I.

INFRASTRUCTURE AND FLOW:

THE CHANNELS OF METADATA

1. Urban Simulacra

It comes as no surprise that Polis[1], one of the most interesting urbanism-related blogs on the Internet, has recently opened one of their articles[2] by referencing to *On Exactitude in Science*[3], the same Jorge Luis Borges short story Jean Baudrillard mentioned in his introduction to *Simulacra and Simulations*[4]. The very brief text tells about an incredibly detailed 1:1 scale map of an empire, eventually shredding apart and leaving scattered remains on the soil it used to discipline. The reason why Borges' vision is so important today is not only the recent popularization of mapping, especially on the Internet, but its evolution into a virtualized and pervasive layer overlapping with both our online and offline experiences.

The emergence of map-based Internet and phone applications, along with the less recent trend of virtual worlds such as Second Life, has now produced different examples of what scholars Michael Batty and Andrew Hudson-Smith have called “urban simulacra”. Curiously,

1 http://www.thepolisblog.org

2 http://www.thepolisblog.org/2009/10/auto-cartography.html (last viewed 08-11-2010)

3 http://elmundoenverso.blogspot.com/2007/12/del-rigor-en-la-ciencia-jorge-lus.html (last viewed 08-11-2010)

4 Baudrillard, Jean, *Simulacra and Simulations*, in *Jean Baudrillard, Selected Writings*, ed. Mark Poster, Stanford: Stanford University Press, 1988. pp.166-184.

they also begin their essay *Imagining the Recursive City: Explorations in Urban Simulacra*[5] by quoting Jorge Luis Borges, this time making a reference to his *Garden of Forking Paths*[6].

Their essay is an interesting experiment in the creation of an urban simulacrum, in their case a virtual reproduction of the city of London. The reproduction is then inserted as a model into a Second Life-like virtual world, and finally printed as an actual 3D model, in order to close the recursive cycle by bringing the physical perception of the simulacrum back where it came from – that is, the physical world. The authors define recursion as "the process where the same set of rules or function is applied to some phenomena over and over again, successively, in such a manner that the phenomena is repeatedly transformed as these rules are sequentially applied.[7]" The experiment's aim is to "explore the recursive city in terms of its physical patterning and the use of these as icons in the digital age[8]".

Batty and Hudson-Smith highlight the process in which certain relation patterns repeat themselves in the development of cities as well as in virtual worlds, starting from a simple structure which repeats and incorporates itself in a quasi-fractal dynamic. From a micro-structure, the recursive process evolves to an aggregate of the same micro-structures assuming the same form itself, on a different scale. Much like in Borges' forking paths, the model they make of the city of London is inserted in a bigger one, becoming a single element in an isomorphic, inclusive environment.

The scalability of the initial set of relations constituting the root of the model is very important. While the "spatial skeleton", or "shell", as the authors call it, remains the same, the media embedded – constituting the skin, or the texture, of the simulacrum – can change at different scales. This type of layering can also be done in 3D modeling software by projecting external image files on vector surfaces. It happens, basically, with the creation of metadata - path to image file or other parameters - to be interpreted by the rendering engine.

5 http://www.casa.ucl.ac.uk/working_papers/paper98.pdf (last viewed on August 16, 2010)

6 Borges, Jorge Luis (1964, written circa 1941), *Labyrinths*, New York: New Directions Publishing Co., p.27

7 M. Batty, A. Hudson-Smith, *Imagining the Recursive City: Explorations in Urban Simulacra,* London: Centre for Advanced Spatial Analysis, University College, 2005. p.2.

8 Ibid.

The distinction between metadata and the underlying set of vector relationships is key to understanding the deep similarities between very aesthetically different models, for example the bidimensional Zillow.com (an online real-estate mapping service) and a 3D environment like Second Life.

I believe urban simulacra, being grounded in the technologies of rendering and new media, but at the same time mimicking the spatial organizations of real cities, represent a perfect example to break down some of the main characteristics of interface and its relationship with infrastructure and metadata.

2. Structure and Infrastructure

The importance of structure in the process of the design/creation of worlds, rather than their content, has been the focus of several important thinkers from various fields: Gilles Deleuze (1973), Nelson Goodman (1978), Christopher Alexander (1964). All of them try to define a set of native principles in the generation of consistent models, all of them starting from very different questions and approaches, but all sharing some key concepts: division, order, relationship. The aforementioned authors are just three relatively recent examples, but there are ancient ones as well. In his famous essay *Ways of Worldmaking*, for example, Nelson Goodman calls in no less than Democritus to describe the need for a division of the world in neutral particles, with quantity and structure supplanting quality[9]. He states: "Such considerations point to a criterion framed in terms of an extensional isomorphism that requires preservation of structure rather than of extension."

Goodman's isomorphism is "global", but not "symmetric"[10]. Similarly, Batty and Hudson-Smith state that:

"The idea that recursion is asymmetric dominates in that its transformation through hierarchy over and over again with as many repeatable modules as one cares to define, soon destroys the logic of symmetry. Hierarchies blur into lattices (Alexander, 1966) as the modules that form the system spread epidemic-like through the medium. As an aside, however, effective recursion where the

9 Goodman, Nelson, *Ways of Worldmaking,* Indianapolis: Hackett Publishing Company, 1978. p.98

10 Ibid. p.100

experiences are meaningful imply some strictness of control over these strange loops, tangled hierarchies they may be but hierarchies that are structured, not random."

Christopher Alexander, quoted by the authors, expresses ideas that are quite similar to Goodman's, at the beginning of his *Notes on the Synthesis of Form*[11]. The Austrian architect and theorist stresses the importance of mathematics in design because of its focus on order and relations, instead of just quantities. He describes logic as the configuration of abstract and artificial structures, built with elements and relations[12].

From Alexander's mention of order I will move on to Gilles Deleuze, who writes substantially about structure himself, in his essay on Structuralism[13]. The French philosopher also describes the structure as the real subject. To him, all structures are virtual infrastructures, which differentiate by actualizing themselves[14]. Since space is what is structural, inside a structure places prevail on what occupies them[15]. Space is built step by step as an order of vicinity, where vicinity has an ordinal meaning rather than extensional[16].

