RC18

Bridging Across Mass Customization

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Urban design is currently cornered in a paradox:

despite technology being an essential aspect and the most visible component for projects; urban design is not a technical solution problem. The value component of the urban project has its grounds in Hardin’s (1968) seminal article “The Tragedy of Commons” where he describes how individuals are currently trapped in the dilemma between the benefits from over-exhausting common pools of resources and those from not doing it.

Fig 1 London’s Ring of Steel. Efi Kasimatti
More and more humanity deeply relies on systems that source with the basics for living and process the surplus in an endless cycle. This global-sourcing project is disconnected from societies. Irresponsible consumption is exhausting natural resources and inducing irreversible changes on environmental systems. As weather temperature peaks settlements are more reliant on these artificially enabled environments. However if these settlements would be just technical solution problems they would require changes only in the techniques of natural sciences, demanding little or nothing in the way of change in human values or ideas of morality.
Digital technologies are currently the driving force for urban innovation. Geo located hardware senses the city in real time while information and communication technologies collect, process and evaluate this data as well as it distributes it among relevant stakeholders. Among these stakeholders, citizens empowered with smart phone technologies are becoming the latest paradigm of the cyborg model. According to Antoine Picon this unprecedented association between human, machine and algorithms is leading to an urban model that sits between a city that ambitions the use of energy and resources in the most efficient way and a city where individuals take a leading role and new forms of cooperation emerge.
Fig. 10 Colour / Cloud Simulation number 01.
RC18 explores the linkage between Digital Fabrication and Social Media as an opportunity for urban hacking; specifically how examining how to bridge across mass customization of user products to pursue a collective project. Through the introduction of individual solutions for the city, outcomes are not designed to prevail in time but rather remain open for others to input the corrective feedbacks into its framework.
The research focuses on the question: what humans do better than machines and vice versa; and explores how the combination of three type of intelligences: the intelligence of the individual, the collective intelligence and the artificial intelligence can open up new type of projects and newly emergent markets that lead us to reconsider the traditional disciplinary boundaries of landscape, infrastructure, urbanism, planning and architecture.
Data Source:
DATA.GOV.UK
Hest Coad Carol - LDMR Pleated Seddy East London 2015

Spatial Analysis:
CLAPPS4 K-Means Algorithm

Spatial Units:
_Townscape Art._ https://clapps.org.uk/

Clustering K-Means Algorithm

Pseudo Code.

K-Means Machine Learning Algorithm is used here to identify patterns inside the Theme data structure, helping decision-makers produce a hierarchical system. Thanks to the development of the system, clustering and classification are exactly the tasks of interest, because they define an urban system that will evolve and change the shape of the different prototypes.

Resources:
Deleuze, Gilles; Badiou, Alain; Nancy, Julien; and Tette, Mustafa (2018) "network architecture.
Technologies of computational learning are breaking through in the form of social innovation enabling to reformulate the urban project as a machinic learning process where individuals are a key component of its materiality. This learning process requires continuous input data in the form of individual interaction. This individual interaction is explored through the workflow of mass-customization with designed and constructed custom machines for interfacing between physical and digital spaces. These experimental apparatuses worked through a constant cycle of unpredictable events, digital calibration, and computationally generated spatial constructs.
Individual-system interaction can be harvested and catapulted by social media platforms resulting in diverse forms of collective organizations and the development of social capital for the city. Developed from the position of the individual, they have harnessed the invisible parameters that are currently shaping our urban experiences and reworked them into interactive models. Through this research projects begin to test the limits and capabilities of providing an open system of public design and how this paradigm shift could develop over time.
There is a breaking point in the history of human settlements when civilizations started to overcome the natural forces that would keep population growth equal to zero. Since then, human settlements have over exhausted environmental systems and as a consequence there is an increasing reliance on technology as an environmental substitute. However, one could argue that what makes city design more challenging is the fact that the majority of urban projects fall in the class of “no technical solution problem.” Wiesner and York introduced this concept in the mid-1960s immersed in the academic and intellectual debate that preceded the formation of the first environmental agencies such as the EPA in 1970. A technical solution problem, according to the authors, requires a change only in the techniques of natural sciences, demanding little or nothing in the way of change in human values or ideas of morality. City design is currently cornered in a paradox: despite technology is essential and tends to be the most visible component of the project; city design is a no technical solution problem. The value component of the urban project has its grounds in Hardin’s (1968) seminal article “The tragedy of Commons” where he described how individuals are currently trapped in the dilemma between the benefits from over-exhausting the common pool of resources and those from not doing it. Since he raised this issue in late 1960s, solutions introduced so far such as privatization of resources, restrictive command and control or the appeal for consciousness have not worked; neither has worked an emphasis on larger, more robust and rapid infrastructural projects. Issues such as resilience, food security, transport, energy or housing provision are becoming more and more difficult to tackle in cities. This is clear as current institutions’ demand for technology is not only for the introduction of new technology but there is an emerging demand of how to use it differently.

