the creativity in problem solving of civil society organizations CSO in forms of collective action. The literature approaches this area of development as social innovation. Specifically, social innovation refers to new ways of resolving societal problems that begin with civil societal organized groups in collective efforts and practices and evolves in interaction with state, business, and other non-state actors. Understanding the results of evolving social innovation in interaction with state and market actors is at the core of this paper.

The field of action under investigation is environmental sustainability in cities. Specifically, findings new ways of sharing public space is a widespread stream of innovation in environmental sustainability of significance in many European cities and corresponding to several of the Sustainable Development goals of importance worldwide. The promotion of bicycle use as a form of sharing space to allow safe bicycle mobility is still receiving different degrees of success and failure across cities despite receiving direct state and market involvement. The question this research addresses is what type of essential, additional or complementary impact contribution social innovation has offered over time into this process and whether it contributes to scaling up the promotion of a shared space for bicycles in the four EU cities.

2. Methods

This paper presents partial results for one of the seven fields investigated as part of a large EU project the ITSSOIN.eu, devoted to investigating impacts of Third Sector as Social innovation in a variety of fields or social areas. The paper takes departure in the same conceptualization of what social innovation was and entailed for ITSSOIN as a novel and more sustainable solution to a social problem for which the value created accrues primarily to society rather than private individuals (Anheir et all, 2017)

One part of the large scale (9 countries, 7 fields) research project included international expert consultations to select major social innovations, one within each field of activity. Each innovations was then studied cross-nationally within a subset of the nine countries by means of a retrospective 'process tracing' (Collier, 2011; George & Bennett, 2005) to find out which (types) of organisations have contributed in which way to the present state of the innovations, and which traits have enabled them to do so.

ITSSOIN recognised social innovation streams in seven fields of activity (culture & arts; social services; health care; environmental sustainability; consumer protection; work integration; and community development with refugees). These were studied across three to four European countries to arrive at pathways of their emergence and in order to identify the involvement and contribution of third sector organisations, firms and public agencies or political institutions therein. In other words they were used to identify CSO involvement and CSO actors traits

The results of the qualitative case-based work was then synthesised across fields into a quantitative data set (Goertz & Mahoney, 2012), which was finally analysed by 'qualitative comparative analysis' (QCA) (Ragin, 1989, 2000; Rihoux & Ragin, 2009) to arrive at solution terms, that is logic combinations of actor traits that have enabled actors to contribute to social innovation. The quantitative data set and QCA are not further discussed here.

The present paper reports only results from the first part with the qualitative case-based work in the field of environmental sustainability in Cities. This part of the project included a cross-country/city comparison of examples of social innovation activities in four European countries. The specific topic investigated was the impact created with the City's social innovativeness in sharing urban space for promotion of bicycle use.

The specific methodological case-based approach used qualitative process tracing mapping how social innovation influenced practices and created narratives. The process allowed mapping and understanding the who?, what?, and how? of the processes that lead to the present status of the stream of innovation for each city. The analysis produced a thick story for each city, which traced the evolving thematic of this particular social innovation. It identified moments of

contention, within which the influence of the actors and the way in which narratives were produced over time.

The preselection of countries and cities took place in earlier ITSSOIN stages and material already published. The country selection report, documented the reasons for the selection of the four countries (Anheier, Krlev, Mildenberger, & Preuss, 2015) and, the Field description report justified the focus on sustainability in cities and provided the basis for the selection of the four cities (Brno, Copenhagen, Frankfurt and Milan) (Figueroa, 2015). In short, these four cities stood out comparatively to criteria such as: geography (population, overall density), the city's economic vitality with respect to the nation and the number of examples and level of experimentation and social innovativeness observed within each city.

The comparison Copenhagen, Frankfurt, Milan and Brno delivers an empirically grounded indication of the social innovativeness in the field of sharing bicycle use in these four cities. The topics guiding the empirical analysis are:

-State of the stream of innovation of sharing bicycle space by city

-Role of stakeholders/actors from state (e.g. policies), market (e.g. services) and civil society (e.g. volunteers, advocacy) to bring the stream of innovation to its present state in each city?

-Related narratives/discourses generated over time and their changing evolution

Our approach traced back two decades events and status observed about the social innovation at present time. Our focus was on tracing how, and by whose influence narratives leading the stream came to be constituted. We in short traced events linked to a certain typology of influence (socio-cultural, political, systemic/infrastructural) and extracted from this understanding their collective meaning in the form of narratives that come to form the core of a value system over time. A central part of our methodology was the interview process and the framework used in the analysis of results.

Our base background interview partners were selected on basis of results from a desktop research and literature reviews on each city in which key actors in the field of sharing public space for bicycle use were identified. While discovering key actors and experts through this process we have further used the snowball-method to uncover more and more documents and actors regarding the SI stream. A total of 32 experts were interviewed.

The information gathered on the current status picture of the innovativeness in sharing bicycle in each city, oriented the following parts of the methodology. In guiding our approach we decided to focus on finding the status of the stream of innovation in the year 2015 (see Figure 1 below); and then follow this conditions and how they emerged, tracing them back for the previous two decades.



Figure 1: Points of departure and end guiding the process tracing approach

The year 1992 was established for it created a similar moment of contention for all four countries and cities, since is the year of the UN Conference on the Environment in Rio de Janeiro, when Sustainable Development was emerging at the international level and subsequently the emphasis on the role of cities, participation and sustainable transportation emerged. This allowed focus on how the international narratives have been implemented. The interview process which we describe in the following section.

3. Results

External factors impact the evolution of the field environmental sustainability in all four cities and they are presented first. Following a brief synthetize version of each city finding is offered followed by the cross-city comparison.

3.1 External Context Impacting All Cities:

Environmental sustainability encompasses a wide array of social innovation activities of increasing significance in Europe and the rest of the world particularly following the Sustainable Development Goals and Agenda 20130. Sustainability in cities is SDG 11 and a key area within the environmental field. Within cities the stream of social innovation here identified has wide spread significance for sustainability in European cities and beyond. The stream belongs to the field of urban mobility and sustainable forms of transportation, topics at the hearth of sustainability in cities.