The virtuality of infrastructure introduced by Deleuze can be explained by way of the paraphrasis that Pierre Levy makes of his concept in *Becoming Virtual.* The virtual is "a kind of problematic complex, the knot of tendencies or forces that accompanies a situation, event, object, or entity, and which invokes a process or resolution: actualization."[17] Despite being opposed to the actual, the virtual is still completely real, even though it is missing a specific form. For this reason, virtual infrastructures are particularly powerful, because they include every possible actualization without indulging in any - just like the power relationships described by Michel Foucault, which need not be enforced, but only assumed.

11 Alexander, Christopher, *Note sulla sintesi della forma*, Milan: Il Saggiatore, 1967. Italian edition, translation and paraphrasis are mine.

12 Ibid. pp. 16-17

13 Deleuze, Gilles, *Lo strutturalismo*, Milano: RCS Libri, 2004. Italian edition.

14 Ibid. p.31 - Italian edition, translation and paraphrasis are mine.

15 Ibid. p. 21

16 Ibid. p. 19

17 Levy, Pierre, *Becoming Virtual*, New York and London: Plenum Trade, 1998. p. 24

3. Node and Metadata

As previously examined, there are several intersections between Deleuze's theory and Goodman's world making, as well as with Alexander and the scalable models described by the authors of *Urban Simulacra*. In particular, the vector relationships on which the latter are based are a virtual infrastructure that actualizes into an interface as soon as it starts being fed with metadata.

Most of the urban simulacra I mentioned are map-based web applications, which means they need to be easy and quick for servers to be able to provide users with a smooth navigating experience. Although different applications might rely on different data sets, a well-structured database is always an important factor. It can be as crucial as a good rendering algorithm, since all the statistical functions provided by applications like Zillow or Google Maps rely on metadata.

Once the structure actualizes itself, the information its creator puts inside of it does matter. Zillow will base its intersection with the cities it maps on real-estate data, Google Street View on panoramic photos, Google Earth on aerial pictures and 3D terrain coordinates. Regardless of the type of data to be stored, however, data sets are still textual and structured in a manner that makes their retrieval and interpretation as easy as possible. In this respect, I think a crucial revolution in Internet informational structures is XML.

Even though Alexander Galloway does not fully address it in *Protocol*, since its semantic structure is very much human-driven, I believe this standard's versatility, both in terms of writing and reading (thanks to the many uses that it serves, especially news feeds), has enabled unprecedented phenomena that well represent our times.

At a first glance an XML file looks pretty simple, with no magic programming tricks hidden inside it. This is true, to some extent, but the intrinsic power of XML lies right in its very simplicity and globality.

As for what concerns the reading, since protocol is "any type of proper behavior within a specific system of conventions[18]" XML is “a set of rules for encoding documents

18 Galloway, Alexander, *Protocol. How control exists after decentralization*, Cambridge: Massachussetts Institute for Technology, 2004. p. 7

electronically[19]", and since the ultimate goal of internet protocols is to "accept everything[20]", the design goals of XML are to "emphasize simplicity, generality, and usability over the Internet". In respect of the writing instead, since protocol "governs the architecture of the architecture of objects[21]", XML is the way metadata meets the infrastructure, thus actualizing it into an interface.

As a universally accepted standard, there are countless applications and languages relying on XML, from RSS (the technology behind newsfeeds[22]) to KML (a geocoding language read by Google Earth[23]). RSS feeds alone are a perfect example of the real-time informational potential of Web 2.0, which would not be the web of flows without XML, just like Castells' space of flows would not exist without the institutional sets of rules that eventually gave way to globalization. Services like Yahoo! Pipes (whose potential, I think, is underestimated) and the thousands of fake automatic blogs clogging the Web are just a couple of examples of how unstoppable and open the flow enabled by XML actually is.

Just like protocol, as described in Galloway's book (2004), XML is not enforced, but recognized and always accepted. It allows many types of international characters, but documents need to be well-formed – that is, to follow certain syntactic rules - in order to properly work[24].

To explain why XML is so efficient, it is useful to study its anatomy. This is a very basic example of an XML file, taken from Wikipedia:

```
<?xml version="1.0" encoding='UTF-8'?>
<painting>
  <img src="madonna.jpg" alt='Foligno Madonna, by Raphael'/>
  <caption>This is Raphael's "Foligno" Madonna, painted in
  <date>1511</date>-<date>1512</date>.</caption>
```

19 http://en.wikipedia.org/wiki/XML (last viewed on August 15, 2010)

20 Ibid. p. 42

21 Ibid. p. 75

22 http://en.wikipedia.org/wiki/RSS (last viewed on August 15, 2010)

23 http://code.google.com/apis/kml/documentation/kml_tut.html (last viewed on August 15, 2010)

24 http://en.wikipedia.org/wiki/XML#Well-formedness_and_error-handling (last viewed on August 15, 2010)

</painting>

Quoting Wikipedia: “There are five elements in this example document: painting, img, caption, and two dates. The date elements are children of caption, which is a child of the root element painting. img has two attributes, src and alt.” There is not much else about it. A significant example of XML's versatility is the possibility for the person who is writing the document to create arbitrary markup tags, that is to name each element and structure their relations.

Also, by defining attributes, it is possible to attach metadata to each element, which can be later interpreted by the algorithm or application (infrastructure) that is being fed the data. There are countless ways to do this, but it is beyond the scope of this thesis to explore them all.

Sometimes elements are called nodes, other times in different ways, but what I am interested in understanding here is the universal and simple set of rules underlying this basic standard logic.

As shown before, the flow of data is a key factor in the actualization of urban simulacra. From the very textual root they are built from, they fulfill themselves by differentiating into relational patterns users establish with metadata. Despite the high coeffient of creativity involved in the structuring of metadata, we should not forget the priority is not a rhizomatic self-expression spree, but the enabling and optimization of flows. As Baudrillard wrote in his text about simulacra:

“The real is produced from miniaturized units, from matrices, memory banks and command models - and with these it can be reproduced an indefinite number of times. It no longer has to be rational, since it is no longer measured against some ideal or negative instance. It is nothing more than operational.[25]”

Baudrillard's description is in line with my overview of metadata, even though it has a much more apocalyptic fascination to it. But if metadata is what makes simulacra real, what about the cities actualizing the globalizing flows Castells writes about?

