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Intelligent habitats for collaborative rationality, collective choice and political agency

by Ilaria Di Carlo

Abstract

Nei discorsi contemporanei sulla città e il territotorio i termini *intelligent* e *smart* hanno via via acquisito quella stessa specie di rispetto di cui la parola *sostenibilità* godeva fino a pochi anni fa: più simile a quello dedicato ad un tema presudo-religioso che a un appropriato obbiettivo di politica globale.

***Smart Cities* o *Intelligent Habitats* sono tutte locuzioni designate a sintetizzare ambienti che tramite l'uso di apparati tecnologici complessi e intelligenti sono stati abilitati a performare meglio contro le ben note problematiche legate ai cambiamenti climatici. Tuttavia il loro *momentum*, che negli ultimi dieci anni è cresciuto tremendamente, sembra già cominciare a sfumare.**

I perchè, di tipo tecnologico e politico, sono analizzati in questo articolo che cerca di affermare la necessità di tornare a inglobare, oltre la tecnologia e tramite essa, l'elemento soggettivo, narrativo, come lo definivano Prigogine e Stengers, per garantire una partecipazione attiva e quindi politica dei cittadini nella costruzione del proprio ambiente.

Perchè è proprio quel 'flusso di partecipazione' evocato da David Abram[1] che rende una città *smart* o un habitat intelligente.

In the contemporary discourse about the city the terms *intelligent* and *smart* are more and more gaining that sort of respect that the word *sustainability* had until few years ago: more similar to one dedicated to 'religious aura' than one more appropriate for a genuine global policy objective.

Smart cities or *Intelligent habitats* are all locutions designated to synthesize environments that have been empowered by the use of technological apparata to better perform against the well known problematic issues related to climate change. Nonetheless their momentum which has built tremendously over the last decade seems to start fading away. Why?

The problems I see are basically of two kinds: technical and political.

On one hand technology has been invested of an overwhelming weight in order to 'save' cities and this sort of 'belief' has being distilled in the use of the adjectives *smart* or *intelligent* that too often become containers of empty meanings in overcrowded international conferences.

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[1] Abram D., as quoted in *Reclaiming Animism*, Stengers I., on line http://www.e-flux.com/journal/reclaiming-animism/

On the other one, as Reiner de Graaf writes, smart cities are mostly blinding us to the possibility of political action: "They [ed. smart cities] allow the political sphere to do a Houdini act, where endless simulation of reality also permits the infinite deferral of political choices."[2]

On the first topic, the existing praxis got us used to think and relate to themes associated to climate change as mainly correlated to economic, environmental and technical issues. Numbers, norms and technical apparata constitute its language and pseudo-scientific paradigms are borrowed to validate its essence, while mental and social aspects, that deal practically or theoretically with subjectivity and are so much part of the experience of reality, are somehow dismissed or worst forgotten.

'It is as if there were a scientistic super-ego which demanded that psychical entities be reified, understood only in terms of their extrinsic co-ordinates'[3]

In this case the term *Intelligent* is simplified/castrated/reduced to a bulimic use of restrictions and regulations and the asphyxiating legitimization of a techno-scientific paradigm.

We should look at cities using the lens of *the three ecologies* by Guattari: 'My perspective involves shifting the human and social sciences from scientific paradigms towards ethico-aesthetic paradigms.'[4]

In the Ecosophical treatise 'The three Ecologies' Guattari was de facto advocating quite a similar position: the increasingly deteriorating condition of human relationships with the socius, the psyche and the environment is due not only to the pollution and the objective damage that belongs to this, but to the most worrying praxes of regarding 'action on the *psyche*, the *socius*, and *the environment* as separate'[5]. Guattari condemns the notion of ecology simply related to the environment in a sort of synonymic equation as too reductive and too dangerous. He adds: 'We need to apprehend the world through the interchangeable lenses of the three ecologies.' Such ecologies are governed by a logic of intensities - the *eco-logic* - which "concerns itself solely with the movement and intensity of Evolutive processes".

This notion of the triple ecology has been recently recalled also by Sanford Kwinter in his attempt to describe the necessary disciplinary updating architecture must face in its passage from the mechanical to the digital era and in particular the idea of the three ecologies applied to the word *environment*.

Kwinter affirms that in order to properly revise the discipline, *experience* must be the 'legitimate scope of operation' for architecture and urban design. One of the main implications of this operation is to reconsider a more appropriate reading of the concept of environment 'on one hand as the process around us that we virtually call nature but which can simply be described for the 'nature deniers' among us as those processes that unfold independently and indifferently to us but whose fate we necessarily share. We must aspire to a new kind of environmental phenomenology in which our nervous systems are seen as deeply bound up with the organizational cues around us and subject even to flamboyant transformations and reinvigorations by design.