Bicycles are here considered as the tool enabling activities, interactive mechanisms around which we discuss and delimit a field of social innovativeness. Bicycles are an environmentally friendly form of transportation which, when utilized in high volumes and in combination with other forms of public transport and non-motorized forms of transportation, can create multiple environmental, social and economic benefits, indeed greatly contributing toward achievement of urban sustainability goals.

At the European and international level the benefits and opportunities for cities of promoting bicycling and other forms of soft mobility are well understood and increasingly promoted. The number of research and advocacy reports and projects offering a well of recommendations to all level of public and private city decision-makers in this area, produced at regional, international and local level, has multiplied over the last decade in multiple international and multi-stakeholder agreements (Figure 2).



Figure 2: Last twenty years of key international milestones in Environmental Sustainability

The use of bicycles pre-dates the invention and popularization cars in cities. Bicycles were and still are popular means of transport. However, the early presence of bicycles sharing in cities space gradually gave way to the circulation of cars and other motor vehicles. Motorized vehicles provide a faster, bigger and more powerful means of transportation requiring greater utilization of urban space for motor vehicles circulation. Over time urban development evolved into a systemic structurally locked in car places, limiting and constraining possibilities for sharing space with lower speed, softer, unprotected transport modes like bicycles and walking pedestrians. The consequences in terms of high traffic fatalities for pedestrians and bicyclist are a hard reality to deal with in all cities.

3.2 Summary of City perspectives on the social innovation stream

This section presents a brief summary of the thick description of the social innovation stream in Copenhagen, Frankfurt, Milan and Brno. Emphasis is given to where they stand today in terms of dynamism, what makes people bike, inspiration for change, and what can be disruptive changes and counter trends in the process such as stratification (pop.age.income) and commodification.

3.2.1 Copenhagen¹

Dynamism in the field

In Copenhagen 63% of Copenhageners bike to their workplaces or education places, and 45% of all the people who come to work or study in Copenhagen commute by bike.

Figure 3:Copenhagen Bike Share Milestones: Cultural changes (RED), Political changes (BLUE) and Systemic changes (GREEN)



¹ For thick stories of cities see Appendix

The number of people who bike to work or education in Copenhagen has increased from 36% in 2004 to 45% in 2014 (Københavns kommune, 2014b). The dynamism of the field shows that more and more people bike. At the same time more and more organisations from all sectors are joining in and supporting the biking agenda. An interviewee says that: "We in the Danish Cyclists' Federation have experienced that there are an increased number of actors in the field of biking and promotion of bicycle culture. I.e the Danish Cancer Society, the Danish Heart Association, the Danish Diabetes Society as well as many municipalities (Copenhagen, Odense, Aarhus), commercial actors like Gehl Architects, the Ministry of Foreign Affairs' ambassadors around the world. And Cycling Without Age is an important actor, also for promoting the bicycle culture of Denmark to other countries" (Interviewee 3).

What makes people bike?

An interviewee notes that "The desire for bikes cannot be explained by built infrastructure that facilitates biking. It must be explained by a change in lifestyle patterns" (Interviewee 4). Another interviewee thinks that built infrastructure is what is really making people use bikes: "The latest evaluation of the public Bike Funds that invested one billion DKK to the building of 250 km biking lanes shows that in places with newly built biking infrastructure the percentage of people who bike has increased with 24 percent" (Cop. Interviewee 3). The increase in the number of people who bike and support sharing space for bicycles cannot be explained by a single set of events and processes, but has to be comprehended in light of the variety of processes that have been described in the sections of cultural, political and systemic changes.

Whom does the inspiration for changes come from?

Bicycling as stream of innovation grew stronger in the years from 2006 to 2009. In this period several political and systemic changes caused the city to develop into a world class cycle city. This has to do with the political representation in the city parliament, because two very bike-oriented figures became Lord Mayor and Mayor of Techniques and Environment. From 2006 to 2009 the local agenda in Copenhagen put a lot of focus on biking: *"The bicycle culture in Copenhagen was enhanced during the period 2006-2009 because in this period cycling became much more prominent in the local political agenda"* (Interviewee 3). This means that there were more resources to initiate bike projects around the city. Throughout this period: *"Every year*

there was between 75 and 100 million DKK in the municipal budget reserved for projects related to biking. This was where the Bike program (Cykelpakker) started" (Cop. Interviewee 5). An interviewee thinks that: "I do not think that local politics and local initiatives and interests have helped to push the biking agenda of Copenhagen (...) the ideas does not come from the citizens. The inspiration comes from politicians, mayors and talented public servants. Apart from that also the Danish Cyclists' Federation has been a good player in pushing the agenda" (Interviewee 5). This quote is backed up by another interviewee: "The development of cycling is to a great extend pushed, I think, by 'heroes' in the public directorates and boards and the Municipality of Copenhagen. This started back in the 80'ies" (Interviewee 1). Having said that this interviewee also thinks that civil society plays a role to push the official agencies through advocacy: "The Danish Cyclists' Federation has always had a great impact because of their advocacy activities. It is a very active organisation and it formulated many wishes and proposals for the formal policy development. And Bicycle Innovation Lab is also an important organisation. They all work to push the agenda of cyclists" (Interviewee 1). Yet another interviewee stresses the importance of the Municipality, because the work that has been done here has a strong influence on the citizens: "Copenhagen Municipality is a very important actor in pushing this agenda. I think that there is a tendency to underestimate the importance of city planners who find ways to start new projects and one step at a time they change the mobility network and improve the possibilities for biking (...) Danish Cyclists' Association is also important, and also Bicycle Innovation Lab is an important actor in the discussion (Interviewee 2). Market sector actors do not play an important role for the SI stream in Denmark.