25 Baudrillard, Jean, *Simulacra and Simulations*, in *Jean Baudrillard, Selected Writings*, ed. Mark Poster, Stanford: Stanford University Press, 1988. pp.166

4. Containers and Heterotopias

At this point of my considerations on structure theories it is time to step away from simulacra and into actual urban, economic, and communication infrastructures.

In the aforementioned *Becoming Virtual*, Levy describes the way the whole of our collective framework – especially the fields of information, our economic activities, and our modalities of being together – are virtualizing. We now have "virtual communities, virtual corporations, virtual democracy[26]". The virtualization of corporations, in particular, "consists primarily in transforming the spatiotemporal coordinates of work into a continuously renewed problem rather than a stable solution.[27]"

Sociologist Manuel Castells analyzes the same changes in his book *The Informational City*. It is interesting to see how Levy discusses virtualization as "the process of transformation from one mode of being to another[28]", while Castells talks about the informational reconfiguring as a "mode of development[29]". Both expressions suggest a transition from a modality to another, a problematization.

According to Castells "the state of the informational mode of development, be it under capitalism or under statism, exercizes more intervention than ever, but it does so by controlling and manipulating the network of information flows that penetrate all activities[30]." The actualization of the problem of spatio-temporal coordinates posed by the virtualization of corporations, described by Levy, thus takes place in Castells' space of flows. The structure – or better, infrastructure – allowing the space of flows to exist is both technological and institutional, and the flows themselves are above all economic. Nevertheless, they have spatial implications. As Castells writes: "International capital flows

26 Levy, Pierre, *Becoming Virtual*, New York and London: Plenum Trade, 1998. p. 15

27 Ibid. p. 26

28 Ibid. p. 16

29 Castells, Manuel, *The Informational City: Information Technology, Economic Restructuring, and the Urban-regional Process,* Cambridge, Massachussetts: Basil Blackwell, 1991. p. 10

30 Ibid. p. 19

segment regional spaces by incorporating them in different ways into the changing geometry of their worldwide logic[31]". The global city "collapses information flows into social matter[32]" and gives way to "regional homogenization with increasing intra-metropolitan inequality." The space of flows is asymmetrical and its worldwide logic is recursive, generating homogeneity albeit following different geometries in different places. For Castells "symbols are attached to location", but "power rules through flows[33]." Once again, structure is more important than texture.

Spatial organization has been a crucial issue in contemporary theory for decades now, not only in terms of sociological patterns but also as a philosophical topic. Both Michel Foucault and Fredric Jameson, two of the most quoted scholars in today's academic literature, pointed out its importance. According to the French philosopher "the anxiety of our era has to do fundamentally with space[34]", while the American theorist of the postmodern stresses the fact that time categories are now less important than space categories[35]. If the latter statement refers most notably to a spatialization of culture, which I will discuss later, Foucault's contribution has been a great influence on the discipline of urban design.
In his book *Recombinant Urbanism[36]*, urban design scholar David Grahame Shane describes the evolution of cities from the monocentric City of Faith to the policentric Ecological City, drawing his analytical terminology from the French philosopher - from whom he borrows in particular the concept of heterotopia - and urban design pioneers like Kevin Lynch[37].

31 Ibid. p. 346

32 Ibid. p. 344

33 Ibid. p. 349

34 Foucault, Michel. "Of Other Spaces," *Diacritics 16* (Spring 1986), 22-27.

35 Jameson, Fredric, *Postmodernism, or the Cultural Logic of Late Capitalism*, London: Verso, 2008. p. 16

36 Shane, David Grahame, *Recombinant Urbanism: Conceptual Modeling in Architecture*, Chichester: Urban Design and City Theory, Wiley-Academy, 2007.

37 Shane mostly refers to Lynch's 1981 book Good City Form (MIT Press, Cambridge MA and London 1984, c1981).

Regardless of the different names given to it in the book, depending on the scholar cited, the contemporary metropolis is described as "a layered structure of heterotopic nodes and networks.[38]"

Shane utilizes three urban elements in his book: enclaves, armatures, and heterotopias. Enclaves are the most important in the City of Faith, the medieval model, while Armatures prevail in the City as a Machine, the industrial model. Heterotopias take over in the Ecological City, or Telecittà, or Scrambled Egg City. As opposed to enclaves, heterotopias "house all exceptions to the dominant city model". They mix "the stasis of the enclave with the flow of an armature" and in them "the balance between these two systems is constantly changing"[39]. Quoting Foucault, Shane describes the emergence of heterotopias:

"Finally, a system of 'sites' replaced 'extension', creating a world in which space 'takes for us the form of relations between sites' (as in the Ecological City). 'Sites' are defined as 'relations of proximity between points or elements' expressed as organizational patterns between elements. Such patterns include top-down hierarchies ('trees'), open linear systems ('grids'), and random spacing systems ('series').[40]"

Shane is also interested in the different types of heterotopias prevailing in different times. The City of Faith has "heterotopias of crisis" (like cemeteries in the heart of the city), the City as a Machine has "heterotopias of deviance" (such as clinics or hospitals), and finally the Ecological City sees the emergence of "heterotopias of illusion", which are "places of escape from the tyranny of production via fantasies of freedom[41]."

I think this type of heterotopias is particularly interesting and fitting for globalized cities. Places like Starbucks, the first and most obvious example that comes to mind, or any type of bohemia-inspired places of leisure - such as cultural centers, showrooms, and art galleries - offer chances for hybrid entertainment and the safe cosiness of a gentrifying neighborhood. Despite Italian philosopher Gianni Vattimo has described heterotopia as the liberation of the

38 Ibid. p. 10

39 Ibid. p. 231

40 Ibid. p. 233

41 Ibid. p. 240

ornament, as opposed to the design utopia of Bauhaus[42], I will argue contemporary heterotopias further embed such a postmodern variety of aesthetic styles into an ideological shell, channeling the dominant urban development credo. Kitsch does not really "stand like a monument", as Vattimo argues, but is rather relegated to low-brow neighborhoods, while a new no-frills aesthetic of rationality and flow – an aesthetic of interface - makes real-estate prices rise. As ethnic restaurants adopt the same international and neutral taste in interior design, regardless of the country the food served is supposed to come from or be inspired by, music venues playing the same kind of hipster mash-ups bloom in every metropolis of the world. Through processes of renovation and gentrification, former factories can become fancy art venues, and containers turn into housing units or showrooms.

