

WikiPlaza and other FLOS [Free Libre Open Source] heterotopias

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[open source tide]

After the green tide, that made cars, energy companies, corporate skyscrapers and megapolis be merchandised and sold as eco-efficient-sustainable products, it seems now that we might be confronted by the emergence of an *open source tide* that is beginning to hit the production of architecture and the city [Gausa, 2010; Anderson, 2010; Open Source 2010 Porto conference featuring Cecil Balmond], as it has already happened in other fields beyond software [Tapscott, 2006], where the contemporary origin of the open source movement is to be found. As it occurred with the green tide, this will probably be good and bad at the same time.

At least for the general public, the differences between Free Software and Open Source software should be reminded, in order to discuss their potential extension to architectural and urban production. One of my favorite [critical] reconstructions of the *emergence* of the field can be found in Christopher Kelty's *Two Bits* [2008]. Kelty's work could be described as a micropolitical analysis of key intertwined processes such as the development of Unix, TCP, Apache, GNU or Linux, and the crucial roles of characters such as Ken Thompson and Dennis Ritchie, Richard Stallman, Eric Raymond, Linus Torvalds, Bill Joy and many others – who are presented not so much as founding heroes, in the old way of understanding history, but rather as characters of a Foucaultian strategic power theater [Deleuze, 1987], and of competing Guattarian schizoanalytic cartographies [Guattari, 1995]. Indulge me the philosophical license in order to convey that Kelty shows today's state of free – open source software and culture, not so much as the result of an ineluctable technologically determined destiny, but as the concrete, precarious consequence of precise practices, decisions, projects, alliances and power struggles. Which means, and this is the interesting thing here, that its next future and its potential declinations in others fields, - such as architecture -, will be, too, the product of the desires, strategies, assemblages and actions put into play by the agents engaged in them.

Following Kelty, “Free Software forked in 1998 when the term Open Source suddenly appeared (a term previously used only by the CIA to refer to unclassified sources of intelligence). The two terms resulted in two different kinds of narratives: the first regarding Free Software, stretched back into the 1980s, promoting software freedom and resistance to proprietary software “hoarding”, as Richard Stallman [...] refers to it; the second, regarding Open Source, was associated with the dotcom boom and the evangelism of the libertarian pro-business hacker Eric Raymond, who focused on the economic value and cost savings that Open Source Software represented [...]” [2008: 99].

While the practices of Free Software *and* Open Source, - that can be loosely described by the four liberties defined by the Free Software Foundation [0/ using the code; 1/ reading the source code; 3/ being able to change it; and 4/ being able to redistribute it] -, are the same, the ethics and the goals of one and the other are different. As Kelty suggests with the differential narratives, the goal of the Free Software movement is to make tools and knowledge free and therefore shared by everyone, while the goals of the Open Source movement are rather related to making business in new ways, that take advantage and “harness the power of mass collaboration” [Tapscott, 2006]. Their schizoanalytic diagrams, if we use Guattari's conceptual tools, are rather divergent. Even if they

share the same *machinic filum*, the universes of values, flows, and existential territories are rather different and, therefore, they produce different worlds; or expressed in a different way, the social and mental ecologies they generate are rather distant from each other. To put a simple example, on the FS side we can imagine a Richard Stallman-Free Software Foundation kind of world; while on the OS side, we can imagine worlds like Google.

[flos architecture case studies]

I will describe and comment three cases of architectural and urban experimentation that I understand will help to visualize the state of the art and the potentials of the application, not so much of the Open Source paradigm, but of the Free-Libre Open Source (FLOS) paradigm to the social production of space, that is to the production of architecture and urban space. As I understand them, the main focus of these projects is not so much to develop a new economic model and more efficient processes for the production of architecture and urban space, but rather to contribute to the construction of spaces with an infrastructural-machinic dimension that support freer, emancipated, more creative social relations.

The first case is that of a competition held in Sevilla [Spain] in 2008-2009, entitled *Caja de Herramientas* [Tool Box] that presents a conceptual panorama of the application of the free culture paradigm to the process of designing, building and *distributing* architecture. The second case deals with a project of our own team, the WikiPlaza project, that we presented at the Future en Seine festival, Paris, in 2009. The focus here is placed on the electromagnetic and digital dimensions of contemporary space. The third case, eventually, presents the MIT Fab Lab network and the connections between open source and digitally fabricated architecture, possibly one of the latest frontiers of the free culture movement.

