The Artist Residency in the 21st Century: Experiments in Cultural Potentiality and Contamination.

By Warren Neidich

Figure 1. Cover of Lost Between the Extenisity-Intensivity Exchange.

Introduction:

In the publication *Lost Between the Extensivity-Intensivity Exchange* published in 2008 by Onomatopee I brought forth the notion, through diagramatic and textual displays, that the inauguration of the 21st century could be described as a time of cultural torpor resulting from free floating anxiety, ambivalence, and wavering. The causes for this condition were many, but two stood out. First and foremost was the condition, suggested by the title, that of being lost in the 'in-between zone' of extensive and intensive labor and two evolving partially incommensurable world views, the local (tribal) and global (cosmopolitan) or the nation-state and the Earthling, merged. Superimposed upon this unstable frame of reference was, and still is, the disparity in epistemology encountered by the subject in the urban designed space of the city and its rural counterpart, although this difference is being quickly eroded away with the advent of fast connection internet and cheap hand-held browsing devices. Could the gridlock in the American Congress and David Cameron's recent veto against the European Community be a result of this ensuing torpor, representing a clash between those of us who want to embrace a world view and those of us who want to recede into smaller more homogenous communities characteristic of the past? The question then needs to be reframed as: is this appropriate in today's world that requires solutions to global issues like global warming, workers' rights, and international terrorism? How, on one hand do we preserve local cultures and practices from global homogenization, while at the same time giving people all over the world the benefits of a global society like antibiotics, education for woman, and better sanitation – just to name a few. How do we soothe the needs of those who require familiarity and constancy with the requirements of those who want to move forward into cosmopolitanism or the idea of the 'world citizen'?

Warren Neidich, Respekt, London, 100x 50 cm, Type C-print, 2005, (From: Earthling Series, 2004-2007)

It is to these conditions that I would like to direct this essay in the hope of finding a way out of this languor by creating a more productive rhetoric, a trans-thinking vocabulary that does not heed the restrictions of a language rooted either in the humanities or the sciences but a mixture of the two. By trans-thinking I want to address a state of mind that is free floating and unencumbered by contrived barriers constructed in thought itself. As will be argued shortly, we are moving out of a condition of strict neo-liberalism; a 'cognitive turn' has taken place. Ideas around the brain and mind are playing more and more of a role in investment strategy and political policy. Anyone regularly reading the *New York Times* will be impressed by the frequency and range of articles concerning mind and brain recently published. In the month of December alone, eleven articles have been published. These articles have ranged from advice on how exercise benefits the brain, to a critique of the limits of neuroscience when researching works of

art to a bevy of articles concerning traumatic injuries to the head in ice hockey and soccer. With the advent of the Internet and the explosion of images created by new media, issues of attention have also become more and more important and with it, maladies like Attention Deficit Disorder (ADD) due to the lack of the ability to focus. In our attention economy, in order to be an adequate consumer, you need your skills of attention to be at their peak. Lack of or easily disrupted attention in the 21st century is a disability that needs to be treated, and the pharmaceutical companies have been all too happy to invent a pharmaceutical menagerie to do so. ADD as well as Depression, according to Franco Berardi, are part and parcel of a whole host of disabilities particular to our time. (1) "The other side of the new economy is naturally the use of psycho-stimulant or anti-depressive substances…How many, among new economy operators, survive without Prozac, Zoloft or even cocaine…When economic competition is the dominant psychological imperative of the social consortium, we can be positive that the condition for mass depression will be produced. This is in fact happening under our eyes." (2) It is here upon this playing field that a new ethics must be formed and refusing a lexicon of humanism or science just won't do. Furthermore, the idea of free market unencumbered by political restrictions and decisions is an idea that has no merit today, for cognitive capitalism is focused on the new territory of the mind and brain, specifically its decision-making processes which skews any reference to free choice which neo-liberalism requires. Consumer neuroscience itself is a wild card in the hand of neo-liberalism. (3)These issues would seem to be a far cry from any discussion of artist residencies. But artist residency programs are, in fact, the perfect site in which to explore a variety of arguments concerning notions of tribalism vs. cosmopolitanism; extensive and intensive labor; the representation of the other in a world of mass immigration and transnationalism; and free choice in neo-liberalism. By their very nature artist residency programs are forms of temporary settlements in a worldwide nomadic movement of peoples and ideas, and as a result, they embody notions of cultural contamination and semiocapitalism. 'The rise of post-Fordist modes of production, which I will call Semiocapitalism, takes the mind, language and creativity as its primary tools for the production of value.' (4) Just as Gilles Deleuze had to create a different language to redefine Michel Foucault's ideas of 'the disciplinary society' with his term the 'society of control', today we need to redefine

other concepts, such as the artist-in-residence, to make them relevant in contemporary discourse. (5)