The container is probably the perfect example of this kind of fit-all heterotopias. This increasingly versatile architectural element can be used both as an information unit involved in commercial flows and as a neutral module to which any urban purpose is assigned.

Like an XML node, a container has a varying function/texture, but it is fixed in its structure, which is conceived for the optimization of space and its relations with other modules. The shipping container thus exemplifies the overlapping of infrastructure as a set of rules in trade and capital flow and as a neutral wrapper.

There is then an isomorphism of the heterotopias of illusion of the Ecological City, as described in Foucault's and Shane's terms, with the XML structure exemplified in the last paragraph. Their functions and textural attributes are the equivalent of XML elements, cells to be filled with varying values according to the prevailing logic of global capital flows and gentrification logics.

I will now go back to Fredric Jameson, who described at length the impact of postmodernism in architecture. While I am not here necessarily examining any postmodern practice in the field – my argument is in fact that the emerging principles I'm referring to are an almost utopian and ideological standardization, which is by definition infused with some modern inspiration – some of his observations deal with the same issues I am writing about.

In particular, Jameson's aesthetic analysis of contemporary architecture is in this context very interesting. For example, according to the philosopher, the abundance of transparent

42 Vattimo, Gianni, *The Transparent Society*, Baltimore, MD: The Johns Hopkins University Press, 1992. p. 64-71.

surfaces in today's buildings points out the importance of reproduction in postmodernism[43], something also confirmed by the emergence of architecture photography along with the construction of buildings that seem to be conceived with the purpose of being portrayed as icons (that is, designed for photography[44]).

When making the example of the architectural historicism of postmodern architects, Jameson also mentions the wrapper. He refers to an invertible figure/ground relationship retaining priority or even hierarchy, where the wrapper can become the wrapped and vice-versa[45], and architectural elements thus float as autonomous signifiers.

If this might be true for postmodern architecture as such, the type of architecture I am talking about here deals more with the first observation about transparent surfaces, and the way volumes function as wrappers in it is more of a protocological need (definitely not invertible) than a liberated semiotic.

To explain this I will refer to another example that Jameson makes in his book: Frank Gehry's house in Santa Monica. The philosopher sharply points out how in the building we find aesthetic and structural elements reminding of the economy, such as low-cost materials[46]. In a shipping container, the very basic volume (optimized geometry) and the object itself (the metal container) are themselves aesthetically and structurally exemplifying the economy in its infrastructural need for smooth transportation and practical storage. Again, an aesthetics of interface, as I have mentioned earlier. Also, while containers are not themselves reflective, their not-so-fascinating wavy metal surfaces can today be augmented, through the use of modern projectors and audiovisual technologies, with the aesthetic connotations of choice[47] (thus also exemplifying the typically economic focus on temporary use and rent).

The container is then a perfect wrapper, but its format is subordinate to the infrastructure channeling it, while its use is dependent on both its standard-abiding practicality and the postmodern appeal of its rugged, low-cost aesthetics.

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43 Jameson, Fredric, *Postmodernism, or the Cultural Logic of Late Capitalism*, London: Verso, 2008. p. 37

44 Ibid. p. 99

45 Ibid. pp. 101-102

46 Ibid. p. 113

47 See a perfect example here: http://arkinetblog.wordpress.com/2010/02/22/co2-cube-a-tonne-of-change/

Jameson, in addition to using the wrapper, mentions a similar versatility when he talks about the "shell", later in the text[48], (reminding us of the text on urban simulacra quoted earlier in this chapter) and a similar hierarchization when he outlines a semiotic reading of architectural space (rooms = names, stairs = verbs, decoration = adjectives[49]). While this terminology can inspire the deconstruction of architectural language, it is not as useful in describing how an aesthetics/function is attached to space in this context. An XML-like reading of the dynamics by which a building or container are inserted into urban space is instead, in my opinion, more effective in highlighting the hierarchical relationship between architecture's format (external volume depending on zoning laws, housing allotment according to real-estate prices) and its augmentation through metadata (the same building/node can be an abandoned factory or an art venue depending on the level of gentrification of the area, or the social status of the neighborhood). Containers also represent today's real-time politics, are they are utilized as emergency housing resources (like after the Haiti earthquake[50]) and means of occupation (as in the Israeli settlement of Migron, in the West Bank, described by architect and critic Eyal Weizman[51]).

In spite of the terminology differences highlighted above, Jameson also uses a computer metaphor to describe how our appetite for photography affects the phenomenological experience of architecture:

"[I]t is as though that 'external reality' (…) is the last refuge and sanctuary of black and white (…): what we take for color in the outside real world is nothing but information on some inner computer program, retranslating the data and marking it with the appropriate hue, like the tinting of classical Hollywood movies.[52]"

To this, I would like to superimpose some words by Foucault:

48 Ibid. p. 116

49 Ibid. p. 105

50 http://www.inhabitat.com/2010/02/26/dominican-authorities-approve-of-container-cities-for-haiti-housing-relief/ (last viewed on August 15, 2010)

51 Weizman, Eyal, *Hollow Land. Israel's Architecture of Occupation*, London and New York: Verso, 2007. p. 2

52 Jameson, Fredric, *Postmodernism, or the Cultural Logic of Late Capitalism*, London: Verso, 2008. p. 99

"We do not live inside a void that could be colored with diverse shades of light, we live inside a set of relations that delineates sites which are irreducible to one another and absolutely not superimposable on one another[53]."

If the French philosopher gives us an infrastructural understanding of the parcellization of space, Jameson can help us fill it in with metadata. The “nostalgia for the present”, which he is often quoted on, fits Foucault's heterotopias, “most often linked to slices in time” and changing their function in accordance to the underlying culture/infrastructure. Hererotopias are “counter-sites, effectively enacted utopias where sites are represented, contested, inverted[54].” They are a site's margin of creative choice inside of infrastructure.
Of course contemporary cities are not only grids of completely homogeneous slots for heterotopias, but the globalized logic of urban evolution described by David Grahame Shane seems to suggest they tend towards a virtual surpassing of potential heterotopias over less modular and deeper-structured urban configurations.