[image 01: Digitally fabricated environment; Mille Plateaux at WikiPlaza Paris; hackitectura.net with Borja Baños, Belén Barrigón and Carlos Bauza, 2009]

[tool box]

Caja de Herramientas / Tool Box [<http://cajadeherramientas.cc/>] was a competition promoted by ACS, a University of Sevilla based association. This association made up by university professors and students has been working for more than 15 years in the field of architecture and urban design with a critical social perspective, both in international cooperation and in local inner city projects. In the last few years, a new generation of ACS members shifted the focus of their interests from traditional ONG approaches to more critical and experimental practices, including collaborations with squatted autonomous social centers and urban orchards. Then, in 2008 they organized this competition where they proposed participants to explore the composition of urban practices of radical social movements with the FLOS paradigm. The object of the competition was the design of architectural elements that could be installed either at *CSOA Sin Nombre* or at *Huerto del Rey Moro*, two autonomous spaces in the city of Sevilla. Despite these two specific locations, the pieces or devices were proposed to have, as well, a generic character allowing for their deployment in other places, with or without modifications. The projects were to consider recycling and reuse as some of their main conditions, and be thought of and licensed as FLOS designs. It was implied, too, the need for a generic character and accessibility of the materials and components to be used, and the need for easy assembly processes that could be performed by not specialized builders.

The design process itself was organized inspired by free software development strategies, inviting participants to upload their working ideas and drawings in a public wiki, so that projects could cross-fertilize each other while being developed. Eventually, another relevant aspect of the competition was that every project presented was to be considered a winner; being the prize for winners the development and actual construction of the designs in collaboration with the competition organizers and the dwellers of each of the sites.

[morning water]

One of the most outstanding projects presented at the competition dealt with a *permacultural* reformulation of the water cycle at the *Huerto del Rey Moro* [<http://cajadeherramientas.cc/node/29>]. The project, entitled *Agua Matutina*, is authored by a collective of architects and environmentalists, being the main authors Arturo Jiménez and Luciano Furcas. Using a traditional diagram, the projected local water cycle collects rain and sub-soil water, circulates it through various instances including edible groves, and cleans it for reuse through natural treatments performed by a combination of small lagoons, rock beds and specialized plantings and micro-organisms. The system is powered by a DIY vertical windmill. The materials to be used are either natural, such as rocks, clay and plants, or recycled such as pallets and discarded tires. All of them are easy locally available. The project includes a detailed library of all the elements to be used, and manuals on how to employ them. Finally, it analyzes the various activities-economies that can be generated in connection to the by-products of each part of the cycle; activities such as food production, composting, fishery, construction, pharmacology or cosmetics. One of the many points of interest of this project is that it conceives architecture [FLOS architecture] not only as an inhabitable environment, but rather as what I like to call a [Guattarian] machine, an heterogeneous assemblage composed by technical, spatial, social and subjective parts, with the potential to produce new unfoldings of the real; creating at the same time a technical ecology, a social ecology and a mental ecology [Guattari, 1995; Pérez de Lama, 2009].

[[image 02 / Agua Matutina water cycle competition panel; Arturo Jiménez and Luciano Furcas, 2008](#)]

[wikiplaza]

The second case study is one of our own projects, WikiPlaza, that we actually presented in 2009 at the Future en Seine Festival in Paris. WikiPlaza can be described as a public space enhanced by information and communication networks. Its goal is the social participatory production of public space, mediated by digital technologies. As Henry Lefebvre enunciated, space is understood not only as a social product, but rather as a permanently ongoing social production. The FLOS architecture approach pursues to make this amplified dimension of contemporary space, - relying on machines, electronic flows and images -, transparent, democratic and easy to be appropriated by the public. Even though it was initially the winning proposal at an international competition for the reconstruction of a large public space in Spain [2], WikiPlaza, in its present-day development state, is a set of devices and space management strategies that can be deployed on any pre-existing public space.