Warren Neidich, Respekt, London, 100x 50 cm, Type C-print, 2005, (From: Earthling Series, 2004-2007)

Each epoch, driven by novel sets of immaterial social, political, psychological, and spiritual relations, must devise new linguistic modifications to capture the essences of these mutated cultural environments, so too must we understand that the artist-in-residence operates in a very different discursive field today than it did, say, in the late 19th century and early 20th century when patrons of the arts created the Corporation of Yaddo. In our moment of a network transnational society, other cultures with other languages and other ideas become essential to the production of a complex point-of-view that has the potential to produce complex brains. I want to show how the artist-in-residence might play a role in this, first by concentrating the cultural capital of the other and secondly by activating this 'otherness' with the marginal and dissociative apparatuses of aesthetic production. I want to invoke it as a place where the power of art might flex its muscle.

The essay is divided up into a number of sections. Section 1, entitled *The building without a program or how the physical condition of the space of the residency might be mutated*, sketches out the potential of the residency as a cultural modifier acting to release its innate plasticity, potentiality in reserve. Utilizing the idea invented by Deleuze of the 'body without organs' as a metaphor, the residency is likened to a body that is no longer subjected to the despotism of the a priori genetic plan and is released to express another side of itself. For instance, surrealism and its instigator Freudian psychoanalysis were understood as tools in the elaboration of a new organization of the cultural landscape in early modernism. As such, this essay outlines the ways in which it, through the rules of its practices, mutated the complex contingencies of the aesthetic-cultural landscape of its time. Thus, it elicited alternative reactions from the brain's attention centers, creating, in response, elaborate changes in the materiality of the neurobiological substrate that might be registered as memory architectures. These restructurings and neural modulations are then shown to have resonance for a model of sculpting of the phantasmagoric relations of the phantom limb and its phenomena of remapping. This plasticity metaphor, in this case cultural plasticity, is also utilized to understand architecture as a malleable space in which the regulation of social and intellectual flows that determine a residency, could be unlocked to affect and mold the surrounding cultural

landscape in which it is embedded, with the potential to produce novel circuits in the brain/mind complex that make sense of it. Section 2 *Cultural Pluripotentiality and Neuroplasticity: Parallelactic Continuity and Discontinuity* further develops this idea. Cultural pluripotentiality refers to the relation of the dominant culture to the minority cultures that orbit around and through it. Healthy cultures are continually in flux. Metaphorically speaking they are a multiplicity of instructional and informational resonances vibrating at different frequencies that are tethered together in time as a meshwork or network phenomena. The sum total of these significations gives rise to that culture's identity and quality. Whether you are looking at the micro-cultural context of the tribe, clan or nation-state, or molar condition of the transnational empire, one cultural referendum usually predominates. This dominant culture controls the center of the network of relations and is thus involved in dominating that portion of the network's activity, as all of its resonances eventually move through the center. At the margins this is less true. Although the dominant culture controls the character, principles and general intelligence of a particular tribe, nation state or transnational entity under moments of destabilization due to war, natural disasters, economic downfall or extreme paradigm shift, the network's disposition might change. In this moment, the marginal culture might have the chance to express itself more intensely. For instance, these moments of destabilization might de-center the network making what was peripheral and marginal more central. I think this is what happened after Catherine David's, Documenta X and Okwui Enwezor's Documenta XI as together, one could argue, they were partly responsible for the cultural turn in art history. This process of destabilization and re-stabilization as something else is essential for the concept of cultural pluripotentiality as a form of cultural plasticity that constitutes a culture resiliency in times of change by allowing for the establishment of different intensities. In this moment of cognitive capitalism – delineated by immaterial labor and new forms of distributed general and machinic intelligence – the redistribution of the network's capacity and the rearrangement of its immanent nodal identity is more important than ever. This cultural pluripotentiality is coupled to the conditions of the brain's neural plasticity. As such, this cultural-neurobiologic plasticity complex, as I would like to call it, provides a mechanism for continued natural selection and survival.

