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Perspectives on the Use of Open Digital Resources for the Development of City and Territory

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The great urban transformations of recent decades have mainly been implemented by following the logic of the market, not recognizing the emergence of new types of living and non-traditional housing demands and excluding from process whole segments of the population. It seems therefore necessary to think to new development processes of territory, abandoning a vertical rigid system that pushes the city towards a defined and designed vision, by developing an interactive horizontal system capable to receive and absorb the demands of various stakeholders (public , private and non-profit) encouraging and developing a fruitful dialogue between the parties concerned. In this sense, the knowledge of urban and territorial context in which we act is a prerequisite for any aware initiative of urban transformation. In this paper we will try to give an overview of what possibilities are opened in the use of open digital resources for the architectural practice, for what purposes and with what application problems.

Introduction

The so-called digital revolution or information revolution, in which we live since a few years, has completely changed the way we relate to technology. It seems obvious that the practice of architecture must necessarily adapt to change (and in part this has already happened), and then acquire some of the tools and techniques that belong to the field of information. While digital tools (BIM and GIS as example) allow the management of the project through the use of digital information increasing parametric and mass customized solutions, on the other hand, some instances (especially those related to the Web 2.0, or to the use of participatory technologies) have not yet been assimilated by the architectural practice and has not yet managed to open the building process in order to make it accessible to other actors,who traditionally continue to be excluded. In this essay we will try to give an overview of what possibilities belong to the use of open digital resources for the architectural practice, for what purposes and with what application problems. We will also discuss the role that designers may have in the future society in the field of town planning, public and private spaces exploiting their traditional spatial knowledge implemented by digital information and how this information should be made available for others. They are architects and designers in the information age.

A right to housing

The right to housing is sanctioned, among others, also by the art. 25 of the Declaration of Human Rights[1] and made equivalent to many other fundamental rights. I think it is historically one of the missions of architecture, at least since the emergence of the modern movement, to develop solutions to get worthy and affordable houses, trying to satisfy the whole request. If in the early years of past decade the population in urban areas has reached the population in rural areas, by 2050 it is expected that this figure will double[2]. It is therefore reasonable to expect a substantial increase in demand for housing which face to in the coming years and also to think that, if at present only a few can afford to design a house, in the future this kind of attitude will necessarily change in order to satisfy this big request. In general it is reasonable to think that in the future, architects will likely face a higher social demand, and a decrease in the demand for luxury products. But if on the one hand the public seems no longer able to compensate for the housing request and the market often does not give more satisfactory and accessible responses, more and more we will have to find alternative solutions and ways, both to the market that to the public administrations, able to meet the needs of future residents. Some researchers underline for the future the emersion of self-provided housing as movement more able of delivering housing of high quality, affordability, sustainability and resilience (Parvin, Saxby, Cerulli, Schneider, 2011). Architects needs to develop the conditions for create a new market alternative and the necessary awareness by which people can be empowered to build their own homes.

The future for architects

The architectural practice must necessarily change and find new ways to develop and realize projects. A recent report by Building Futures[3], a research group inside the RIBA, undertaking a study into the future of architectural practice, underlined, among the parts of the industry with the greatest opportunities for growth in the next five to ten years, some interesting new attitudes. These are practices in emerging eco-

1 Source: Article 25 of the Universal Declaration of Human Rights: (1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control. (2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

2 Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision and World Urbanization Prospects: The 2011 Revision Wednesday, November 07, 2012; 3:21:14 AM.

3 http://www.buildingfutures.org.uk/

nomies, the BOOT (Build-Own-Operate-Transfer) designers, and the design houses/creative agencies, the latter considered as a

«type of practice, which is emerging out of the recent cohorts of graduates, is not committed to delivering architectural services, but is more flexible in following the market. They will continue to grow because they are willing and excited to try their hand at anything that involves 'design thinking'. This type of practice could do well if it is driven by technology, and by the new markets where technology provide opportunities. They might pool the collaborative talents of brand consultants, researchers, product and industrial designers, with architects. This is a strand of practice that may well break free from the constraints of the term 'architect', possessing a much broader base than the term can provide. Service design and design of experiences might be significant areas for these practitioners» (Robinson, Jamieson, Worthington, Cole, 2010 p.25).

According to a further recent research, called Spatial Agency[4], design agencies will also be able to

«acting as an agent with and on behalf of others, not in the sense of simply reacting to the often short-term marketed demands of clients and developers, but in the sense of the longer-term desires and needs of the multitude of others who build, live in, occupy, visit, and perceive architecture, acting» (Schneider & Till, 2009 p.100).

The professional practice is already finding and developing other ways of achieving a new social project. Should also seek new technological tools that can help address the huge housing demand and urban quality that neither the market nor the state are currently able to provide.