Disruptive changes

The innovation of sharing space for bicycles has evolved gradually in Copenhagen. Actors such as Municipality of Copenhagen and the Danish Cyclists' Federation have worked for many years to promote bicycling culture and sharing space for bicycles. The infrastructure in Copenhagen has gradually become better and better for cyclists, and safety has been enhanced. When we turn to look at the work that the organisations Bicycle Innovation Lab and Cycling Without Age are doing we discover some disruptive and radically new tendencies in the field. The two organisations are rethinking bike-use as more than a mere instrument for mobility that can be a green, healthy, effective instrument for mobility. An interviewee points to a tendency towards thinking of bike-use not just as a means of green and healthy transportation but also as a socially innovative force: "Cycling Without Age is an important civil society actor. This project is about mobility but it is just as much about all the things that biking is apart from a mere form of mobility. Biking in this project is about social life and promoting the quality of life for elderly through biking" (Interviewee 3). Bicycle Innovation Lab has promoted bike use in the business world through their mobile Bicycle Library. Hence they have promoted work-related bike-use instead of the use of cars at the Danish Broadcast Corporation. The fact that biking enters the business world extends the interest for biking and sharing space for bicycles, as the latter somes play an important role for the corporations' everyday activities. Disruptive changes regarding new approaches to biking and new areas for bike-use thus seem to come from CSO organisations, rather that from the state actors, though the latter are also very important for extending and improving bike-use for the universal purpose of mobility.

Counter-trends, stratification, commodification

According to two interviewees the number of cyclists has slightly decreased. This is the case in Denmark as a whole, and not in Copenhagen (Britz Nicolaisen 2016). One interviewee notes that the share of people who bike has stagnated and dropped a little bit recently due to that fact that the Government has lowered the fees on buying cars (Interviewee 5). Hence the choice between cars and bikes is correlated to prices. As driving a car becomes cheaper less people choose the bike, but in times before prices on cars were lowered, more people would choose to bike. Another interviewee mentions that new numbers show that young people bike less, and he points to the fact that in most public transport there is wifi accessible, whereas it is illegal to use a phone when riding a bike (Interviewee 3). One interviewee notes that even though biking has a priority in Copenhagen, the power structures in the country are differently organised: "There is a lot of attention on bicycling in Copenhagen, but the interest of the wealthy and powerful societal actors is directed at car traffic and oil import. It is almost impossible to grasp the power and money that lies in the car traffic management" (Interviewee 2). Lastly, regarding the stratification of the field in the context of Copenhagen the group of people who bike is very diverse and people of all ages and cultures bike. The Copenhagen Bike Accounts' focus on safety has also resulted in enhanced safety for cyclists, and this can be seen as a factor for making people of all ages ride a bike, and even young school kids ride their bike to school in the morning. De-commodification is high in the field, because it is free to ride a bike, and compared to other means of transportation very cheap. One tendency in the direction of commodification is the new brands of luxury bikes that are very expensive.

3.2.2 Germany/Frankfurt

Figuer 4: Frankfurt Milestones: Cultural changes (RED), Political changes (BLUE) and Systemic changes (GREEN)



Dynamism in the field

The number of people that use bikes has significantly increased within the last 20 years: Starting at 6% of the whole traffic in Frankfurt in 1998, the bike use increased to about 11-13% of the total traffic in Frankfurt in 2013 (Fra. Interviewee 2). The ambition is to further increase this share (Fra. Interviewee 1, 2, 9). As a social innovation bike stream has picked up in terms of trajectories and dynamism in the last years. Much effort has been made to expand public spaces for bicycles in the city of Frankfurt. In addition to the opening of one-way streets to counter-directed bike traffic, which had peaked around 2006-2009, other developments in recent years were of great influence for the bicycling conditions in the city. However, the numbers are currently stagnating and another interview partner didn't see much further room for significantly increasing bike use in relation to other forms of traffic (Fra. Interviewee 5), which does not mean that the quality of using bikes in Frankfurt cannot be increased.

What makes people bike?

Part of the increase in user numbers in the past has been promoted actively, but another part depended on general trends and happened without anyone's particular doings as explained by one interviewee: "Since about the millennium we have had a steady increase. Partly because we wanted it to happen and have supported it, and partly this has just happened" (Fra. Interviewee 9). More specifically, the increasing user numbers in Frankfurt have been affected mainly by two different factors, as described by one interviewee: "[...] I think two waves have coincided in Frankfurt. One thing is that there is a positive attitude towards bike use and that is I think a general trend in Germany. And then there is the Green Party leading the city parliament [...]" (Fra. Interviewee 1). "[I]t is recognizable for us that the promotion of bike traffic has become more important politically" (Fra. Interviewee 5). This has driven the issue of using bikes in the city as well as the infrastructure as well as softer promotional factors that are needed to foster it.

Disruptive changes

A very big influence came from the election of a city parliament, which is led by the Green Party since 2011. This has produced a major leap in the priority that has been given to the SI stream in Frankfurt. It has for instance manifested in the creation of the Radfahrbüro in 2009, which has since become a new central player if not <u>the</u> central player in Frankfurt's actor landscape. It is not only important in terms of its coordinative function between actors but also and in particular as a link between these actors and cyclists: *"The Radfahrbüro has a central function not only with regard to coordinating processes within the public administration, but also since it provides a link to cyclists, into the community"* (Fra. Interviewee 9).

The will of political decision makers is in fact central to the current state of the SI stream in Frankfurt. Not only do they theoretically have the strongest lever in creating public spaces for bicycle use, they have in fact chosen to do so. In comparison to other cities for example, Frankfurt is investing a lot of money in infrastructure and mobility management according to one of our interviewees (Fra. Interviewee 1).