The original idea for the project was to put together, to assemble, technological knowledge and experiences developed in the realms of the arts, architecture and social movements during the late 90s and early 2000s [free software and hardware, free networks, hacklabs and *hackmeetings*,

independent media practices, digital social networks, video streaming, audiovisual experimentation...] to configure an active public space; a space that would be a hybrid between the physical, the social and the digital. The use of the “wiki” prefix, as in the well known Wikipedia, presents the image of the construction of a plaza that is continuously editable by the community of its dwellers, a socio-technical community that organizes itself horizontally. We imagine this community as a mix between the assembly in a social center and the collective managing an indymedia center [3].

WikiPlaza, as most of hackitectura.net's projects, departs from the idea of understanding contemporary territory as the result of the interaction-hybridization of physical space, its inhabitants and a series of technological layers. Among these technological layers, one of the most outstanding ones is that made up by electronic networks and flows. In this way, we conceive contemporary architecture composed, not only by physical materials that configure geometric spaces and aesthetic and thermodynamic environments, but also by connections, interfaces, electronic flows and images, and the devices that make these happen (software, hardware, netware). As we often use for Wikiplaza, we consider that the perspective of describing architecture or urban space as an assemblage or *agencement* of spaces, bodies and machines becomes a more efficient way to trigger new events of the real. We also use the expression cyborg territory to describe these new spatial conditions [Haraway, 1991; Mitchell, 2003; Pérez de Lama, 2006].

Going FLOS with this kind of conceptualization of architecture means that we not only need to develop the tectonic elements as free, but also all the other heterogeneous components that, for example, configure the WikiPlaza territory. Hackitectura.net conceptualizes these various elements as spaceware [the traditional architectural parts]; hardware, software, netware and humanware [which would be the organizational or social diagrams that make the WikiPlaza *machine* work as such].

Through the experimentation with several WikiPlaza temporary prototypes (Future en Seine, Paris and Figueras, 2009; Cáceres and Donostia, 2010) the project has evolved into a modular architecture, a flexible matrix of modules that can be used in different combinations. Modules have an heterogeneous character, ranging from predominantly tectonic-architectural ones, to infrastructural, to activity centered ones. We are working in the development of these modules according to the free software paradigm. Modules include Internet-Tv set (aka *Mille Plateaux*), Open Medialab, Open Performance (infrastructure), educational workshops (with children, on technologies, on mental health), Participatory Cartography and Mobile Open Fablab (that will be implemented at the upcoming instance in Donostia/ San Sebastian, 07.2010). Modules are being developed under a combination of GPL and CC licenses, and will be made available to the public through on line repositories. In this way, communities, educational or cultural centers will be able to use them, read their codes, modify and redistribute them. The goal is that the matrix becomes a common good, that can grow with the contribution of multiple agents, taking multiple embodiments, and eventually generating a distributed network of public spaces performing as cooperative, technological, biopolitical laboratories.

This theory and these practices distance themselves from the conventional disciplinary understanding of architecture as an activity limited to the production of objects or even atmospheres. Our practice of architecture is understood instead as the production of machines (in the sense of the term proposed by Felix Guattari), something in between a tool box, an interface and an infrastructure. We understand WikiPlaza as a *machine* that composes and at the same time produces certain social relations, certain *subjectivation* processes; certain other relationships between humans, technosphere and physical environments (Guattari, 1995; Pérez de Lama, 2009).

If we extend the reasoning developed around the WikiPlaza project to any kind of public facility, another question can be posed. The question is: What would a Creative Commons public facility be? I think that this is indeed, using other names, something that many experimental social movements are exploring these days [4].

[image 03: WikiPlaza Paris diagram; hackitectura.net 2009]

[image 04: WikiPlaza Figueras, children workshop; hackitectura.net with Susana Tesconi and Penélope Serrano, 2009]

[fab lab networks]

Digital fabrication constitutes today the ultimate frontier for the convergence of architecture and FLOS culture. As pointed out by future guru Bruce Sterling [2005], a vast part of the objects we live nowadays with exist first in a computer screen and after in the “real world”. Digital fabrication is the process that transforms directly the digital objects existing in the computer into its material *instances*, the actual objects that we do use. Even if these objects, as Sterling develops his argument, are more and more something that exist in between the physical and the digital worlds: the I-phone being one of his favorite examples. These kind of new objects were in a first phase either large expensive sophisticated ones such as airplanes or cars, or small consumer goods ranging from *made-in-China* plastic toys to high-end electronic gadgets. Since more than a decade ago, however, this new way of production of material goods has reached architecture [Gershenfeld, 2005].