5. Living by Metadata

The illusion of freedom provided by the heterotopias of contemporary cities fully abides by the principle that protocol has to standardize in order to liberate, and through the virtual infrastructure of global capital, zoning laws and local incentives, certain neighbors are labeled as "creative", while others - where the immigrants are deflected - become known as "ghettos". Given the growing importance of home locations - sometimes also in job opportunities[55] - such labels become effective metadata to the people who inhabit those areas.

53 Foucault, Michel. "Of Other Spaces," *Diacritics 16* (Spring 1986), 22-27.

54 Ibid. p. 3

55 http://www.povertyactionlab.org/sites/default/files/publications/3_Mullainathan_Market_Discrimination.pdf – see page 4 (last viewed on August 16, 2010)

As Foucault wrote, "the problem of siting or placement arises for mankind in terms of demography[56]", and if “space is still sacred”, choice – or assignment – of site is important to people, be they employers or employees.

In *The Informational City*, Castells analyzes the spatial conditions of place in the location of technology-related industries, trying to find patterns in their distributions. The election of a particular area to the status of a technology-fertile ground, and the resulting creation of social and professional milieus in the same area, seems to depend on certain infrastructural characteristics, making the location particularly fit for channeling global flows of investment capital and product transportation.

For example, certain social factors, like the absence of workers unions, were important in the development of Silicon Valley[57]. According to Castells, social control of labor is important to keep innovation going, and if work regulations are meaningful variables to location choice (something visible on a global scale in the well known phenomenon of sweatshops), real-estate and zoning laws are the infrastructural parameters shaping spatial polarization around different professional classes (for example, skilled and unskilled workers live in different neighborhoods with different statuses, harvesting different social milieus[58]). He writes:

"Spatial division of labor in these industries [information] also affects labor sub-markets and plant location within individual metropolitan areas. Real estate prices and residential segregation create spatially distinct labor markets and work sub-cultures, as shown by Saxenian and by Keller for Silicon Valley, and by Storper for the "ghetto-peasant worker" communities created in Oregon around decentralized electronics production facilities[59]."

When it comes to immaterial work instead – as in the software industry, for example – location choice can be the result of a preexisting social scene, a phenomenon much documented by Richard Florida, the author of *The Rise of the Creative Class*[60].

56 Foucault, Michel. "Of Other Spaces," *Diacritics 16* (Spring 1986), 22-27.

57 Castells, Manuel, *The Informational City: Information Technology, Economic Restructuring, and the Urban-regional Process,* Cambridge, Massachussetts: Basil Blackwell, 1991. p. 44

58 Ibid. p. 81

59 Ibid. p. 80

While Castells talks about a dual city[61], where the social gap between specific skilled workers and unskilled service workers is increasingly dividing the urban population, segregated in micro-societies[62] through the patterning of space and systematic gentrification, Florida has made himself the spokesman of a creative workforce whose main concern seems to be achieving to live in a place where sushi bars and art galleries are within walking distance. While Castells links the informal economy – and the drug trade - with the informational economy through the aforementioned urban divide[63], Florida suggests city councils looking for an economic boost to increase the bohemian and creative coefficient of their cities. The importance of local governments in creating place status is something both theorists seem to agree on. Other studies highlight developmental rhetorics (or "economic imaginaries[64]") like the Knowledge-Based Economy or the Creative Industries as a key factor in urban growth.

Bas van Heur warns that these meta-narratives - the use of this term suggests the return to a post-postmodernist ideology, opposed to Jean-François Lyotard's postmodern incredulity towards them[65] - have to approached cautiously, since the institutional specificities behind them are impossible to capture with one type of regulation only[66].

Pasquinelli goes further, and writes that Richard Florida's creative class is a simulacrum produced by the cognitariat and attached to a territory to be exploited by the upper class through rent[67]. The chimera of creative cities is "a biopolitical machine, where culture is a

60 Florida, Richard. *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*. New York: Basic Books, 2002.

61 Castells, Manuel, *The Informational City*, Cambridge: Blackwell, 1991. p. 214

62 Ibid. p. 226

63 Ibid. p. 214

64 van Heur, Bas, *Creative Networks and the City. Towards a Cultural Political Economy of Aesthetic Production*, Bielefeld: Transcript, 2010. p. 14-15

65 Lyotard, Jean-François, *The Postmodern Condition: A Report on Knowledge*, Minneapolis: University of Minnesota Press, 1984. p. 1

66 van Heur, Bas, *Creative Networks and the City. Towards a Cultural Political Economy of Aesthetic Production*, Bielefeld: Transcript, 2010. p. 72

67 Pasquinelli, Matteo. *Animal Spirits: A Bestiary of the Commons*. Rotterdam: NAi Publishers / Institute of Network Cultures, 2008. p. 120

flow like any other and the collective production of imagery is hijacked to increase private profits[68].” The Italian writer also refers to David Harvey's “collective symbolic capital[69]”, harvested in order to extract monopoly rent, either from pre-existing subcultural scenes and historically constituted cultural artifacts and practices (like in Barcelona and Berlin), or artificially fabricated (like in Amsterdam)[70].

As an economic trend, Van Heur describes the creative industries as “a service industry, one in which state investment in “high culture” shifts to a form of welfarism for property developers.[71]” He is also very skeptical about many of the stereotypical qualities commonly associated with the knowledge-based economy in official literature, like their definition of creativity[72], the supposed incentive to social inclusion[73], or the economic reliability and inevitability[74] of such restructuring process.

With the excuse of growth, social issues arise: from the “endocolonization[75]” of downtowns, evicted from the poor and reclaimed by the middle-class, to the exploitation of housing rents in subculturally-appealing areas (“The price of our house rent is rising because we produce the value of the district we live in[76]”).

Creative districts are marketed as more ethnically diverse than they actually are[77], and, while the infrastructural investment in private enterprise for their development is state-financed[78],

68 Ibid. p. 127

69 Ibid. p. 119

70 Ibid. p. 131-133

71 van Heur, Bas, *Creative Networks and the City. Towards a Cultural Political Economy of Aesthetic Production*, Bielefeld: Transcript, 2010. p. 101

72 Ibid. p. 135-137

73 Ibid. p. 100

74 Ibid. p. 130-131

75 Pasquinelli, Matteo. *Animal Spirits: A Bestiary of the Commons*. Rotterdam: NAi Publishers / Institute of Network Cultures, 2008. p. 128

76 Ibid. p. 146-147

77 van Heur, Bas, *Creative Networks and the City. Towards a Cultural Political Economy of Aesthetic Production*, Bielefeld: Transcript, 2010. p. 142-144

78 Ibid. p. 100

the overly-competitive market forces the people who actually work there in precarious and low-paying conditions[79]. Van Heur also connects the Thatcherian restructuring of London for urban growth to the emergence of CCTV surveillance technologies[80].

