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From Attention to Spatial and Informational Mobility

Towards a Digital Common to Design a Dynamic City

Outcomes of Mobiance 4 workshop

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Abstract. *The 4th edition of Mobiance workshop, held in Grenoble in October 2019, brought together 18 international students (engineers, architects, marketing experts, and urban planners) from 6 different countries. The workshop goal was to focus on spatial and informational mobility without any technological limit, starting from a real transportation hub in Grenoble, namely Chavant.*
Their proposals show a city automatically adapting to the needs of citizens and continuously collecting data, even the most intimate one. They proposed omniscient digital universe that fluidly links the real and the digital spaces. Keeping in mind the limits and the drawback of such concepts, the future shared city might be a city made as a common.

Keywords. ***Ambiance, Urban design, Mobility, Digital Common, Attention***

Introduction

The interplay between analogue and digital practices redesigns our attention and changes our understanding of the physical world. Sensitive urban environments evolve with the emergence of what is now called ambient intelligence (Aarts and Marzano, 2003; McCullough, 2013). Those modifications are especially noticeable in mobility spaces that are increasingly equipped, amplified, or augmented.

The first Mobiance in Nantes (2013) questioned mobile tools as devices for analysing and designing the built environment, highlighting the problem of urban ambiances. The second edition in Nantes (2015) focused on the effects and practices of interacting sensors in the city. The third edition in Milano (2017) explored and considered future urban scenarios in the context of the sharing cities paradigm. For this fourth edition in Grenoble (2019), we focused on the increasing influence of Digital Information and Communication Technologies (DICT), which might be studied in two ways: from urban sensory environment evolution and ambient intelligence emergence, from mobility practices and experiences, which is increasingly equipped, amplified and enhanced. In such a context, the focus of ambiances leads to the diffuse and omnipresent phenomenon which permeates daily experiences of commuters and involves multiple technical interfaces that reconfigure the contemporary urban environments (Crang and Graham, 2007). This informational environment in which commuters are immersed impacts their perceptions and practices, their movements, and daily shifts. This new sensory ecology of the urban experience requires a turn to the central issue of attention and its various processes (Citton, 2014) when you want to study urban

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from a sensory way.
What shapes could be designed for future mobility spaces? How does this hybridity transform our experience of spatial and informational mobility? How to contribute to developing a sustainable design of mobility situations and transportation spaces? What kind of evolution could be highlighted from these new urban requirements? What attention modality could be experienced from the urban environment?
In the following paper, the outcomes of the students will first be reported then analysed. Their proposals were based on a place in Grenoble, Chavant, with a focus on spatial and informational mobility.

Framework and Proposals

The 4th edition of this workshop, held in Grenoble in October 2019, brought together 18 international students (engineers, architects, marketing experts, and urban planners) from 6 different countries. They were invited to redefine a given context without any limits in technology. For 3 days they worked on one of the major transportation nodes of the city, named Chavant. For the first time in the Mobiance editions, we proposed students an existing place to research on. They had to anchor their concepts to a delimited physical space with its own pros and cons. Tramways, bus and car lanes, pedestrian streets, bike lanes, cross this space in several directions often without clear signage.

The following section describes four out of the five students' proposals for this area.

CoMobile

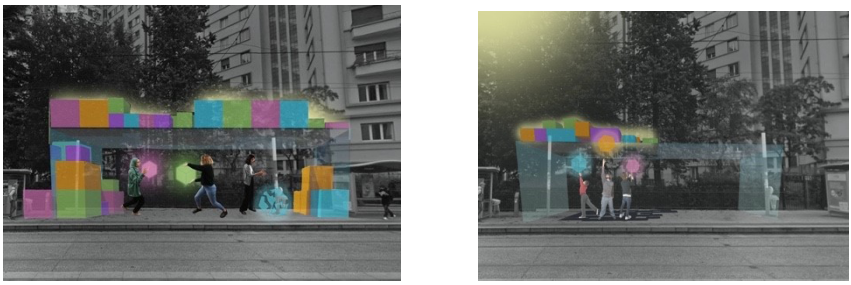

Figure 1. Two illustrations of the use of CoMobile at a tramway stop in Chavant, Grenoble – [CC-BY-NC 4.0 A. Gupta, A. Moustaine, O. Palic]

CoMobile stands for collaborative mobility. This group observed that social interactions were weak in mobility nodes. Hence, the CoMobile system aims to encourage playful interaction while waiting at public transport stops. It reacts to people's unconscious behaviour and mood while they are waiting, and it encourages passenger attention to each other using Mixed Reality. This project aims at reinventing stations with a playful approach. Virtual blocks (e.g. blocks, balls, Tetris, etc.) appear around the station and people can interact with them together with other people (Figure 1). As soon as they move away, the simulation disappears. The tool is able to automatically adapt itself to the environment and is different for each station. According to the authors: "CoMobile thus envisions a future that is collaborative, adaptable, conscious, inclusive and a crucial part of the city."