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[2] De Graaf R., *The smart city blinds us to the possibility of political action,* available on line @ http://www.dezeen.com/2015/07/16/reinier-de-graaf-oma-opinion-megatropolis-smart-cities-political-action-favela-rio-brazil-cosmoproletariat/

[3] Guattari F., *Chaosmosis – an Ethico-Aesthetic Paradigm,* Indiana University Press, 1995

[4] Guattari F., *Op. Cit.*

[5] Guattari F., *The three Ecologies,* Continuum International Publishing Group – Athlone, July 2000

On another hand as a sincere engagement with the broader surround in which we are embedded and which is and is not merely masquered as a living, transforming, metabolic entity: the natural world and the manifold interactions of its *triple ecology*.[6,]

In other words: in order to 'save' our cities technology is not enough, we need to include subjectivity, that *narrative element*, both personal and collective, mentioned by Prigogine and Stengers in their *Entre le temps et l'Éternité*.[7]

This link with the *experience, the narrative element, as the legitimating factor of any operation on the environment* brings us back to the second point regarding the political issue around the *smart cities* phenomenon.

The 'belief' in technology and its power to improve the city processes and behaviour and therefore our lives, has put the accent of the power of change, of the key –*intelligent*- factor, on the environment, as either city or habitat, and not on the environment's creators and users: *the citizens*. In doing so it is framing the problem within the wrong perspective that the city is something somehow separated from its citizens and this is mainly a political question or more cynically put a political choice.

Instead of talking about *smart cities* we should rather talk about *smart citizens* and their role through technology to organize an *intelligent habitat.*

When talking about smart cities or intelligent habitats in fact we are basically negotiating with a technology that through the use of algorithmic models digitally breeds cities, dealing with the 'organization, quantification and systematization of quanta of data[8]'.

This is also a revolutionary approach for what concerns one of the most controversial and debated issues in the discipline of architecture and urban planning: the notion of *style* and *authorship* and the new political agency they would bring along.

As Valerie Châtelet points out, communication networks and widespread calculation capacity combine to become centrifugal forces, pushing towards the decentralization and democratisation of control. 'Whereas bureaucracy assimilates information, the networks distribute it. [...] individuals are regaining control of their institutions and social organisation. Lower costs and widespread information and communication processing tools promote the emergence of new decision-making methods, as well as new methods of co-operation[9]' and they imply a sort of dialogue, a notational code, between man and machine.

This dialogue would be better described as an *interface [i/f]*, a physical/virtual device enabling communications among entities of different kind (what Harvey used to call *relational domains*[10]) each one with its own particular protocol of communication and values, and has a particular privileged role to play in the production and use of subjectivity (the narrative element) as we find it in the definition of the aesthetic paradigm of Guattari's *Chaosmosis*. An idea of subjectivity strictly linked to the concept of virtuality and therefore intelligence.

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[6] Kwinter S., in *Organization or design*? Architecture symposium at Harvard GSD, October 2015 available on web @ https://www.youtube.com/watch?v=xRRYDzNg8hA

[7] K Prigogine I. and Stengers I., *Entre le temps et l'Éternité,* Fayard, Paris, 1988

[8] Parisi, L., *Contagious Architecture: Computation, Aesthetics, and Space*, The MIT Press, Boston, 2013

[9] Châtelet V., *Moving towards Control Tensegrity*, available on line @ http://www.editions-hyx.com/sites/default/files/anomalie6_chatelet.pdf

[10] Harvey D. *Justice, Nature and the geography of Difference*, Wiley- Blackwell, Oxford, 1996

The very notion of the interface, together with the one of bottom up, intelligent systems, entails concepts like open-endedness, participation, interaction and mass collaboration and reconnects to the concept of Population thinking as the method of reasoning which remind us that the population, the group, the society is the medium for the production of forms, not the single person.

This position in the history of art is neither new nor revolutionary as even in the XVth century Leon Battista Alberti, 'master builder of the Italian Renaissance'[11] committed to achieve personal recognition through the affirmation of 'his role above the others' in the construction of a building, believed that creativity was a social and not an individual process[12].

In this sense the *interface [i/f]* would perfectly resemble the 'collective management and control' needed to 'orient sciences and technology towards more human goals'[13]: not a 'blind reliance on technocrats' but a coral and collective form of intervention.

It would be a clear departure from an *authorial* attitude based on the concept and modes of *typicality* towards a *poliarchic* assemblage based on *seriality*.

