ANFA NYC : A Model for Collaborative Neuroarchitecture

Luke Petrocelli, M.Arch
LSPetrocelli@gmail.com

I. EXTENDED ABSTRACT

abstract: Developed as a University of Maryland Masters of Architecture thesis between September 2015 and May 2016, "ANFA NYC: A Model for Collaborative Neuroarchitecture" is a design and research proposal focused on cultivating new means for the collaboration between neuroscience and architecture to occur. The proposal explores and puts forth solutions and methods in two predominant categories: those of the built (architectural) and those of the unbuilt (informational).

built: The hypothetically built portion of the proposal, located on Roosevelt Island in New York City, defines a small complex of three structures designed as a place where architects and neuroscientists can work side by side. These structures include a Neuroarchitecture "incubator" building with shared access to integral neuroimaging facilities, an adjacent private study tower, and the repurposed ruin of a 19th Century Smallpox Hospital. While providing a means for direct interaction between neuroscientists, architects, and the public, each structure applies principles of Neuroarchitecture in its design. Collectively, they generate a rich variety of environments through which Neuroarchitects can conduct research on site. Principles woven into the design of each structure include recent research in Neurogenesis, Chronobiology, Wayfinding, and Empathy, and a new synthesized concept titled "Relation".

unbuilt: The unbuilt portion of the proposal explores three methods concerning the application of Lidar technology to Neuroarchitectural practice. Predominantly used for archaeological and forensics purposes, Lidar instrumentation allows for the rapid collection of data pertaining to an environment's space, materiality, and color. This proposal not only deploys Lidar as a graphic means, but explores the varying implications and data analysis methods for its use in Neuroarchitecture. Results concluded by these methods find the instrument's data to be especially beneficial in the rapid creation of immersive virtual environments used in CAVE systems, an innovation to which is explored in the proposal. More importantly, the study suggests that these spatial analysis methods may allow the development of a more direct working language between neuroscientists and architects: that of data.

In concluding, it becomes evident that a stronger collaboration between neuroscience and architecture can and should be reached in a variety of both built and unbuilt and ways. The results, however simplified, however intuitively obvious, may help achieve a profession, society, and legislation that more effectively understands, simply put, how we should build.

2. REFERENCES

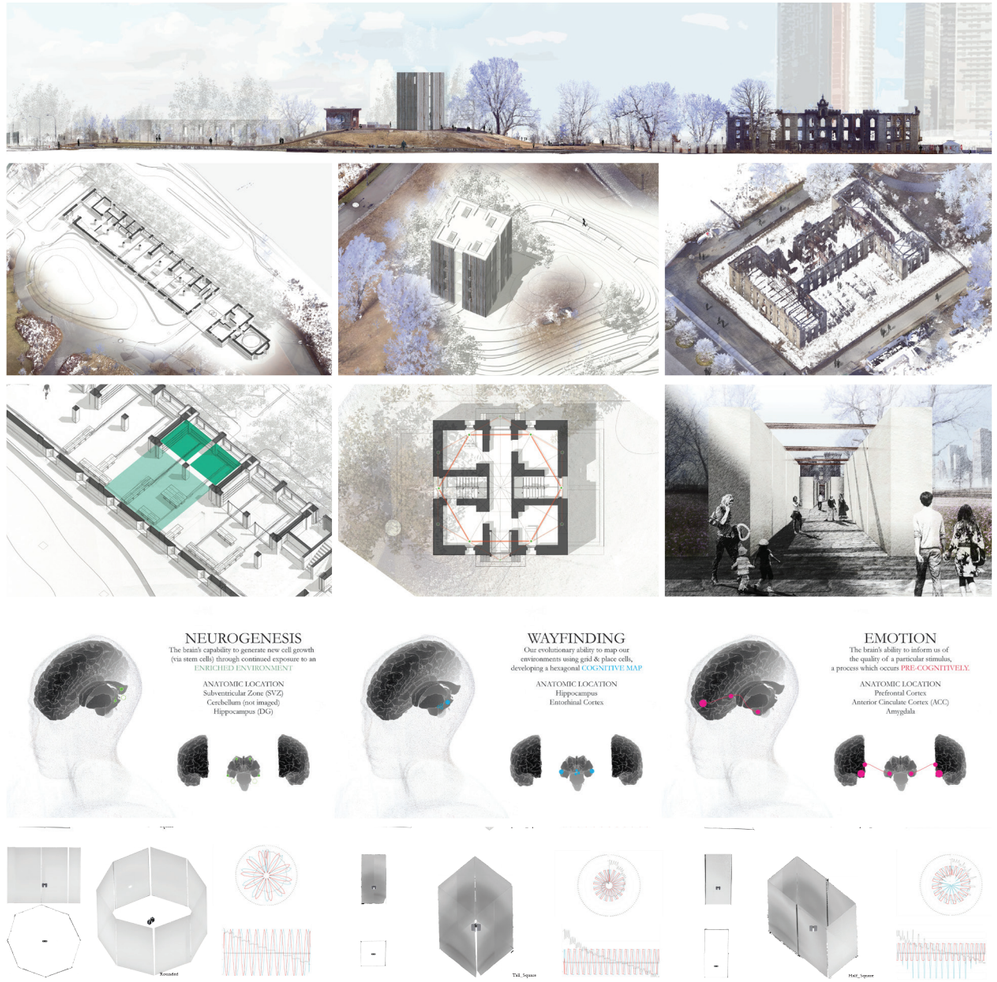
John P. Eberhard, Brain Landscape: the coexistence of neuroscience and architecture (New York: Oxford University Press, 2009).

Fred H. Gage, "Neurogenesis in the Adult Brain" in The Journal of Neuroscience, February 2002 (La Jolla, California: The Salk Institute Laboratory of Genetics, 2002).

Rose Macaulay, Pleasure of Ruins (London: Thames and Hudson, 1964).

Harry Francis Mallgrave, Architecture and Embodiment: The Implications of the New Sciences and Humanities for Design. (London: Routledge, 2013).

Juhani Pallasmaa, Towards a Neuroscience of Architecture. (Finland: Tapio Wirkkala-Rut Bryk Foundation, Oy Nord Print Ab, 2013).



From top to bottom (left to right): North-south section through intervention site, axonemetric Lidar composite renderings of Neuroarchitecture Incubator building, Study Tower, and Smallpox Hospital, supplemental views of each structure, informational diagrams of neuroscience principles applied to each structure, and sampling of Lidar spatial tests and spatial data analyses