

On Brains and Urbanism

Reflections on Space, Neurons and Cities Inspired by the Projects "Ways of Neuron"* and "2 Cycles"**

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*"Steven Johnson coined the somewhat more precise term "interface culture". The latter term is of particular interest because the world always shows itself through the interface. The interface is a semantic generating surface (in an abstract sense) of a medium."*¹

Hans H. Diebner.

On Brains

There is a common expression that addresses the delicate distribution of the different cortices, areas and cells on the brain as "Architecture". Keeping in mind the enormous complexity, diversity and richness of the brain structure I prefer to use the metaphor of "Urbanism" to achieve a better understanding of the brain structure. Since the last decades of the XIX century with the rise of Phrenology and the production of images associated with that predecessor of Neurosciences, it is possible to find some formal coincidences between the division of specific areas of the head with the city map and its divisions.

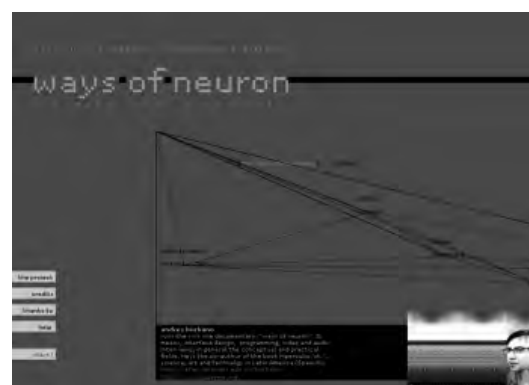
When I had the opportunity to do interviews with prestigious specialists and researchers about Neurosciences for the project "Ways of Neuron" — a prototype for an on line scientific documentary — I used to try to visualize in my mind the structure of the brain. In almost every case I got mental representations of systems which could be compared with the traffic of a large city, the electrical power distribution in a metropolis or the water systems of the Inca Empire. That was a useful way for me to imagine the large and complex series of connections on the brain (complex understood as the opposite of isolated not as the opposite of simple).

Later on, I discovered Steven Johnson's book "Emergence: The connected lives of ants, brains, cities and software".² Johnson had studied in detail the hidden connections of the evolution of these biological and cultural productions, finding the complexity as the crucial concept for the understanding of these diverse

phenomena. Emergence that is a property of complex systems and it is the key point of the aforementioned book.

In my opinion there are connections between the structure of the brain and the macro structures of a city. However more than formal coincidences, there are interesting similarities in the nature of processes that characterize both of them. For instance in brains and in cities some places have well defined borders and there are well known functions associated to these regions. Nevertheless there are also another processes that seems to be mysterious. Although cities as brains have regions which vibrate synchronically and this does not appear to respond to an obvious connection. It is possible to realize then that in these rich and complex systems everything is somehow interconnected and the vibrations and rhythm of every single neuron, or person could reflect and transform other remote spaces.

Ways of Neuron - 2004



"Ways of Neuron" — an online scientific documentary — 2004/2008

"Ways of Neuron" is an on-line scientific and experimental documentary about the impact of Neuroscience research in the comprehension of the mind's nature. A critical aspect of the project is, from an aesthetic point of view, the coherent relationship between data processing and content access.

The documentary is informative while using professional and respectful sources of research and information in order to provide the necessary depth of content bound to these scientific fields; it is based on three types of materials: interviews with specialists, interactive experiences and audiovisual material. The project covers twelve general conceptual axes: Brain, Cognition, Consciousness, Emotion, Evolution, Imaging, Language, Memory, Mind, Neural Networks, Neuron, Perception.

“Ways of Neuron” was made with the special collaboration and support of PhD. Hans H. Diebner in the Basic Research Laboratory at the ZKM, Karlsruhe, Germany.

2 Cycles — 2008

“2 Cycles” is a *performative* project that works on — at least — to bicycles in motion, every bicycle has a laptop computer. “2 Cycles” explores physical motion, mobile Wi Fi network behavior, MAX/MSP and PD software, UDP and Open Sound Control messages and audio synthesis. The laptops also have Wiring I/O boards used to read input data from potentiometers to add some real time gesture to the performance. The stream of data shared between the laptops is sonified and amplified in real time. As soon as the data stream goes from one laptop to the other it is translated into noise music that certainly get the attention of pedestrians and another cyclists starting processes of human interaction.

Nowadays with the idea to integrate more elements and expand the project possibilities I decide to include, among other things, a GPS to track geo-spacial information of the bicycles motion. Therefore it is possible to trace trajectories, drifts, movements. In this new step “2 Cycles” project is exploring different levels of the cities, doing wardriving for instance, visualizing the shapes of Wi Fi networks around specific urban places.

The data collected with the input of “2 Cycles” is also processed in different ways later on; however the most important thing of the project is the mutual interconnection between the two bicycles that have completely independent movement, but despite that condition and the fact that they can be separated even more than 50 meters, they are still sending and receiving messages between them as if they were two neurons creating synapses exploring the complexity of the urban space.

This project is currently developed at the University of California Santa Barbara and it is based on the Berebere*** project by Gabriel Zea, Camilo Martínez and Alejandro Duque.

Conclusion

Having the first ideas on the one hand and on the other hand the two projects, I started to think seriously in a problem. If one could point out possible parallels and similarities between the structure, connections and functions of neurons and citizens, there should also be a way to think about the outcome of the interaction of these interactions.

In other words, the most important aspect of the brain is not its structure, it is what it produces: the mind, the consciousness. There is an important lesson here to be learned, the most important thing of a city are not its divisions, its buildings, its neighborhoods or its traffic, the most important and mysterious thing of a city is what it produces. It is not easy to find a word, but I guess what a city produces is an Ecology, to put it in a more accurate way, what the interaction of structures, relationships and processes generate in a city is an Artificial Ecology.

One of the most challenging compromises for media arts, activism, design, urban planning and architecture, is to create tools that can help us to destroy-construct a new relationship with such Artificial Ecosystems, to be practitioners of a new urbanism understood as the “the lifestyle of city dwellers”.³

Notes

The seed of this text was written for the Beijing Architectural Biennial 2006 catalog. The adjunct curator of the Biennial, Mr. Lucca Zordan, commissioned it. Mr. Zordan was searching for particular projects and texts that could be useful for understanding of the dynamics of contemporary cities even if they don't come from the architectural field.

* Ways of Neuron: <http://burbane.org/neurona>

** 2 Cycles: http://www.burbane.org/html/mat_200B_02/

*** Berebere: <http://berebere.info>

- 1 Diebner, Hans H. 2006. *Performative Sciences and Beyond*. Wien.
- 2 Johnson, Steven. 2001. *Emergence: The connected lives of ants, brains, cities and software*. New York.
- 3 Apple Computer Inc. *Oxford America English Dictionary*. Entry for “Urbanism”.