Except for the creation of dedicated agencies in recent years, the constellation of actors involved in and driving the SI stream hasn't changed much during the last years. In the contrary, the main actors within the field have been operating for a long time and become stable components of a fairly collaborative system. In general, all identified actors have a great interest in promoting bicycle use in Frankfurt. The responsible actors mostly seek cooperation pro-actively. One interviewee points to the importance of knowing each other:

"[E]verything fits together, and it is a small family, and all of them know each other" (Fra. Interviewee 1). In relation to this, another one explicitly highlights the network aspect and a 'give and take' between the organisations which is necessary for working together in an effectively: "There is a network of people, who know each other well and who, and this is he prerequisite for this to work, to each give and take, people who can work pragmatically and who try to build a good working atmosphere" (Fra. Interviewee 4). For example, ADFC and the City of Frankfurt are working in a cooperative way and not against each other. This is what might differentiate Frankfurt from other cities even within the same federal state and at close proximity.

Counter-trends

There are, however also some counter-trends. On the national level, the so called "Sinus Study" commissioned by the Ministry of Transport in 2015 has shown deficiencies in relation to the aims in the "national bicycle traffic plan" issued a year before by the same Ministry (Bundesministerium für Verkehr und digitale Infrastruktur, 2014; Sinus Markt- und Sozialforschung GmbH, 2015). In the latter report it was formulated that the share of bike travel should be increased further from the level of 10%. The Sinus Study in contrast points out that the popularity of bike travel has decreased in the population as compared to previous years. It is not entirely clear how this relates to Frankfurt. In 2013 "Stiftung Warentest" and "German Automobile Club" have issued bad test results for a number of e-bikes and pedelecs for safety reasons (ADAC, 2013; Focus Online, 2013). A study in 2014 has shown that the concept of e-mobility, mainly concerning cars but also bikes, is less accepted in Germany as compared to other European states, for example the Netherlands or Norway (Breitinger, 2014).

On the municipal level, Frankfurt, despite the efforts referred to before, had to diagnose in 2014 that bike routes need further improvement and expansion (Stadt Frankfurt am Main, 2016). It has also been reported in the media that bike parking facilities at Frankfurt main station were few and not well organised. Better examples at close proximity could be found in Bad Homburg or Darmstadt (Rippegather, 2014). As regards the issue of bike sharing or renting, it is currently dominated by big companies like Deutsche Bahn or Next Bike and there is no established private bike sharing culture in Frankfurt.

Lastly, since the use of bikes is essentially not a pay for service system and in principle the cheapest form of transport available, de-commodification in the field is very high. This might have changed slightly and continue to do so by the initiation of bike renting systems, which however come at fairly low costs, or the increase of e-mobility, which makes bikes significantly more expensive. Similar factors, but also demographic characteristics may have an influence on the stratification of the field across society. In Frankfurt, but also across Germany using bikes is currently considered trendy, mainly by urban young people, so that the share of such people using bikes is currently over-proportionately high (Fra. Interviewee 5). The fact that e-bikes are currently still expensive makes them more attractive to wealthier target groups then to others. And there is a tendency among some migrant groups to use bikes somewhat less than those without a migration background (Fra. Interviewee 1 & 3). Yet, according to interviewee 3 their share is on the rise, partly because public transport is comparatively expensive. Altogether, biking doesn't have a special target group and as one interviewee puts it, if anything, the heterogeneity of bicycle users has steadily increased as compared to previous years: "It is becoming more diverse. Significant shares of bike users are to be found in all groups of society" (Fra. Interviewee 9). Cycling spans all types of people and all ages and in principle it is available to everybody, so that stratification in the field is very low.

3.3.3 Czech Republic/ Brno

Figure 5: Brno Milestones: Cultural changes (RED), Political changes (BLUE) and Systemic changes (GREEN)

	Beginning of regular bike rides
1990	
1992	• First greenway in Brno
1992	New study of cyclo transport: Study of cycleways in Brno and its surroundings
1994	Network of cyclotransport in Brno Spatial Plan
2003	• Strategy for Brno
2004	National Cycling Development Strategy
2005	Update of previous study on cyclo transport: Study of cycleways in Brno (in cooperation with ADOS)
2005	Cyclogenerel in Southmoravian region
2007	Framework plan for development of cycle paths and cycleways in Brno (in cooperation with ADOS)
2008	• Strategy for Brno - update
2009	Established function of national cyclo-coordinator
2009	Brno na kole introduced two documents about cyclo-barriers in the city to the Local Municipality
2010	Change of the attitude towards bicycle trails (bicycle trails as an alternative to automobile transport, greenways are too expensive and serve for leisure) - Systematic change
2012	 Possibility to borrow a bicycle through Mezikavárenská půjčovna kol
2012	Beginning of passes to selected one-way streets
2013	Bike Sharing Feasibility Study (ADOS) and Council meeting - Political change
2014	Approval of the investment project "Systém sdílení kol - bike sharing" by City Council (based on Cyclogenerel and previous studies)
2014	Foundation of Rekola Brno
2014	• Seminar about bike sharing
2015	Full access to the City Center for bikers (24/7) as a result of a safety audit (2012)
2016	 Cooperation with the Local Municipality and Brněnské komunikace,a.s sharing data about most frequent places where users park their bicycles in order to build an infrastructure for bicycle racks

Dynamism in the field

There is a demand for bike sharing from the part of cyclists, cyclist movements and students who are looking for alternatives (Brn. Interviewee 1). The first successful (if not completely of bike sharing nature) project of bike sharing was Mezikavárenská půjčovna kol (Inter-cafeteria bike rental). Bikesharing in Brno would develop also without civil society but it would take longer and it would focus more on profit than on cycling (Brn. Interviewee 3). The rise of interest in bike transportation was caused by the promotion through various contests and campaigns organized by civic associations, change in the attitude of employers and new healthier lifestyle associated also with hipster subculture (Brn. Interviewee 2). The topic can be unpopular within a particular group of people, who are not welcoming changes and represent convinced adversaries of the cyclo transport. As one organization reflects: *"The association looks at the same time at a wide range of the citizens that are considered [by the association] as transport promiscuous [changing means of transport]*."

What makes people bike?