Data and information as a resource

The DIKW hierarchy (DIKW: Data> Information> Knowledge> Wisdom) expresses quite well and intuitively the importance of the data and the derived information to obtain the necessary knowledge of things in order to make aware decisions. The possibility to make informed decisions in a housing system, in which normally or the market or the state decide according to their interests, means being able to oppose to the development of the housing market some alternatives. We must also take into account that information and data, by their very nature, are non-rival goods, non-exclusive, and the cost of their reproduction tends to be negligible. For all these reasons, the information can sometimes be seen as a public good (Floridi, 2010). So we have a public good (data and information) that can led to wise decisions. Through new technologies we are increasingly able to process, edit, transform, share and make this information accessible to a greater number of people. We must therefore strive to get more and more sensitive data (geographical, statistical, economical) to try to make them readable to the layman, to allow the emergence of new patterns of housing development and to build informational infrastructures able to encourage independent choices by other users. The question we ask is this: what data and what kind of data we need to take into account and how do we build tools based on data and information that is truly capable of empowering others?

Open digital resources for the development of city and territory

Since the rise of digital revolution emerged a lot of different phenomena. Some of them, according to the development of Web 2.0, have actually managed to establish a kind of collaborative digiteracy, ie they are able to develop a collective intelligence that can successfully deal with many different issues. In the current scenario the two phenomena that could affect the world of architecture for the collaborative development of the city and the territory are the phenomenon of open data and open source. Open data (and applications connected to it) effectively demonstrate how sensitive information, if it is distributed freely, can become in effect a public good and ensure an efficient decision support. For open source instead is different, it is in fact a collaborative development model, a strong alternative to the market and to the closed-loop system established with capitalism and competition. These two phenomena have opportunities to develop different

4 http://www.spatialagency.net/

but complementary tools and could allow researchers and innovators, particularly in the creative arts and design, to test that the new technologies can be adapted to a new social project.

Open data

According to the current definition we mean by open data "A piece of content or data is open if anyone is free to use, reuse, and redistribute it — subject only, at most, to the requirement to attribute and/or share-alike."[5]. Open data is the idea that certain data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control. The movement, born on the certitude that digital technologies have made terribly easy and cheap to generate, store and publish data. aims to convince public administrations to publish open data as the data produced inside (Fioretti, 2010). It seems natural to assume that the release of data in an open form by the government (by which data are produced in order to manage the public good and to ameliorate its services and, in addition, the costs of production of these data are often covered by the same community) to encourage participation and encourage the initiative of actors previously excluded from the process of transformation of the city. The open data, appropriately filtered and processed, can be therefore the basis of a shared cognitive process that can provide to the greatest number of citizens sensitive informations about accommodation, services, spaces, resources, education and opportunities for active participation. Against a process of releasing data and geodata that slowly takes hold in Italy[6], it is then that we have a lot of data related to the territory and so you are able to extract informations and knowledge according to our needs. It will be the task of the architects or of design agencies to develop applications based on open data that can encourage the use of cities by developing new and affordable housing practices related to user-responsive application.

Open source

In computing, open source indicates a software whose authors allow and promote the free study and modifications made by other independent programmers. This is achieved through the application of appropriate licenses. Open source has emerged in recent years due to its success in the production of reliable and robust software. This paradigm of software production, collectively-created programs in a process where users are also (to different degrees), stressed the effectiveness of community-based open systems comparedto proprietary standards, highlighting the cheapness and the flexibility in the adaptation to different situations (De Landa, 2001). The development of an architectural community-based tool may lead to the construction of architectural objects able to respond to needs of local communities that want to increase the quality of public spaces in order to use them in a spontaneous way. The use of digital information connected to digital fabrication and favoured by the proliferation of electronic devices and accessible design software, can foster the creation of digital platform in which every user (or a community of users) can give his propositional contribution and can share and improve ideas with the collaboration of the web-community. Digital platform is designed conforming to the network logic of an effective distribution of ideas, and the results can be tested in different situations and improved, making use of the 'collective intelligence' of a large group of users and developers.

Conclusions

The digital revolution in reality is giving us an opportunity, as Mario Carpo says:

«the inherent technical logic of digital systems suggests and encourages participatory, collaborative, communal and "organic" uses. In the great project of ideological and social change that seems imminent – and that will not come any too soon, in view of the disaster that has accompanied the end of neo-capitalist experiment, in architecture too – the new technologies can be our tool of choice.» (Carpo, 2009 p.26)

5 Source: Open definition via http://opendefinition.org/

6 Source: http://www.dati.gov.it/ and http://www.appsforitaly.org/vincitori/

Paraphrasing Habraken, which wanted to exploit, with the supports, the huge arsenal of technological capabilities we now have, the huge body of knowledge and experience from which the housing problem can derive huge benefits (Habraken, 1972), now we begin to see the suitable supports. But they are informational tools, composed mostly of bits that, thanks to the actual technological advancement, it is always more easier to transform into atoms, into physical matter (Anderson, 2010). The spread and development of numerical control machines and their use in architecture are already guaranteeing the production of non-standard components, thereby ensuring low-cost mass-customization of what can be produced. The challenge at the moment is to shift from a mass-customization to a mass-collaboration, bringing participation and interactivity at the center of the digital project, in order to reach an effective technological humanism.

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