District promotion policies are also strategically selective[81], and for public authorities the promotion of a particular area or city is more important than the development of other cities[82] and even the rights of residents[83].

As discussed above, the patterning and spacing of the urban territory by governments, via "urban textures[84]" and specific metadata (both top-down constructed labels and bottom-up collective symbolic capital), follows a recursive logic, actualizing specific infrastructures into relative interfaces which, if successful, can become global formulas[85]. The recursion process also distributes metadata on local entities (companies, organizations, people), tracing patterns in their clustering[86.] Distribution emerges as a means to control flows, which is encouraged and seconded along the lines of today's real-time economy and global competition[87].

If work is one of the parameters by which areas are profiled, it is definitely not the only one. Globalization has not limited itself to extending the markets, but it has created multi-ethnical metropolises where different groups give form to ethnicity-based environments. These environments are not necessarily culturally integrated with the surrounding neighborhoods, and they are mythically connected to their "tales from the homeland[88]",

79 Ibid. p. 172-175

80 Ibid. p. 90-91

81 Ibid. p. 126

82 Ibid. p. 92-93

83 Ibid. p. 141-142

84 Ibid. p. 124-125

85 Ibid. p. 145

86 Ibid. p. 110-112, 116-117

87 Ibid. p. 132

88 Ibid. p. 227

something American anthropologist Arjun Appadurai defined “diasporic public spheres” and “communities of sentiment”.

If such communities constitute global narrations, personal histories of melting pot success, and worldwide family connections, they can sometimes be antagonistic to one another. Infamous terrorist movements like Al Qaeda have shown how the informational, globalized infrastructure can also channel dangerous flows. This is one more reason why its protocological control is so pervasive, as we can experience ourselves every time we have to board on a plane. As Scott McQuire writes in his essay in *The Urban Screen Reader*, "surveillance society emerges in the nexus of demands for economic and administrative flexibility", where “people trade privacy with functionality”[89].

In *Protocol*, Galloway explains how, according to Foucault, biopower is the power to interpret material objects as information, and how, as stated by Deleuze, individuals are "dividuated", sampled, and coded[90]. In the information age, then, demographics and statistics become more important than real names and identities[91], and it is no surprise to learn that Google, with its huge statistical power, is interested in genetic and biometrics (the founder of 23andme.com, a site offering custom gene decoding to its clients, is married to one of the the company's bigwigs[92]).

If protocol becomes "a controlling force in social life[93]", distributed social networks (protocol's native landscapes) are still composed by "self-deterministic intelligent end-point systems[94]", which in theory can play with their own metadata and connections. In practice this might be more or less effective, since DNA itself is a medium determining some of our metadata and not many, apart from Google, have that type of control on statistics. Plus,

89 McQuire, Scott, et al. (edited by), *Urban Screens Reader*, Amsterdam: Institute of Network Culture, 2008. p. 55-56

90 Galloway, Alexander, *Protocol. How control exists after decentralization*, Cambridge: Massachussetts Institute for Technology, 2004. p. 12

91 Ibid. p. 69

92 http://techcrunch.com/2007/05/22/google-takes-stake-in-sergeys-wifes-company/ (last checked August 13, 2010)

93 Ibid. p. 111

94 Ibid. p. 11

collaborative filtering devices[95] like Facebook are too seducing a temptation to hold back from the interface, and they determine and affect identity at the same time. The protocols shaping metadata inject a synchronic logic into a social relation, allowing a channelled self-expression.

6. What is Really Metadata?

Dynamics, Format, and Parasitical Infrastructure

To give a perfect idea of what I mean by metadata, I will discuss Fulvio Carmagnola's *Il consumo delle immagini*[96] ("The consumption of images"), a very compelling investigation of "aesthetics and symbolic goods in the fiction economy". The book includes an overview of all the major theorists dealing with the disruption of the traditional symbolic order that contemporary times have put in a dramatic crisis (from Appadurai to Baudrillard and Žižek). A key passage sees Carmagnola describe the "becoming opaque of the symbolic" and the "passage into the economic[97]", that is the imagery economy, in the chapter dedicated to imaginary symbols. One of the symbols Carmagnola mentions is the Che Guevara portrait, something that (even though the author doesn't phrase it this way) has now shifted from a memento of historical battles and ideologies to an implicit reference to certain urban lifestyles. According to Carmagnola, what people call postmodernism is a determining factor in such change in symbolic communication: the same symbols have now different meanings depending on context. Metadata are imaginary symbols in the sense that they belong to a shared collective imagery, where each symbol does not have a descriptive value, but an autonomous potential of association loosely bound inside of a certain range, but varying on context.

In many ways, metadata is opposed to metaphysics like postmodernism is opposed to modernism. It is indeed embedded in and implied by something existing on a separate

95 Ibid. pp. 114-115

96 Carmagnola, Fulvio, *Il consumo delle immagini. Estetica e beni simbolici nella fiction economy*, Milano: Bruno Mondadori, 2006. (Translation of following quotations is mine)

97 Carmagnola, Fulvio, *Il consumo delle immagini. Estetica e beni simbolici nella fiction economy*, Milano: Bruno Mondadori, 2006. p. 26

(physical) level, but the rhetoric by which it connects to the subjects and actors – in one word, the citizens – of our global informational societies can be both iconic and narrative. It does not represent a direct correspondence between a significant and a signifier, but it is more like units of imaginary, similar to the simulacra French philosopher Jean Baudrillard wrote about in his famous text *Simulacra and Simulations*[98].

At the same time, there are certain properties that cannot be framed in the modern-versus-postmodern debate, especially structural and social qualities that regulate its creation and distribution. Metadata can be used instrumentally and accumulated asymmetrically, thus carrying ideological and political implications in its very format – unlike the anti-utopian and strictly contextual postmodern image. Since metadata is channelled through global flows, carried by both the media and the people using them, it is as effective as it is discrete and spread: clean-cut metadata can spread faster, and spread out metadata becomes an accepted standard – for this reason it is crucial that the imagery be shared, and that data keep flowing. Also, the possibility for metadata to be creatively and instrumentally used within the ideological space of its circulation makes it a potentially double-edged weapon.