There are about three major factors which support the development of cycling and bring new people in the field. The first one is simply the tradition: Brno is a very "local" city in a sense that many of its inhabitant come from neighboring towns and villages of South Moravia which is geographically very flat region. Biking culture has always been part of it and therefore is part of the mainstream way of living. Second factor is a more recent, and it is a health and fitness reason. Contemporary Czech citizens have been constantly raising awareness related to the healthy way of life, sport activities and active lifestyle. Cycling – together with jogging – has become a common and easily accessible mean how to stay physically active in the city. Finally, biking in the city has become a part of youth subcultures in the city, related especially to hipster one. This together with the fact that several universities are located in Brno and thousands of young people live and study in the city, biking is preferred lifestyle of youngsters here.

Where does the inspiration for changes come from?

As mentioned before, one of the cultural sources of cycling in Brno is simply the tradition of neighbouring localities. At the same time, these and other cultural sources needed to be made attractive and socially available for the citizens of Brno, which was the role of local civil society

organizations and associations which aim at popularization of biking and advocacy the development of particular infrastructure for biking. Another source of inspiration comes both from Prague (some of the NGOs working in the field in Brno are local branches of Prague NGOs) and from other countries – most notably Austria and Sweden (at least in the field of bikesharing).

Disruptive changes

Bikesharing may partially be seen as a disruptive innovation in Brno. The most important reason for that is the change of the perception of a public space. At the same time, this change is to some extent being drive by commercial – private – reasons. More specifically, it is quite unusual to share some means of transportation or other things in the Czech culture. Generally, there were dramatic social, political and economic shifts towards the privatization and commercialization after 1989, so that common goods, joint properties of socialized activities are generally seen as suspicious, unusual and even irrational. The idea of bikesharing disrupts this cultural patterns and aims at public sharing of things that are not owned privately. This is something that is anew. At the same time, bike sharing initiatives are to some extent driven by commercial interests (some of them are prepared to become fully commercial once they have enough "customers"). So there is a certain level of disruptiveness towards the privatized civic culture but driven partially by the private interests.

Counter-trends

There are three major countertrends to bikesharing in Brno. One of them is the perception of biking a sa personal lifestyle (as mentioned above) which makes the bicycle a symbol of a social status of its owner. This combined with a civic privatism and social competition lead to the development of biking subcultures but not to bikesharing – each person needs to have his or her own "super-bike" which reflects his or her lifestyle, status and character. Second, there are initiatives driven partially by the right-wing parties and supported especially by the elderly citizens who disagree with the creation space for biking at the expense of individual car transportation (e.g. during the reconstruction of the streets and squares). This represents the continuing trend of perceiving a comfortable individual transportation by private cars anywhere in the country as a sort of "citizens' right" for which they "pay their taxes". Third, and quite

paradoxically, it is the very dense and well-operated network of public transportation which fully supplements the individual car transportation but may also discourage citizens from using bike. Furthermore, the public transportation (trams, buses) is still not entirely ready for being combined with biking (e.g. not enough space for bike transportation in tram across the city, low number of bike buses etc.).

Lastly, in a sense, bikesharing itself is rather available for various socio-economic groups: it provides a service for a rather small amount of money (as it also aims at students), so its effects rather weaken the stratification in the field. On the other hand, existing stratification is a medium one. On the one hand, the cycling is available for most of the citizens, the bikes are affordable and the stigmatization of the users of the old or cheap bikes seems to be fairly low - on the contrary, the weariness of the bikes, DIY biking culture and certain level of amateurism in bike maintenance has become a positively evaluated trend. At the same time, biking is also seen as an attribute of certain type of leisure activities, related to fitness and healthy lifestyle which are part of the habitus of educated middle class. In this sense, the field is stratified and excludes certain social groups. The de-commodification of the field may be ranked as medium, too (with inclination to low). This is due to the fact that there is a mix of motives and reasons of actors active in the field. On the one hand, most of the activities which aim at the support of cycling are driven by the civil society organizations. These are usually oriented at environmental and cultural values – they aim at dealing with environmental pollution, gentrification of some part of the city, transportation problems etc. At the same time, the very bikesharing is promoted by organizations that are situated at the border between the profit and non-profit motives and aim at some form of ethical business rather than strictly non-profit activities. Many of these organizations consider themselves rather as "start-ups" than NGOs and have business ambitions for the future. At the same time and for reasons mentioned above, the cycling culture has become commercialized and many cycling events or projects are sponsored by the business which aims at targeting certain part of the population (sport equipment, alcohol, media etc.). There are several trajectories of the innovation stream under study. First, we witness its quantitative rise both in terms of people involved in the process and the effects it has on other citizens: the gradual rehabilitation (if not invention) of the bike transportation as the part of the city transportation strategies with the rise in the investment into the infrastructure is undisputable and they are

limited only by the declining resistance of (now minor) political forces, by the availability of public resources for the construction of biking infrastructure and by the geography of the city itself. There is unfavourable geography of the city that prevents cycling and bike sharing; there is a lot of hills (Brn. Interviewee 5). The infrastructure is not developed for extensive bike sharing projects, it is necessary to do so in order to keep cycling safe (Brn. Interviewee 3). At the same time, the content of the idea has also been transformed and remain mixed. Quite surprisingly, traditional NGOs promoting biking in the city are to some extent sceptical both in terms of impact and motives of organizations promoting bikesharing.

