



Context

Personal background. I have developed my career on diverse topics and disciplines. I'm mainly a designer, with a bachelor in Graphic Design. I have been working with interactive technology and web development during almost 8 years. Then, Interested in cities and how are governed, I started several projects, and did a Master on Urban Studies. At the same time, I had worked in local governments for 3 years.

My background led me to a critical conception on how things are governed, and how interactions have a social perspective. In few words, my approach to social change is not perceptual but critical.

Contextual background. In a Smart City context, with a century of Urban Theory, thinking about infrastructure and technology should be focus on its social and environmental consequences.

For my research topic, I've started questioning how interactions with everyday objects (from lampposts to entire buildings) build our experience?

I take an approach that mix **Human-Computer Interaction with Science and Technology Studies**, to face the question with a critical perspective.

In a second order of importance, I use a **performative approach to analyze and provide new insights regarding interaction with objects** that includes new technological advancements with Artificial Intelligence to understand how these systems works with the theoretical conception.

The third point of interest, is to recover the concept of Empathy, as a possibility to evaluate new engagements between people and technology.

Theoretical mindset

To clarify the perspective that I'm taking, I would like to cite some references:

- The Actor-Network Theory and the importance of non-human actors [1]
- The conception of Devices taken from John Law [2]
- The work of Harvey Molotch on studying objects in the city [3]
- The ethical perspective of Paul Dourish on Technomethodology [4]
- The suggestion from Yvonne Rogers on the importance of experiment outside the lab [5]
- The concept of Empathy proposed by Depew [6]
- The model of 3 levels of design from Donald Norman [7]

! Challenges

I found a Research Gap in the HCI field where is a lack of methods on how to approach more performative and less quantitative results to understand the chaos and unpredictable flow of the city.

At the same time, in Digital Sociology it is known that getting general conclusions from empirical findings is difficult since it is hard to replicate. The main challenge here is to **contribute with methods that provide enough evidence to validate them.**

A second objective is to go deeper in the **implications of Empathy on interactions and its impact on the urban field.** This term has been abandoned in place of cognitive engagement, but is where aesthetical and ethical concerns can be addressed.

Lastly, it is needed to face a more critical approach in Computer Science and HCI in the design of new interactions and intelligent systems for the public, where can be negative consequences.



Actions

To reach the goals, I planned different experiments (called Workshops) that involve diverse methodology to assess each. Firstly, I developed a theoretical framework for observe these interactions having in mind different complementary theories

In W1 I worked on the opportunity to generate and test empathic relations with conversational agents (CA). Methods used are psychological surveys and interviews.

In W2 I oriented the goal to understand how interactions in urban objects are held in public places with everyday objects. Using Ethnomethodology and others sociological techniques to classify and model those interactions.

The W3 will be a walkthrough of the CA platform in the public space. Using ethnography to describe the participants' output and perception.

For the W4 I will develop a new prototype including a physical device (based on IoT capabilities) to bring the CA to the public space. And it will be tested "In the Wild", taking notice of what changes do really happen regarding the outputs and methods from the W2.

These actions will provide empirical results for the proposed theoretical framework.



Results

In the development of the first Workshop, I found that Empathy depends more with the personality and social assumptions than the interaction itself.

That lead to develop the W2 with more attention over the sociological perspective of the interactions. How does people make sense of the interactions is not only a cognitive situation and neither a total symbolic action. I developed a model that face this complexity and provide insight for design future interactions.

Progress in numbers

Conference full-paper submitted	2
Journal paper submitted	1
Conference short-paper published	1



Impact

Mainly impact is oriented to academic research (in HCI and Sociology fields) following to new understandings of how to address urban studies and urban interactions.

Results can be used also for design studios, Internet of Things companies, interaction designers, urbanists and professionals related to Smart Cities, and want to improve their process of design.

Lastly, it is aimed to generate an impact on public policy, on how decisions are made in order to understand how infrastructure and objects are placed in the city affection the life of citizens and non-citizens.



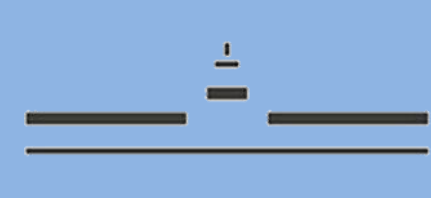
Scaling Up

In theoretical thinking, the novelty resides on exploring the opportunities on ethical implications of interactions in cities within Artificial Intelligence. My findings can be used to drive new research projects on how society are built together with technological advancement in future smarter solutions.

Methods for design new interactions can improve the process of design, having in mind these tools, theories on participatory design or design thinking, although design fiction can be complemented with this research.

Finally, developed tools used in the experiments can be improved to support others languages and implemented by other cities.

Consortium



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