The question arising is in which ways shall we use technology differently. Saskia Sassen’s (2012) call for Urbanising Technology might help to engage with this question. In this call she raises the issue that technologies are not sufficiently urbanised. For this to happen, technologies need to incorporate the specific capabilities of interaction so it can deliver their utilities including the logics of users and the logics of the city; which, as the author highlights, can diverge significantly from the engineer’s logic. In that sense Sassen introduces the idea of cities and users as hackers of technology. The author uses hacker differently from the common acceptation of hacker as someone gaining unauthorized access to a system or hacking as the introduction of a quick and inelegant solution to a particular problem. Her idea of hacker is close to that described by Greg Borenstein (2012) in his book “Making Things See” where hacking is the introduction of a temporary and clever solution to a difficult problem. What makes hacking so interesting and powerful is this mix of temporariness and sharpness. A solution not designed to prevail in time but left open for others to add the necessary corrective feedbacks to it. This is quite visible when one looks at how social networks of open source technology development such as processing.org or
grasshopper work, these social networks are highly successful in keeping hackers, or in other words, technology custodians, engaged with issues at stake.

One could argue that the current scenario described by Mario Carpo (2011) where the divide between the author and the audience is fading opens up a realm for hacking. Social design softwares have the structure of a net and at every node of the net can be the conceiver, the maker or the receiver; this structure has underpinned a trend in industrial design for extreme customization of personal goods. Customization of personal goods is no longer confined to the ‘do-it-yourself’ hobbyist. Massproducing international corporations have begun to offer services and adaptable templates that allow end users to take part in the design process. In this new era of collaboration, established companies are mixing and moving across disciplines whilst simultaneously engaging the customer in the final product. At the root of this advancement, in all its various outcomes is digital fabrication and material sciences. Companies like Nike have been offering its NikeiD service for the past 4 years, allowing users to create custom color ways and personalize their sneakers with individual lettering. Pushing the concept of digitally tailored clothing one step further is generative design studio Nervous Systems. Titled “Kinematics” this series of clothing “behaves as continuous fabric; By combining body-scanning technology with 3d printing they have developed workflow to flexibly conform and fluidly flow in response to body movement. Unlike traditional fabric, this textile is not uniform; it varies in rigidity, drape, flex, porosity and pattern through space.” (System 2015) Customization of individual elements isn’t just being pushed in clothing, but can also be found in the world electronics. Google’s Advanced Technology and Projects looks to (ATAP) introduce “Project Ara” in 2016 (Google 2015). It is set to be the first modular smartphone that allows consumers to create a phone that “is precisely tailored to their functional and aesthetic preferences.”

Advances in customer participation in the design process are becoming prevalent within consumer goods, but what about the architecture? Architecture at its core is a service-based industry where upon a client / architect relationship is established on delivering a design based on site, regulations, and aesthetics. This paradigm is currently being challenged by a non-profit organization from the United Kingdom called ‘Wikihouse.’ (Parvin 2011) The project was launched in 2011 by Alastair Parvin and Nick Lerodiaconou (2015) of OO architects who sought to democratize and simplify the construction of sustainable, resource-light dwellings. The basis of their system allows for the “capacity to design, share, download, adapt and locally manufacture and make high-performance, low-cost hardware suited to their place and needs.” Still in its infancy, the project has seen only a few dwellings constructed but the word is spreading quickly and offers us a new way of thinking about the future of constructing our homes.

For urban design this might mean a technological...
revolution that opens up new forms of engaging with our old no technical solution problem or what is tragically driving us to more adverse living conditions. For this to happen, urban designers might need to play a new additional role; that is the design of the net of users and the media for interaction. This new role has the potential of producing new agencies and new forms of integrating urban and environmental policies into urban design. This net of users and the media for interaction can be seen as new form of urban documentation which is at the same time a social trust mechanism. The research cluster RC18 aims to engage with this context opening up the discussion about where our discipline can go when the communication between the user, the conceiver and the maker is framed within a social design platform. Which new spatial regimes emerge when the designer is engaged in the design of this platform? What new systems of notation could be more suitable for this methodology? Have social design platforms the capacity of bridging and bounding across users? Can they unlock development opportunities across the city? The cluster will engage with these questions departing from the current trend of extreme customization of consumers’ goods and exploring whether this can be retooled to bridge individual aspirations of identity across the city; with the result of new scenarios for the discipline of urban design.

RC18 will work establishing new domains that cut across data, the material and the digital. In order to engage with the topic of customization the students will work on the development of a composite as a material research and explore how to manipulate it through the design of an interactive mixing-desk. The design research will firstly focus on the ways this composite allows for variations in its properties engaging the user at the individual level. This individual customization of the architectural material will then be deployed in the urban realm through a social design platform where the students will explore how existing agencies will engage with the design process and how new agencies could emerge thanks to the platform itself. Leading the discussion about the future of our discipline and what new forms of documentation can help our discipline to gain domain within the city.

Field Trip. Barcelona
Spain.