3.3.4 Milan



1990	some interventions during the first years of 1990 aiming to develop cycle paths in town.
2000	The establishment of AMAT (local agency for mobility of the local municipality)
2002	First Critical Mass Event
2006	first cyclomechanic competition
2008	the municipality of Milan launched the first phase of the BikeMi project (first urban bike sharing). The bike sharing system was partially financed through government funds (Ministry of Environment)
2007	the first feasibility study for the bike sharing system the National Bicvcle Conference settled in Milan incentivised by the Milan County
	Major Moratti, Milan began to focus on sustainable mobility policies in order to improve cycle infrastructures
2010	Cyclobby-Fiab acquired the Cycle Mobility function and we started doing the Plan of Bike Mobility (finally approved in 2014- following the guidelines of the Law 7/2009).
2010	First Milano Bike Polo team Brief explanation
2011	There were 130 km of cycle lines, the majority of them were disconnected or interrupted. it is allowed to bring the bicycles on public transports for free
2011	Green referendum in 2011 (5 questions for citizens on green issues) Administration replacement
2012	Bicycle Film Festival; "Salva i Ciclisti" Movement supporting the cyclists safety
2012	Creation of 1350 bike parking and introduction of Area C (charge for driving vehicles within the charging zone) + Funding for bike lanes (9 mln euros).
2015	PUMS Sustainable mobility urban plans (not approved yet). A strategic plan that builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles to satisfy the mobility needs of people

Dynamism in the field

In recent years more bike paths have been built in the city of Milan and by 2011 there was 130 kilometres of cycle paths. Also the restriction of cars into the city centre has encouraged the citizens to bike more. An important factor according to one of the interviewees had also been the economic crisis, "people can't afford anymore all the expenses related to car maintenance

namely: insurance, taxes, oil, etc. they are therefore opting for the cheaper alternative- the bicycle." The cyclist image has also deeply changed, businessmen and elegant women ride the yellow bicycles as part of the bike sharing initiative; the bicycles are a fashion item, some of them are even expensive because of the peculiar design or layout. The strength of innovation started picking up towards 2005, when various institutions were involved in the the Mobility Management Project. In 2011 a replacement in the administration to a new mayor took place. Letizia Moratti began to implement some interventions building new infrastructures and promoting cyclic events. Firstly she proposed the "Green Rays project" that defines and promotes a new slow mobility, as a new green nervature in Milan urban fabric. In 2013 it is showed that the use of bikes increase while the use of cars in Milan has decreased. The SI stream in Milan is strong in the sense of more people using bike sharing system and this vay use the bike instead of the car. The SI stream is hence getting stronger in Milan.

What makes people bike?

In Milan, recent data highlight an increasing number of car bike sharing users. This number has increased by 26% over the last 8 years and by 56% compared with 2003. The highest number of passengers use the bike sharing service to move from home to work. After a slight reduction in 2013, the data has raised again and it is now close to its value in 2012, with a total number of passengers of 34,100. (source: Censimento Ciclisti 2013 – Ciclobby)

Whom does the inspiration for changes come from?

The inspiration for change comes from the programs run by the municipality in partnership with the private sector who offer financial support with projects such as #Bicittadini. Another factor driving the inspiration is grassroot organisation e.g. "Massamarmocchi consisting of parents who are educating their kids to be responsible for the environment by picking a less polluting means of transport. The Bike Sharing service is more and more successful as evidenced by more than 13 % of the bicycles detected in the town center belong to the public bike sharing service with a peak in the Augusto local district.

Disruptive changes

Sustainable mobility and the promotion of the bicycles in in Milan has not greatly disrupted the current transport system in Milan and Lombardy. This is because it has mainly been a partnership between the private sectors- through activism and lobbying for better policies and safer biking lanes, funding and the Municipality which from 2007 has made a greater effort in promoting a biking culture in Milan. There are more people using bicycles because of improved infrastructure, but according to one interviewee "*Milan's main problems are cars that occupy public spaces impeding the development of alternative mobility ways*." . On the other hand because of inadequate infrastructure bicycles have to ride the same lane as cars with a high level of dangers for the riders themselves.

Counter-trends, stratification and commodification

There has been an emerging counter trends in bike sharing in Milan, one of the more prominent ones is the fashion statement that bike sharing has created. The more expensive and uniquely designed the bike is the more status it gives to the cyclist. The de-commodification in the field may be ranked as medium. This is because most of the bike sharing activities, campaigns are done in collaboration with the Municipality and mainly the private sector. It is the private sector players that acts as lobbyists and often partial financiers to Municipality run projects e.g #Bicittadini. The third sector in the form of self organized parents plays also an important in trying to create awareness in schools and to the general population on the environmental benefits of biking. There has however been instances where the city of Milan has not worked in partnership with the third sector organisations specifically Cyclobby-Fiab and the result has led to undesirable outcomes according to one interviewee *"In Milan it's always been preferred to build expensive and, sometime, useless infrastructure rather than listening to the cyclists' voice and save money!"*

4. Synthesis of comparative analysis

At the core of social innovativeness in the stream of sharing space for bicycle use we find the workings of formation of a core set of value system of which all actors are playing part.

Geographical and historical conditions vary between these four cities and therefore each city has the capacity only to produce and recreate its own value system and as a result create particularity to the stream of innovation that takes place. In the four cities a decisive and timely intervention from state throughout the time frame is key to either setting in place or not the ground elements over which innovation can take root. A clear progression is observed in all four cities toward greater innovativeness in the sharing of space for bicycles are synthetized in Figures 9-12,

CPH	Sport Recreation Local transport	Safety Sport Recreation Local transport	Environmental Sustainability Local (LA21) Participatory Planning Redevelopments of Copenhagen Ørestad	Cultural EU Capital Shared Pedestrian Tourism branding	Livability Well- being Health Green EU Capital Green Transport Sharing Copenhagen	Art/Bike Elderly Fitness Branding Cph Civic bike Pride Speed back fast commute Economic Productivity
Civil Society	Men & Women Cycle Federation	Pedestrians (Ghel 1970's) Cycle Federation collaborates testing	Families	All can ride Cycle Embassy	All must ride	Riding bikes a right for all Mores bikes at cost of worsening car circulation conditions (disruption)
State	Bike counting(1924) Systemic counts(1930) Road Standards (1940) Bikes paths as lines	Traffic Planning Safety/speed Define how a road + bike line should look like	Participatory Planning Environment including Safety Standards Cycle Budget	Sust.Traffic planning links public + bikes Focus on easing commuting by bike	Bike on Trains Bike&Ride Park&Ride Region Mobility Management	Super Cycle Highways Bikes absorbing part of traffic Green bike corridors E-bikes sharing
Market	Plain bike models	Men /sport Women/city differentiation	Christiania Bike, family bikes	Foldable bicycles to take on trains	Bike delivery Post/DHL	E-bikes Multiple IT platforms
Years	1940s-60s	1970s-80s	1990s-98	2000s	2008	2015

Figure9: Synthesis of Process Tracing Narratives and Value creation in bike SI Copen	hagen
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Figure 9 shows Copenhagen the SI stream that has more maturity than in the other three cities and strong participation of the state, strong support and creativity form civil society and fruitful opportunities for market actors.