The Sand City

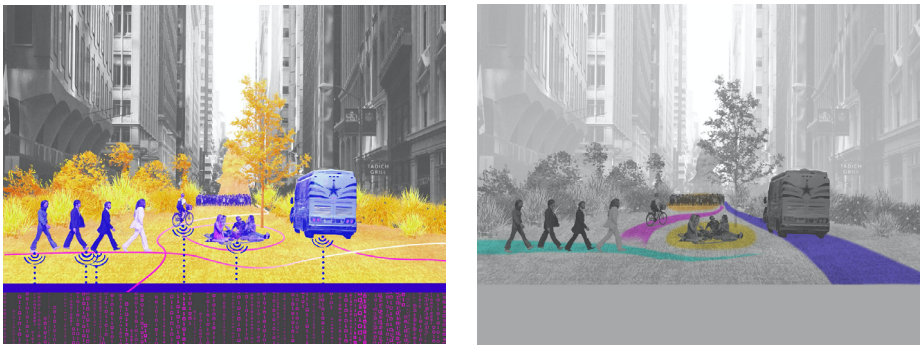

Figure 2. On the left, the Sand City captures users' desires and uses through the set of sensors; on the right, it adapts itself to the input. [CC-BY-NC 4.0 M. Dubreil, A. Hmidouch, I. Morel, E. Talvard]

For this group, current urban mobility solutions (e.g. bus lane, car lane, pedestrian pathway) drive the flows in a rigid way. Each modality has its path defined by a specific signaling system, which results in a division of space that often does not correspond to human dynamics and might cause stress, conflicts, and inefficiencies in transportation. The goal of Sand City is to increase the livability and accessibility of mobility spaces for citizens. Open urban areas become a responsive interface adaptable in real time to urban flows. Mobility flows dynamically rearrange the urban space, as the water makes its way through the sand as the sea retreats. The city becomes an interface mobility draws its path thanks to the analysis of sensors detecting the activities of users. The city is continuously redesigned through the capture of quantitative (e.g. number of people in each modality) and qualitative data (e.g. user emotions). It reshapes the spatial experience (through temperature, colours, sounds, textures) while capturing personal data (destination, schedule, mood) and sensory data (transport means, size, speed) interacting with users (Figure 2). It is a self-regulated model that maximises time and size per flow.

Moodility - from mood to mobility

Figure 3. Moodility illustration: if enough people want to cross the light turns green and pedestrians take precedence over cars - [CC-BY-NC 4.0 C. Gauchet Dumortier | C. Derue | E. Braconnier | N. Brooks]

This group focused on the people's mood and how mobility could affect it. They aim at accommodating people's moods during its movement through the city through a *moodity* microchip implanted in the brain that allows them to be interconnected between them and the city. This chip continuously monitors the person's physical and

emotional state and an algorithm allows to produce personalised suggestions to alleviate the mental stress of mobility and consequently improve the traffic efficiency. Through Moodility, the city is connected (Figure 3). This group aimed to accommodate people's feelings through mobility.

City: Sustainable Interface

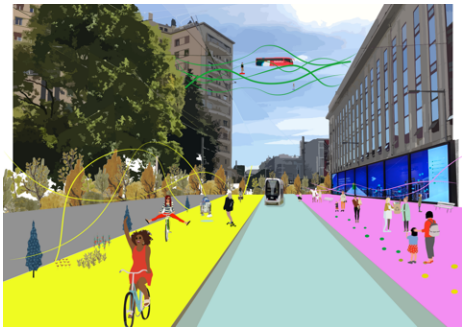

Figure 4. Representation of the uses of the city through coloured paths - [CC-BY-NC 4.0 A. Mounereau; F. Brett; M. Abdallah; J. Bricot]

This group imagined a (car-free) city as a sensitive interface that reacts to the sensory needs of people (four on five senses). It does it through touch, sight, hearing, and smell. This group aims at creating a calm and relaxing space where people can be surrounded by natural sounds that counterbalance the urban noise. As interface, the city physically interacts with citizens reshaping itself according to people's needs detected through sharing data. Different colours of pathways, bike paths, buildings, and walls will create a much more visually pleasing place than the typical grey city ambient; this will encourage to appreciate city places as a singular system. Colour is a means of communication from the town to its inhabitants (Figure 4). The abolition of the car will make the city's atmosphere much more breathable.