Beyond the exclusive works by architects like Frank Gehry and Zaha Hadid who constitute the most visible avant-guard in the field, other groups are actually exploring the potentials of digital fabrication for architecture in areas close to the Open Source paradigm. Groups like the Fab Lab Network lead by MIT's Neil Gershenfeld have been discussing at least since 2002 about personal and community fabrication. Once an object, even a large scale architectural object, can precisely be specified for fabrication through its digital code, the conditions of its reproducibility, as Walter Benjamin would have said, become similar, or at least comparable, to those of other digital goods such as software, images or music.

A relevant question here becomes that of the accessibility to the so called CNC [Computer Numeric Control] machines, the machines that interpret the fabrication files and translate them into code [G code] understandable by mechanical tools that will cut, mill, print or form raw materials into the actual designed objects. Gershenfeld is convinced that the future evolution of digital fabrication will be parallel to the evolution that took place from mainframes to personal computers and from industrial presses to home printers [2005: 3-4, 15-17]. And indeed, during the last decade, machines [and the software to use them] have been made significantly smaller and affordable by people like him and others like Adrian Bowyer, leader of the visionary Reprap project [<http://reprap.org>]. Already today, any hobbyist, as I myself do, can have a personal 3D printer at home, a machine able to print 3D objects previously designed with simple 3D CAD software. There is even a new generation of free hardware CNC machines, as the one that I actually have, that people with not to much experience can build by themselves. Gershenfeld and Bowyer, taking up speculations developed by John Von Neumann in the late 1950s, are working on machines that eventually will be able to reproduce themselves [2005: 39, 244]. The free hardware 3D printer Reprap, and its descendants like Makerbot Cupcake, are already able to reproduce a significant part of their own

components. The emerging scenario of [free] machines that are able to make other machines, - a realm that is occasionally called Fab 2.0 -, opens up immediate perspectives of revolutionary economic and political potential transformations [2005: 49]. [5]

MIT's Fab Lab Network [<http://fab.cba.mit.edu>], at the heart of these researches, constitutes, possibly, the most relevant case study in this field. Beginning in 2002, the Center for Bits and Atoms decided to build a field fabrication laboratory in a small town in India. Since then an heterogeneous network of fab labs has grown around the planet, unfolding singular strategies of bottom-up research, sharing knowledge, standards, and actual designs. Many of these fab labs are placed in non-central sites, becoming experimental nodes for alternative strategies of community empowerment and economic development.

Let's see Gershenfeld's definition: “[...] fab lab can mean a lab for fabrication, or simply a fabulous laboratory [...] a fab lab is a collection of commercially available machines and parts linked by software and processes developed for making things. The first fab labs have a laser cutter to cut out two-dimensional shapes that can be assembled into three-dimensional structures, a sign cutter that uses a computer-controlled knife to plot flexible electrical connections and antennas, a milling machine that moves a rotating cutting tool in three dimensions to make circuit boards and precision parts, and the tools for programming tiny high speed microcontrollers to embed logic [...] This is not a static configuration; the intention over time is to replace parts of the fab lab with parts made in the fab lab, until eventually the labs themselves are self-reproducing” [2005: 12].

It is also interesting to read the so called Fab Lab Charter [<http://fab.cba.mit.edu/about/charter/>], as can be read in the network website [2007]. It clearly reminds us of hacker culture, with such strong connections to the recent history of some sectors of MIT:

Mission: fab labs are a global network of local labs, enabling invention by providing access for individuals to tools for digital fabrication.

Access: you can use the fab lab to make almost anything (that doesn't hurt anyone); you must learn to do it yourself, and you must share use of the lab with other uses and users.

Education: training in the fab lab is based on doing projects and learning from peers; you're expected to contribute to documentation and instruction.

Responsibility: you are responsible for:

safety: knowing how to work without hurting people or machines,

cleaning up: leaving the lab cleaner than you found it,

operation: assisting with maintenance, repairing and reporting on tools, supplies and incidents.

Secrecy: designs and processes developed in the fab lab must remain available for individual use although intellectual property can be protected however you choose.