In Frankfurt Figure 10: shows efforts are more recent than in Copenhagen but the state has taken the lead, while organizations from civil society are fewer and use of bicycles has stagnated in a low level during the last years, the foundation for a value system are there but the creativity of civil society and market is tempered by a strong car culture prevailing in the city spaces.

Figure 10: Synthesis process tracing narratives and value creation in bike SI Frankfurt

FRA	Sport Leisure	Sport Leisure	Sport Leisure	Sport Leisure	Bike & Ride Parking near stations Bikes on Trains Sport /Leisure	City of Commuters Increasing ridership Leisure
Civil Society			ADFC 6% using bicycles	ADFC starts Bike+Business	ADFC	11-13% actual bike traffic Bed-Bike Bike-Business
State			Traffic Agency RMV Federatl State Hesse Concept of 12 main bike routes Opening one-way streets	2005-2006 open all of the many one- way streets to counter-directed bike traffic	Radfahrbüroin 2009 Green Party Bike Award 2010	National goal 10% traffic should be by bike ADFC + RMV offer bike to fold IVM Regional authority
Market					NextBike Call a Bike (Deustsche Bank)	platform Meldeplattform Radverkehr (suggest new bike lines)
Years	1940s-60s	1970s-80s	1990s-98	2000s	2010	2015

In Milan, the state has recently cleverly adopted strategies, and resources, directly in interaction with market actors. Market actors are coming forward with very innovative ideas that will certainly gain attraction in other cities, as they are making them fashionable in Italy and potentially beyond. The conditions to ride safely are not in place in Milan, therefore the efforts are more targeted to the well-fit category of young, healthy and those led by fashion.

Milan	Sport Recreation	Sport Recreation	Sport Recreation	Creation of a municipal agency for mobility analysis	Major Focus in Sustainable Mobility Branding- linking bikes to fashion	Bike & Fashion Bike & Culture Bike & Drinks Bike & Food Bike & Art Music
Civil Society	Men	Men	Men	Young culture- Men and women but fit to ride	Bike as Status – Youth & fitness oriented activity	Young culture- Men and women but fit to ride
State				AMAT-agency collecting traffic data National Bicycle Conference 2007	BikeMi (2008) Change of Government Green Rays Project	Taxing Cars entering city center Further restrictions
Market					#Bicittadini (children)	Cycle Mechanics Upcycle Cycle Bar
Years	1940s-60s	1970s-80s	1990s-98	2000s	2008	2015

Figure 11: Synthesis process tracing narratives and value creation in bike SI Milan

In Brno, the innovativeness of the stream is still in the ideational phase. Civil society actors wanting to become business actors are taking some initiatives to test. However, Brno is also exemplifying a place where organized civil society efforts may be capable of damping innovativeness in this stream of sharing. Brno's civil society contestation to "sharing" as a business and city development proposition seems to be a contradiction in terms for a country emerging from a communitarian base into a open market society. One of the parallels that can be found in the four cities is that at the local level the narratives that seem to generate more traction and innovativeness in sharing space for bicycling are not those closely linked to awareness and political prioritization of environmentally friendly practices per se but those linked to improving

health (all), enjoying life (Milan/Copenhagen), recovering the local traditions (Brno) in the urban context.

Brno	Sport Leisure	Sport Leisure	Sport Leisure	Sport Leisure	Sport Leisure Sharing questioned	Sharing Bikes contested Geography limiting No public interest in alternative modes to cars Bikes as Leisure
Civil Society			Beginning of regular bike rides	Young culture- Men and women but fit to ride	Sharing contested Brno Rekola Supporting	Civic Privatisms Youth culture Brno Na Skole pro- bikes Brno Autem: anti bikes-citizens rights to cars
State			Revolutionary Plan for Bike Transportation		Bike Plan Renewed Emphasizes bike sharing	Limited bike lanes provision
Market					ADOS Brno Rekola	ADOS Brno Rekola
Years	1940s-60s	1970s-80s	1990s-98	2000s	2010	2015

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Discussion and Conclusions:

The picture that has emerged from this qualitative comparative analysis of four cities highlights a systemic and dynamic interplay between organizations and actors, where practices, narratives, stakeholders claims, new and old struggles, are acting simultaneously in the physical world impacting the opportunities for sharing space for biking in these cities. Social innovation is contextual therefore social innovation in is to a large extent difficult to replicate from city to city. A key pivotal role is played by the state creating a safe play field with rules that make possible

innovative efforts from civil society and market actors. There is a significant risk to advance sharing space for bicycling when safety is not guarantee. Similarly, infrastructure provision is no guarantee for sharing space. The efforts required are multiple. The creation of a common shared value that social innovation demonstrates as a result of this stream of innovation is so important. Brno and Milan demonstrates the case that safety is important and can damp other efforts and possibilities. The opposite can be observed in Frankfurt and Copenhagen where the careful laid out of infrastructure and attention to safety rules have secured higher volumes of bike ridership.

In the city with the most vibrant stream of innovation of the four cities, Copenhagen, the many narratives and claims that are presented or created in the interplay of actors, reproduces and maintains a great infusion of innovativeness. The other three cities are tagging along with fewer claims or narratives brought forward. However as Milan and Copenhagen exemplify the room for creativity has no limits and the timing for advancing ideas needs not be postponed. Overall our observation and tracing of these processes clearly indicated the constituting emergence of what we see as the most important impact of this stream of social innovation. This is social innovation contributes to re-embedding the social in forming a strong value system for promotion of bicycle use. This value system is formed by new meanings, practices, services, new agencies, opportunities and sets of objectives together reinforcing the innovativeness in sharing space for bicycling.