The *interface [i/f],* an abstract machine for collaborative rationality, would be ordering and designing a combination of extremely precise parameters controlled by the potentials of technology and a mixture of personal and collective values, a less 'measurable' set of information and knowledge.

It would, in other words, manage an *intelligent habitat* combining a metric system, defined by parameters, an *explicit* form of knowledge codified and vastly accepted ('the metric system is for all people for all time[14]'), with values, a more tacit form of knowledge, the *tacit dimension* as per the definition of Polanyi[15] or the *narrative element* of Prigogine and Stengers or yet again the *subjectivity* wished for by Guattari.

An example of how an *interface [i/f]* device could develop in terms of technology and use can be seen in the groundbreaking work done by the group Relational Urbanism® (Eduardo Rico Carranza and Enriqueta Llabres Valls) with their RUMs (Relational Urban Models).

Questioning the relationship between urban environments, current technologies, availability of data, roles of the main actors to the planning processes and citizen participation, they have started to set up a parametric system capable to allow for a real time interaction/participation between different groups of contributors during the design process, creating fully functional, self-organised complete models for Urban Planning/Design.

Conjugating Harvey's understanding of constructing space time and value through *relational domains*[16]*,* group of people sharing common features relative to a specific issue, with Polanyi's concept of *the tacit dimension* and the master use of *parametric algorithms*, they have created an *interface [i/f],* which they call 'informal domain' or *RUM*.

'These are customized toolkits of urban parametric models, databases, infographics and interactive platforms allowing real time interplay with urban form in such a way that users can understand interdependencies between different spatial and non-spatial parameters. The purpose is not so much

[11]Grafton A., *Leon Battista Alberti, Master Builder of the Italian Renaissance*, Hill and Wang, New York, Usa, 2000
[12]Carpo M., *Op.cit*, Writing architecture series, The MIT press, Cambridge, Massachusetts, USA, pp. 81-120, 2011
[13]Guattari F., *The three Ecologies,* Continuum International Publishing Group – Athlone, July 2000
[14] Condorcet de N.*,* quoted by Alder, K. in *The Measure of all Things - The Seven -Year Odyssey that Transformed the World.*, London: Abacus., 2002
[15]Polanyi M., *the Tacit Dimension*, University Of Chicago Press, Reissue edition, 2009
[16]Harvey D. *Op. Cit.*

showcasing existing data or decisions made a priori, but fabricating new knowledge and building urban institutions understood as "a set of rules based on ethical values of a specific community that influence the individual's decision making" [17]

The RUMs are not only incorporeal, or informal, ecosystems but are most of all aesthetic assemblages: the designer, employing the tacit knowledge, is capable 'to engage with this level of knowledge and arrive to the wider audience through inner feelings and developing ideas in the form of intuition that can only be contained within the individual[18].'

Some meaningful examples of how the RUMS work can be found in the regeneration of BaiShiZhou urban village in ShenZen, the transformation of the Brazilian town of Santos and the landscape analysis and proposals for the Yangtze River during the Wuhan Future City Workshop.

In the BaiShiZhou[19] regeneration plan, the RUM has been modelled to help a reduced group of stakeholders to face the challenge of a problematic regeneration: the will to keep key workers in Chinese villages as per the government agenda would conflict with the interests of the landowners and developers who would count on a total upgrade of the area with higher densities and profits. The goal was therefore to imagine scenarios capable to induce incremental regeneration though partially maintaining the existing social mix.

The RUM was then designed, through the use of a generative algorithm, to respond to retained blocks proximity, highlighting the value of the urban villages' public spaces. The diversity in size and types of the public spaces was granted by the use of a plinth structure while densities and sunlight exposure constraints were regulated by a series of above towers. 'An optimization mechanism was used to interrupt and reverse the flow of information which typically would go from design parameters towards calculation results. The outputs can be turned into inputs, seamlessly moving between spatial, infrastructure and economic decisions, opening up discussions about marginal costs of design concepts, potential economic transfers linked to density distribution or other types of negotiations[20].'

In this case the role of the *interface [i/f]* has been modelled by the designers to offer the users a systematic rather than intuitive control over different spatial results targeted to balance social mix and profit though maintaining a similar development quantum.

In the second example, in Santos[21], the RUM was designed as well for a restricted group of stakeholders but in this case they were 'non-experts', a characteristic that implied a higher attention and inclusion of values, the tacit dimension, within the assemblage of the model.