Business: commercial activities can be incubated in fab labs but they must not conflict with open access, they should grow beyond rather than within the lab, and they are expected to benefit the inventors, labs and networks that contribute to their success.

It is interesting, too, as it can be partially deduced from this charter, that the Fab Lab Network emphasizes its three, - dot-edu, dot-net and dot-com -, components. They assume as part of their

project that in order to become truly successful they need to develop, not only scientific knowledge, education and global networking, but also, as happened with free software, its own economy.

[image 05: CNC milling machine operating during Fablab.04 workshop at Sevilla University, 2010]

[mapping the future for FLOS architecture]

For almost a year now, together with Manuel Gutiérrez de Rueda, I have been directing a Fablab in Sevilla, Spain (no connected yet to the MIT network but for its name and inspiration). Drawing from our own experience, the study of Gershenfeld's network and MIT's documentation, and from the afore mentioned studies by Christopher Kelty, we are working in the conceptualization of a research and socio-political diagram in order to move towards a development of FLOS architecture, digital design and fabrication parallel to the one achieved to date by the free software communities.

This project, as we are understanding it, will not be limited to the use and development of free CAD-CAM software or to addressing the multilayer quality of the source code of digitally produced architecture, but should imply becoming involved in a process of emergence of a particular political economy, a recursive public sphere as Kelty describes [2008] it, a commons-machine involving hardware and fab-bots, software, repositories, theorists, hackers, *hack-itects*, fabbers etc. connected in new networks of knowledge, production, distribution, use and transformation. Something that, to a large extent, still needs to be invented.

[image 06: Table / analysis of componentes and liberties related to the potential emergence of FLOS architecture]

[image 07: FLOS architecture diagram, agents, machines, technologies, networks]

[notes]

[1] José Pérez de Lama is member, with Sergio Moreno and Pablo de Soto, of [hackitectura.net](#). Arguments developed here are in great part the result of the works developed with [hackitectura.net](#), and of further discussions held with Sergio Moreno, Laura H. Andrade, Aretí Nikolopoulou, Manuel Gutiérrez de Rueda and Marta Malé-Aleman, among others. Many thanks to all of them. A fun circumstance is that the WikiPlaza open modules project explained here was triggered by a conversation with Sergio Moreno traveling in a public bus through Sevilla. Then, let's thank, too, public transportation systems!

[2] In 2006, [hackitectura.net](#) together with José Morales, Sara de Giles and Esther Pizarro were the winners of the International Competition to design and build the *Plaza de las Libertades* in Sevilla, a 30.000 square meters public space including a cultural center, situated next to the Santa Justa train station, one of the main arrival points to the city. The competition was sponsored by Sevilla City Hall. However, in 2010 the project hasn't yet been commissioned to the team due to political and economic reasons.

[3] Initiated in the context of 1999 Seattle WTO protests, the web-base community of Indymedia became a formidable global networked machine and one of the most relevant information and organization agents in the alter-globalization cycle that grew in the following years. It has to be considered one of the seminal projects in the emergence of what came to be known as Web 2.0. Its

principles of organization drawing from hacker culture, anarchist practices and federalism still remains a highly efficient model for diverse, democratic, consensus based management of socio-technical organization.

[4] One of the first times I have seen the proposal for a Creative Commons licensed space was in 2008 at the *CSOA La Fábrica de Sombreros*, an autonomous social space in Sevilla, Spain. In 2009 at the *Post-capitalist City Conference* in Pula, Croatia, hackitectura.net participated in a discussion on the topic of Creative Commons cities. Since then, Ana Mendez de Andés from Observatorio Metropolitano de Madrid, and the Pula group, lead by Emil Jurcan, have been working on the development of the concept.

[5] Gershenfeld, however, sees the state of the art merely as a very preliminary phase in a new process of machine evolution. In the next future he envisions molecular machines that will be able, on one hand, to make “perfect things out of imperfect parts by building through computation”, and on the other, duplicate, program and recycle themselves. This kind of machines will have “the essential attributes of living systems” [2005: 244]. However, this is still in a very embryonic state, and the revolutionary dimensions of its potentials will make for interesting history – as sci-fi writers like Neal Stephenson [1995] elaborate in their novels.

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