The value system created is contextual. What is generic about it for all cities is that at its core is built upon the networks established between stakeholders. We have sought to document the relational systemic interplay between stakeholders but further analysis such as network analysis could prove this further. We submit that this qualitative approach has allowed us to show what the impact of social innovativeness in this specific field of action is and how important the creation of a value system is in supporting the evolution of a stream innovativeness in sharing space for bicycling.

In Copenhagen where the social innovation is more prominent in this field the city bike system attracts high innovativeness from all actors, constantly pushing in the direction of further innovation and social inclusion. Innovativeness has given place to greater social inclusion for

example with the organization Cycle Without Age bringing elders back to the street. However, as bicycle volumes increase the limits to the physical space available to bike in Copenhagen also shrinks resulting in bike congestion. Further increases in bike traffic in Copenhagen may require achieving new compromises to limit car traffic and difficult political decisions. If bicycle congestion becomes common in some corridors in the city, accident risks may discourage some bike riders. Within Denmark the innovativeness of the Copenhagen system instead of serving as a blue print for all other cities, becomes a magnet for the innovators, bicycle lovers and bicycle leaders available in the country. This produces what one of the Danish experts called a see/saw effect, where further innovative gains in terms of the resources that organizations invest, time, energy and ideas applied Copenhagen come at the cost of deploying these same resources of innovation in other cities. Indeed outside Copenhagen, bicycle use levels drop and significantly so in rural areas.

The social innovativeness impact in this field in Frankfurt has also brought about a strong positive feedback value system, however in our observations the field appears less rich in narratives than in Copenhagen. Innovativeness in the field in Frankfurt is advanced via state intervention in cooperation with third sector and market. Frankfurt demonstrates a solid record of development of facilities, services and integration with public transport of recent data. The state has created and funded a central office "Radfahrbüro" which has the vision of increasing bike ridership. However, in Frankfurt, as in the rest of Germany, a strong pro-auto narrative is always present. Frankfurt is presented as "a city of commuters", the branding narrative says, and as such it needs to provide easy access to them. This narrative can be playing a role as well for car users, and it may not be catching the imagination of bicycle commuters as much as, "a super cycle highway" does in Copenhagen. The opportunities for replicating Frankfurt success in creating safe conditions for bicycling across Germany are great, but the challenge for Frankfurt to stimulate increasing bike ridership in the city will still require further innovation.

In Milan, a value system of innovativeness is building its reputation led by the state in partnership with business sector. A recently elected green motivated government has been mirroring and directly cooperating with businesses in branding a strategy that makes sharing space for bicycling fashionable, and part of a youth culture; a combined strategy of target branding and medium stratification. Milan has the state and market as the primary innovating actors in the field. The state in Milan to a certain extent ahead of -Frankfurt and Copenhagen- in engaging in two fronts: on one side directly strategizing and in partnerships with business, on the other waging the first confrontational battles to limit access to car owners (taxes and imposing access restrictions). These may be unpopular policies but they also create the demand markets require to thrive. Effectively many university students have made the switch. Milan seems to be tapping into the high end forms of idea-creation and innovativeness observed in Copenhagen however the physical supporting infrastructure for safe riding is simply not there. Therefore a large and all-encompassing increase in ridership seems unlikely. Sharing space cannot advance without safety first. The ideas Milan is creating in this field have a good chance to be replicated in other cities in Italy and beyond, in particular when they directly offer to target and make more difficult car use in the city.

In Brno, the value system for sharing space for bicycling is challenged by historical narratives that question what the meaning of sharing in a post-socialist era really means, and by specific geographic conditions. In Brno geography alone limits the expansion and use of the system, a constraint not present in the flatter cities. Field innovativeness in Brno is the most incipient of the four cities considered. It is led by the state with mixing degrees of support from civil society and market. The business sector in Brno although incipient is ready to capitalize and make inroads replicating innovative approaches from cities like Prague and Vienna, but they are counting on a less supportive environment from the general population. The importance of state intervention to the field innovativeness is emphasized in the cases of Milan and Brno. Only when safe conditions for bike riding and space sharing are present can the third sector actors and business thrive with ideas that have better success of being implemented. In all cities it is visible, that while truly innovative forces may emerge from civil society with support and cooperation with the public sector, market actors are ready to tap into the ideas of the SI stream in order to produce profits.

The present study has confronted a number of limitations particularly to achieve a more rigorous implementation of the process tracing methodological approach which would have required summing in more concretely into tracing events at the organizational level, potentially linking actors' roles to specific outcomes. We have added different steps to gain further traction in our analysis but not sufficient to claim that we have established causal relations. The process has

been fruitful nonetheless, to identify systemic and relational dimensions, plausible links and elements. Further research in analyzing specific individualized segments of influence and interaction concerning the stream of innovation of sharing space for bicycling are possible, but clearly not recommended in a large comparative study like the present one. We found the findings and discussion in further research that considers streams of innovation as relational systems can yield richer and more valuable inputs to the understanding of impacts of social innovation.

The results highlighted a dynamic interplay of the civil societal actors in practices of social innovation that over time contribute to consolidation of distinctive social narratives, and reembedding of social claims expanding possibilities participation and scaling up of bicycle use. The longitudinal analysis of the narratives and claims emerging reflects a process of societal practical learning. Accumulated practical learning appeared to evolve to a form of accepted value system supported by citizens and leading to scaling up of more sharing bikes in the city. It is necessary to create more understanding for how this can become a virtuous cycle in some cities but remain in embryonic stage in others. The most important realization is that Social innovation has potential for unlocking lock-in conditions, that experimentation in society can produce forms of social 'coping mechanisms' and 'new imaginaries' for long term progressive social and environmental change.

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APPENDIX A: THICK STORIES AND STAKEHOLDERS BY CITY

AVAILABLE UPON REQUEST.