Section 3, entitled *Neurobiopolitics: The Mind's Eye as a Place of Political and Social Contention*, explores the notion of biopolitics of the mind. Biopower, as defined by Michel Foucault, constitutes the methods through which sovereignty constitutes docile and productive bodies and organizes life through the modulations of affect, for example, pleasure. (6) In cognitive capitalism, the brain and mind are the focus of sovereignty's desire to normalize the subject's gnostic potential in order to produce a 'like minded' people. This constitutes one of the conditions of neurobiopolitics. When neurobiopolitics focuses specifically on the neural plastic potential of the brain especially in the frontal lobes where it is most abundant, the term 'neuropower' is used. In tertiary economies it has been argued by the likes of Poalo Virno that the virtuouso performance leaves no trace. (7) It does not produce any material product. Through my project *The Noologist's Handbook* (2008-2011), I argue that in late capitalism a trace is, in fact, left in the form of complex memory structures in the mind's eye. Secondly I argue that this space of the mind's eye is one of political contention and political determination. I then explain how a 'residency without walls' adapts to the rubric of the early 21st century and embraces this idea of the immaterialization of architecture as a mechanism by which to unhinge regimes of oppression that attempt to debilitate it as a cultural and neurobiological modifier. In Section 4, *The Cultural Capitalism/Cognitive Capitalism Ratio and its Relation to Cerebral Complexity,* I define my concept of the Cultural Capitalism / Cognitive Capitalism Ratio and tether it to cultural complexity. As opposed to the usual definition of cultural capitalism proposed by Pierre Bourdieu, in which cultural capital refers to those factors that include the cultural habits and dispositions inherited from the family and which are fundamentally important for a child's success in school and therefore society, I put forth an alternative position in which cultural capital is seen as the degree to which artistic practices create other resistant possibilities for the mind by neural modulation. (8) I would like to expand Bourdieu's position because it is not broad enough and does little to examine the emancipating aspects of cultural capital. I am extending it to include the idea that these same resources form the fundamental epistemological context that later inform the practices of those children that become artists and architects. This specialized knowledge becomes the fundamental platform though which they produce novel intellectual products and discourses, especially in the

cognitive regime, to interact with those conditions of cognitive capitalism in order to mutate them. Beyond the definitions of cognitive capital currently circulating in the public's eye as espoused by a group of Italian political philosophers such as Maurtzio Lazzarato, Matteo Pasquinelli, Titziana Terranova and Christian Marrazzi, I would like to add the following: cognitive capitalism refers to a recent accentuation of an ongoing historical process in which the territory of the mind and brain is the focus of capital investment. Most importantly, cognitive capital organizes its apparatuses of power upon the brain's neuroplasticity in the hope of producing a future passive and normalized human being. This, as we saw above, is called neuropower and will be elucidated later. I then proceed to explain what I call the 'Cultural Capital/Cognitive Capital Ratio', where a high ratio delineates an open society whilst a small value connotes a repressive one. In the following section called *Further Elucidation of the Cultural Capital / Cognitive Capital Ratio and Neuromodulation*, I investigate how this ratio could serve as indices for predicting how the neuroplasticity of the neural tissue is sculpted and modulated within specific political cultural environments. After a detailed discussion of neuroplasticity and its relation to epigenesis, I go on to discuss its link to cultural production. In this respect I tether this ratio to the concept of complexity both in culture and in the brain. The coupling of cultural complexity to what is referred to as degeneracy forms the final discussion in this section. Cultural complex environments that embrace high levels of cultural capital produce degenerate networks in the brain that give that brain a greater capacity to think creatively and improvisationally.

We will see later on that the term complex, when used to describe the brain, does not necessarily depend on increased size of the brain, human brains are 2.75 times larger then chimpanzees' number of neurons or their percentage of connectedness. "As the brain is scaled up, however, if every neuron were to connect with every other neuron, the increased volume of connections and the increased length of connections stretching across the increasing size, would slow down nerve-signal processing speed, and the overall benefit would be trivial." (9) In fact a fall in connectedness occurs leading to a proportional decrease in connectivity and a consequent remodeling of brain structure. The brains of advanced species such as ours specialize by making their functions more

automatic. ‘Small local circuits, made of an interconnected group of neurons are created to perform specific processing jobs and become automatic. The result of their processing is passed on to another part of the brain, but all the computations that were used to arrive at the result are not.’ (10) Or maybe they are subsumed inside these permutaions? Two issues need to be clarified. First of all these automatic processes that are genetically prescribed are based on consistencies found in the stable perceptual field that the human brain has encountered in the past and are still present. This coupling is the key to becoming automatic but the way in which these local processors are linked together to create an understanding may not be. We will see later how neural apparatuses like reentry may play a role in this by linking together local circuits to global mappings in the brain. Reentrant patterning may be induced by the by concomitant environmental contiguities that are linked artificially together, for instance, today by branding. Thus they may be bound together in groups that are tethered together by assemblages constituted by culture. Their sequencing or distribution in time and space may be culturally specified and as we will see form the nuts and bolts of somatic evolution and cultural memory. Degeneracy may be the key to this through creating a multiplicitous field of epistemological trajectories that constitute complexified understanding. After all the definition of ‘complex systems’ of which the brain is defined by three conditions. First, it consists of thousands, if not millions of different localized systems, processors, that interact to produce emergent properties that are greater then the sum of their individual parts. Secondly, from the various combinations of these systems, a multiplicity of possible outcomes results. Finally, there is no general overseeing the system of interactions that is not hierarchically arranged but rather operates in parallel. (11) It is an orchestra without a conductor. Could this be a model for the way that cultural memory works as well? Is there an analogous system at play in which cultural practices make themselves faster and meaner by automatizing their processes and linking them into various narratives/non-narratives that are both visible and invisible. As one cultural form replaces another, as high modernism replaces those forms of architecture that it replaces, the theories, impulses and even their technological know how are buried deep inside its algorithm