Analysis

In this edition, as in the previous ones, students were fostered to think with no technological constrains, even if some solutions would have been appeared as science fiction. Anchoring their concepts to a real place has improved the materiality to the proposed solutions, but, compared to the other editions, it has been more difficult for them, at the very beginning, to think to solutions far from really feasible ones. The chosen place is a particularly complex urban hub in Grenoble, and the analysis of its functioning has influenced the proposals. Spatial as well as informational mobility was not new to the workshop participants, as it is a daily practice in their lives as young urban dwellers. However, the Mobiance prospective approach was a novelty that enabled them to rethink the relationship of people-space and the signals received in a transport hub. The common aspect of their proposals is a search for a dynamic city and the ever-increasing influence of data.

Design of a Dynamic City

One common denominator of these proposals was the design of dynamic spaces that allows the city to adapt itself to people – as individuals or community – through interfaces, but not people to adapt themselves to the city, through the use of any kind of digital technology. The traditional city is considered to be monolithic by the *Sand City* proposal looking for spaces that adjust themselves in real time. In *CoMobile* the space around the bus stops is collaboratively modified. In *sustainable interface* the city

adapts to the needs un/expressed by its users to provide a calm and relaxing environment, mainly through colours. In *Moodility* the users' emotional state is directly analysed and transmitted to the city that adapts itself to people's needs in order to support them (e.g. making traffic more efficient to reduce stress).

In all these proposals the concept of *Fab-city* (Diez and Posada, 2013) is traceable and taken to extremes. In *Fab-cities* citizens collaboratively use technologies and become manufacturers, in so doing they can express and meet their needs. In the original idea, it was rather the advent of the *fablabs* movement that was put forward through the example of a citizen empowerment project for the creation of environmental measurement sensors; in these cases, these were tools in the city, here the city itself responded by re-creating itself. This allows citizens to "regaining local control through network reconfiguration" (Rumpala, 2018). The city is no longer only intelligent, it is made according to the desires of its users, and their moods play an important role in shaping it.

Gathering the Data – From Sensors to Mood

Attentions but also emotions, perceptions, and habituations are collected through these digital interfaces. In all the proposals, centralisation and agglomeration of a lot of personal data allow them to "make the city." There are tons of data collected everywhere, all the time. The city as an underlying layer of data like an extra flow in motion that runs through it. Who is collecting data? Who decides? Who is in charge of it? The resulting *Data City* (Peugeot, 2014) could be seen as ambivalent within its spectre of centralised control, which is frequently evoked but rarely explored; indeed, these questions were not addressed except for one group.

The data is considered as a common that needs to be shared to shape according to its citizens' needs. Students' concepts foresee the future city as an outcome of 'sharing': community data on citizens and space, where everything melts. Above all, it emerges a "digital commons" of a shared urban living. As Zandbergen and Uitermark (2019) asserts, the produced and shared data "afforded the sensing citizens the power of speech, mediating between these citizens and the larger community by virtue of their representational and argumentative quality." The issue of decision makers may not even be addressed because it may no longer be relevant. Citizen empowerment, which is currently illustrated by bottom-up approaches as in Carton and Peter (2017), is here pushed to its paroxysm, the city is made by citizens for citizens.

Conclusion

The participants made proposals where they envision an urban space that is not just a common space, but a redefinition of places modulated by citizens' most intimate emotions, embedded in an omniscient digital universe that fluidly links the real and the digital spaces. The digital/analogue space complementarity is keen on present and future issues, particularly in urban spaces, since, beyond the utopias/dystopias developed in Mobiance, the digital information available is already modifying the way we design and experience mobility. The proposals unload the attention processes of mobility users even at the cost of a systematic monitoring of citizens' data, movements and moods. As Zandbergen and Uitermark (2019) conclude in their article, this type of experiment "may contain seeds of alternative ways of organizing urban life," then keeping in mind the limits and the drawback of such concepts, the future shared city might be a city made as a common. The 'next' interface is the city itself. The interface would be the common, the shared territories that we do make better and valuable.

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