A low density mixed use area was to be transformed by public investment in civic buildings and two new tram lines. Within this context of small grain and fragmented land ownership, the challenge

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[17]Rico Carranza E. & Llabres Valls E., *Relational Urban Models: parameters, values and tacit forms of algorithms*, in AD: Parametricism 2.0: Rethinking Architecture's Agenda for the 21st century, March/April,, John Wiley&Sons Ltd, London, 2016

[18]Rico Carranza E. & Llabres Valls E., *Op. Cit.*

[19]Baishizhoun RUM. Team: RU Direction Enriqueta Llabres. Team Giorgio Ponzo, Jung Hyun Woo, Juan Carpio, Javier Serrano, Giulia Grassi, Giulio Dini and Tessa Steenkamp. Coding Direction Immanuel Koh. ARUP Ian Carradice and Eduardo Rico. PEER REVIEW Charles Waldheim. Local support by ShenZhen University

[20]Rico Carranza E. & Llabres Valls E., *Op. Cit.*

[21]Santos RUM. Team: RU Direction Enriqueta Llabres. Team Giorgio Ponzo, Jung Hyun Woo, Juan Carpio, Javier Serrano, Giulia Grassi, Giulio Dini and Tessa Steenkamp. Coding Direction Immanuel Koh. ARUP Ian Carradice and Eduardo Rico. PEER REVIEW Charles Waldheim.

raised was to provide a successful story by 'orchestrating' diverse proposals without relying on a single final top down master plan.

'In this context, the RUM was used as a form of testing the effects of an incentive for the fabrication of a public space design based on an interconnecting landscape which derives from the user's selection of urban plots to be regenerated. Densities as well as bonuses for landscape provision can be tested in the model giving a quick feedback about the influence of incentives as a form of policy together with a vision of the quality of public space[22].'

The interesting thing about this specific RUM is that not only the designers had to capture the values of the community turning them into incentives set by the municipalities, but that the model itself had to comply and please individual decisions of 'clustering and reaching one to one agreements. It was designed to extract knowledge about preferences in pooling resources by members of the public in ways which are more difficult to systematize.[23]'

The last case, the Yangtze River model[24], is possibly the most engaged with the harvest and the use of the tacit dimension, in its vastest meaning of values, ideals, beliefs, feelings, mental and aesthetic models, etc..etc..

The project was basically an installation, a scaled down version of a braided river running in a laboratory tank, meant to deal with the problem of sediment and ecosystem management in river landscapes where the use of riparian terraces as sources of aggregate and the channelization of the river could have either a negative impact on ecologies or, if properly planned, be a potential benefit in landscape regeneration. This part of the installation constitutes the tacit knowledge, as the results of this model are mainly of a qualitative nature.

The explicit knowledge instead is represented by the incorporation in the installation of a digital system capable of scanning the river morphology in terms of water depth and sand topography to generate its computer version with the accuracy of a millimetre. Alongside the tank, the digital model is analysed in real time through its different components: geometric (pond area, average and local slopes), ecologic (prey-predator model simulation) and economic (fisheries and aggregate extraction).

'The idea behind the work is that users can "play" as a form of tacit algorithm with a landscape miniature which immediately reacts to alterations and observe a "fast track" evolution of the landscape morphologies and ecological succession which would take several years to occur at the large scale. Cause and effect of human actions are amplified and accelerated so the spectator becomes aware of the interdependencies, subtleties and the relational nature of the environment which he or she is manufacturing. The RUM has a strong tacit component, seeking a sense of immersion into the river dynamics provided by the texture and noise of the model as well as data projection[25].'

The work of Relational Urbanism® shows us how their models, in the form of an *interface [i/f]*, are capable to deal with three of the biggest issue in the praxis of intelligent habitats:

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[22]Rico Carranza E. & Llabres Valls E., *Op. Cit.*
[23]Rico Carranza E. & Llabres Valls E., *Op.Cit.*
[24]Team RU: Enriqueta Llabres and Eduardo Rico
[25]Rico Carranza E. & Llabres Valls E., *Op.Cit.*

- to masterly use technology to merge an explicit form of knowledge that integrates a tacit dimension,
- to reconcile both a top down and a bottom up approach into one urban model and
- to handle different degrees of participation, interaction and self organization according to the level of involvement required by its users

The public is never just a 'spectator', being included in the creation process since the beginning, and has therefore the possibility to feel active in a process of *collective choice*.
This change of perspective in terms of critical agency would inevitably bring along a change in what Jacque Rancière calls the *distribution of the sensible*: new forms of inclusion and exclusion of the collectivity in the process of politic/aesthetic appropriation of reality, since the access to the different distribution of the sensible is the political instrument par excellence against monopoly.[26]
Technology has been used to create political agency.

We would then recuperate that *'flux of participation'* evoked by David Abram: 'Our senses are not for detached cognition but for participation, for sharing the metamorphic capacity of things that lure us[27].'
And it is that flux of participation that makes a city smart and a habitat intelligent.

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