While, nowadays, the only way we can get in contact with each other is through conceptualization[99], the clichè (the violence of representation, according to Deleuze[100]) inscribes itself on the flesh, through the convergence of media and desire in the collective imaginary[101]. Along with the schizophrenia, famously praised by the French philosopher, depression appears as a collateral damage, as pointed out by Franco "Bifo" Berardi[102]. At the same time, though, the Italian activist also sees a creative potential in those images: "What is interesting about the image is its ability to select among infinite possible perceptual experiences, so that imagination becomes imagin/action."[103] The image can be "a narrative

98 Baudrillard, Jean. "Simulacra and Simulations". *Jean Baudrillard, Selected Writings*. Ed. Mark Poster. Stanford: Stanford University Press, 1988, 166-184.

99 Pasquinelli, Matteo. *Animal Spirits: A Bestiary of the Commons*. Rotterdam: NAi Publishers / Institute of Network Cultures, 2008. p. 166

100 Ibid. p. 174

101 Ibid. p. 192

102 Ibid. p. 203

103 Berardi, Franco, *The Image Dispositif*, p. 1 (originally part of a text published on rekombinant.org, now unretrievable on the site)

dispositif, a stratum of consciousness able to modify the projection of the body in space." It can provoke "effects in consciousness" and predispose it to "produce effects in the world"[104]. However, not all images have the same potential, in the same contexts.

I will now discuss the folksonomical nature of metadata, one of its most essential properties - and one that justifies my use of this Internet metaphor, commonly appearing in online spheres as "tags".

As the reader probably knows, tags are textual attributes used on online platforms to organize content. One of the most typical features of Web 2.0, they are usually organized by popularity (number of items to which a certain tag is attached), but also by formatting rules. For example, depending on the platform on which they are shared, the New York tag might be formatted as "New York", "new york", "newyork", and so on (without mentioning separation standards like commas etc.). While tags are characterized by creative textual freedom (as opposed by the more rigid categories[105]), in order to share content with the most people, a user should format his or her tags in accordance with the most popular formula. The aforementioned system of classification I just outlined is commonly referred to on the Internet as "folksonomy", a term coined by information architect Thomas Vander Wal and connecting the notion of popularity ("folk") with organization ("taxonomy")[106].

Like tags are user-generated so is imaginary metadata, as it emerges from a collective pool of shared images. Like tags are social, and cluster around popular formats on specific platforms, so metadata is built on the intersections of common desires and imagination, following specific aesthetic standards depending on the media that channel it. To make a very practical example, sharing a phone picture of New York on the Internet has a different potential than doing it on TV, where the same idea of New York will be best channeled by a more generalist format, like a short documentary. Choosing the wrong level of technology, or investing in the wrong format, can make a potentially powerful image dispositif just another moment in the endless flow of daily information we encounter.

104 Ibidem.

105 http://en.support.wordpress.com/posts/categories-vs-tags/ (last viewed on August 15, 2010)

106 http://en.wikipedia.org/wiki/Folksonomy (last viewed on August 15, 2010) – I hope the reader will not mind the use of a Wikipedia quote for this particular term.

However, the asymmetrical nature of metadata is the result of many other factors.
Matteo Pasquinelli refers to economist Enzo Rullani to explain the value of knowledge, depending on interpretive, multiplicative, and institutional mediators[107]. With Lovink and Rossiter, he also points out that networks thrive on diversity and conflict, not unity[108], and focuses on competition[109] and imitation as key factors in determining the asymmetrical and parasitical nature of value exchange. If, according to Paolo Virno, the cognitive product needs to have a political attitude[110], by quoting Maurizio Lazzarato's reading of Gabriel Tarde, Pasquinelli highlights that an invention that is not imitated is not socially existent[111].
Another reading of Tarde, this time by French sociologist and Actor-Network-Theory pioneer Bruno Latour, points out how the innovations, the "quanta of change[112]" he is dealing with, have a life of their own:

"This is why any social production having some marked characteristics, be it an industrial good, a verse, a formula, a political idea which has appeared one day somewhere in the corner of a brain, dreams like Alexander of conquering the world, tries to multiply itself by thousands and millions of copies in every place where there exists human beings and will never stop except if it is kept in check by some rival production as ambitious as itself." (Tarde 1895/1999: 96)

If "folksonomy" is a useful term coming from the digital environment, it is not the only term that can be associated to the organization and definition of metadata. Another expression, interesting in this context because of its subtle differences with the concept of folksonomy, is "flat ontology."[113]

107 Pasquinelli, Matteo. *Animal Spirits: A Bestiary of the Commons*. Rotterdam: NAi Publishers / Institute of Network Cultures, 2008. p. 97

108 Ibid. p. 101

109 Ibid. p. 110

110 Ibid. p. 114

111 Ibid. p. 112

112 Latour, Bruno, *Reassembling the Social: An Introduction to Actor-Network-Theory*, Oxford and New York; Oxford University Press, 2005. p. 15

113 Marston, Sallie A., et al., *Human Geography Withour Scale*, Tucson, AZ: Department of Geography and Regional Development, University of Arizona, 2005. p. 7

Such an ontology, according to human geographer Sallie A. Marston et al., "discards the centring essentialism that infuses not only the up-down vertical imaginary, but also the radiating (out from here) spatiality of horizontality." It consists in "self-organizing systems where dynamic properties of matter produce complex relations and singularities that sometimes lead to the creation of new, unique events and entities, but more often to relatively redundant orders and practices."[114]

Such definition includes many of the properties of a folksonomy, but there is a subtle difference: the relationship of metadata with interface.

In the online context, formatting is constrained by protocological boundaries making the platform ultimately responsible for sharing performance and metadata diffusion (for example, the relevance given to tags by temporal criteria). On the other hand, in the context of the globalized world, informal practices that escape the limits of interface are more common, as imitation of nearby localities is easier than looking-up to globally established categories[115].

As pointed out by David Harvey, there is a

"[...] more complicated relationship across scales in which local initiatives can percolate upwards to a global scale and vice versa at the same time as processes within a particular definition of scale —- interurban and interregional competition being the most obvious examples – can rework the local/regional configurations of what globalization is about."[116]

Going back to the authors of *Human Geography Without Scale*, they quote JK Gibson-Graham's exhortation to "think not about how the world is subjected to globalization (and the global capitalist economy) but how we are subjected to the discourses of globalization and the identities (and narratives) it dictates to us." In their words, Gibson-Graham's concept of "resubjectivation" aims at recovering the local as the site of significant practices that have the potential to upset the "capitalocentric discourse of globalization."[117]

114 Ibidem.

115 Ibid. p. 6

116 Harvey, David, *The Art of Rent: Globalization, Monopoly and the Commodification of Culture* (retrieved at http://www.16beavergroup.org/mtarchive/archives/001966.php)

In the way they seduce us into pre-formatted narratives and identities, the discourses of globalization are more dangerous than globalization itself. Like the Internet exemplifies, the aesthetics of interface are very appealing, and this is the reason why metadata shapes identity in a folksonomical way, more often than according to a flat ontology. Such an interface gives the vertical element that separates a flat ontology (more imitation-ridden) from folksonomy (also interface-inspired).

The ambiguous nature of metadata is hopefully quite clear by now. On one hand, choosing the labels to attach to oneself is a creative act of choice, while on the other it strongly depends on the interface filtering the collective imagery, which is not equally accessible and enables strongly bound choices.

According to Arjun Appadurai, individuals are "sites of agency", "globally defined fields of possibilities"[118], whose imagination is at the center of their consumption/work[119]. The anthropologist points out how fetishism for goods has been replaced by fetishism for production and for the consumer, whose specific and disciplined consumption is a social practice just like their imagination[120]. Individuals consume symbols, but they are selectors rather than actors[121]. When it comes to identity their choices are just as bound as they are with goods.

Metadata hides a trap for everybody. If the urge for a more detailed and personal self can be a positive drive in the pursuit of goals, the hybrid parcelled-out folksonomy offered by metadata is firstly a compromise, and secondly an illusion of choice, masking the rather limited interface underneath.

From European bloggers to Central American gang members, we all give in to desire and imagination. We shape a projection of who or what we want to be, choosing from images floating in a collective imagery, and proceed to adhere to it as much as possible. For some,

117 Marston, Sallie A., et al., *Human Geography Withour Scale*, Tucson, AZ: Department of Geography and Regional Development, University of Arizona, 2005. p. 12

118 Appadurai, Arjun. *Modernity at Large. Cultural Dimensions of Globalization*. Minneapolis: University of Minnesota Press, 2000. p. 31

119 Ibid. 41

120 Ibid. 54

121 Ibid. 13

choice is both the greatest freedom and the most pressing duty. The creative class praised by Third Wave theorists like Alvin Toffler[122] and urban advisors like Richard Florida[123] fractalises in niche markets and sub-subcultures, making a living (often barely) off ultra-targeted information. On the other hand, immigrants balkanize in gang-ridden slums, physically deterritorialized and also deterritorializing their imagined identity on a globalized recording surface. Everyone, though, is caught between the endless flow of desire - with its intensities of love, fear, exstasis, and panic – and that of metadata – with its logic of parcellization, imitation, and compromise.

Taking into account that metadata is created, exchanged, attached, distributed in an economic regime of imaginary symbols, ultimately crystallizing the identities of its very desiring-creators into a stratum of alienation, what is the role infrastructure plays in this process? Is it a role of mere mediation, or are there political or corporate macro-interests at stake?

To answer this question I will refer to Matteo Pasquinelli's *Animal Spirits*.

Using a materialistic approach to analyze both digital culture and the theoretical, social, and urban contexts which it refers to, Pasquinelli creates a bestiary of the commons in order to achieve a nondialectical understanding of the dark side of the multitude, of its animal spirits. One of the main points the Italian scholar makes is the asymmetrical nature of exchange (which is, has I have explained before, also in the nature of any recursive process and flat ontology). It is interesting to report some of his observation on exchange, relying on Michel Serres' *The Parasite*. According to Serres, and Pasquinelli, exchange is always a ternary diagram rather than binary, with a parasite generating an asymmetry between the two ends. Abuse-value precedes both use-value and exchange-value, and for this reason exploitation of surplus is a counterpart to the endless production of desire. Society itself is then inscribed within an implicit civil war of parasites[124]. To use Galloway's term, we can also say that the parasite, being a sort of tax on exchange – it obtains energy and pays for it in information [125] -

122 http://en.wikipedia.org/wiki/Alvin_Toffler (last viewed on August 15, 2010)

123 http://www.creativeclass.com/ (last viewed on August 15, 2010)

124 Pasquinelli, Matteo, *Animal Spirits. A Bestiary of the Commons*, Rotterdam: NAi Publishers, 2008. p. 59

125 Ibid. p. 61

is protocological. In fact, it is a “technical and neutral concept without political connotation” which can also produce life, and, for this reason, it can be advisable to stipulate an alliance with it[126].

In particular, Pasquinelli focuses on the immaterial parasite, which is the symbiosis between immaterial labour and digital networks. The space of flows, the creative economy, and the cognitive circulation of imaginary symbols and metadata are then parasites themselves, as the “network infrastructure is itself portrayed as a vampiric tentacular creature[127].”

The immaterial parasite “initially functions as a spectacular device”. It does so by “simulating a fictional world” (as Baudrillard describes it), “building a collaborative environment” (for example the internet), or simply “providing communication channels” (like the space of flows)[128]. It is “an assemblage of semiotic, technological, and biological strata that extracts an energy surplus (in the form of labour as well as money or libidinal investment)” which functions through the material and technologic infrastructure by applying a “monopolistic rent” on it[129].

As I have discussed in these last pages of the first part, the desiring-production of global citizens generates exchangeable metadata that is channeled by the infrastructure, itself actualized and prospering through it, while the circulation of metadata creates alienation and schizophrenia. But while flow is unstoppable and impersonal, choice is personal and not granted or free.

In the second part of this thesis I will explore metadata with the help of more specific examples and through the analysis of the four figures mentioned in the introduction (Nerd, Hipster, Comedian, and Gangster) and the respective types of metadata (structural, textural, body, and scale) they embody.

126 Ibid. p. 60

127 Ibid. p. 62

128 Ibid. p. 65

129 Ibid. pp. 66-67