The final section *Residencies as Crucibles for New Global Concoctions* discusses how the reception of cultural difference in the time of the nation-state has been radically transformed in this moment of global urgency.

Section 1: The building without a program or how the physical condition of the space of the residency might be mutated.

> "We come to the gradual realization that the BwO [Body without Organs] is not at all the opposite of the organs. The organs are not its enemies. The enemy is the organism. The BwO is opposed not to the organs but to that organization of the organs called the organism". (12)

Mature Teratoma of the Mediastinum

What is a BwO? It is a body that is totally unfixed like a teratoma or a body of heterodoxy. It is a body in which the organization of its organs – from its intimate cellular structure to its relationship with other organs to its relationship to the entire organism – are free from the despotism of the body's overall plan. In other words, it is free of the rules and regulations of the specific a priori program situated in the DNA code. It utilizes its different pathologies as methodologies of escape and defense against this evolutionary dictatorship. It is the hypochondriacal body in which part of the body is

denied. It is the schizo-body in a state of catatonia. It is the masochistic body who 'has its sadist or whore sew it up; the eyes, anus, urethra, breasts, and nose are sewn up. It has itself strung up to stop the organs from working, flayed, as if the organs clung to the skin, sodomized, smothered, to make sure everything is sealed tight.' (13) In other words it is a body that is remade into another image of itself and which functions according to other codes of disorder and anarchy. It implies, therefore, a body still neutral that can become anything within reason or unreason. But, the Body without Organs is also a brain in a state of incessant remapping of its own neural connective logics as a result of the continual reconfiguration of its materiality and immaterial relations. Neuroplasticity is a property of the human nervous system that allows the genetically inscribed hardwiring of the brain to become something else. That 'something else' as we will see shortly results from the unfolding of these genetic predispositions in the context of an evolving cultural disposition that alter it. As Peter R. Huttenlocher, the late pediatric neurologist at the University of Chicago, so eloquently expressed it, 'While neural plasticity probably exists in the nervous system of all species, it appears to be most marked in specific regions of [the] human cerebral cortex, in areas that subserve the so-called higher cortical functions, including language, mathematical ability, musical ability, and executive functions.' (14)

The brain is an organ that adheres to both genetic and somatic evolution. Everyone is familiar with genetic evolution as a slow process continuing over a 1,000,000 years, in the case of the human, inscribed in changes at the level of the DNA of the chromosome. Somatic evolution describes the changes that occur in the human body or brain in the course of a lifetime. Both processes determine the brain's anatomy. (15)

The brain's blueprint or plan is inscribed in the genetic DNA, and the brain unfolds according to it. But that unfolding is in a cultural context and the brain's plasticity allows it to be modified by the environment, be it natural or cultural, within its lifetime. Those somatic changes that occur die with each person. Cultural memory – as it is deposited in the cultural landscape through cultural labor as art works, design products, and buildings – is a garbage dump or storage space for the effects of this somatic evolution and expresses in analogue fashion the details of the brain's effort. In other words, artists of all sorts inspired by the conditions of their moment in history create

works of art that are deposited, for instance, around or in architecture as cultural memory. The struggle of expressing their voice and having it displayed in such a way has implications for their importance to posterity and is basically political. The residue of these cultural affects that are produced by a social body – not just artists but game designers, filmmakers, industrial designers, urban planners and so forth and so on – produce, in total, the real and immaterial conditions of their peer group which are displayed in various guises and are important for the sculpting of brains in future generations. This process continues ad infinitum as the products of somatic evolution sculpt each successive generation. Modernism facilitated this with its insistence on the new and notions of the avant-garde.

We will go more deeply into various arguments surrounding neural plasticity later on but for our purposes a couple of illustrations will do. First, let us explore the example of the phantom limb phenomena. The sensorial map of the lower arm – as it is normally represented on the precentral gyrus of the cerebral cortex, the outer covering of the brain – is contiguous to the somatosensory representation of the face.

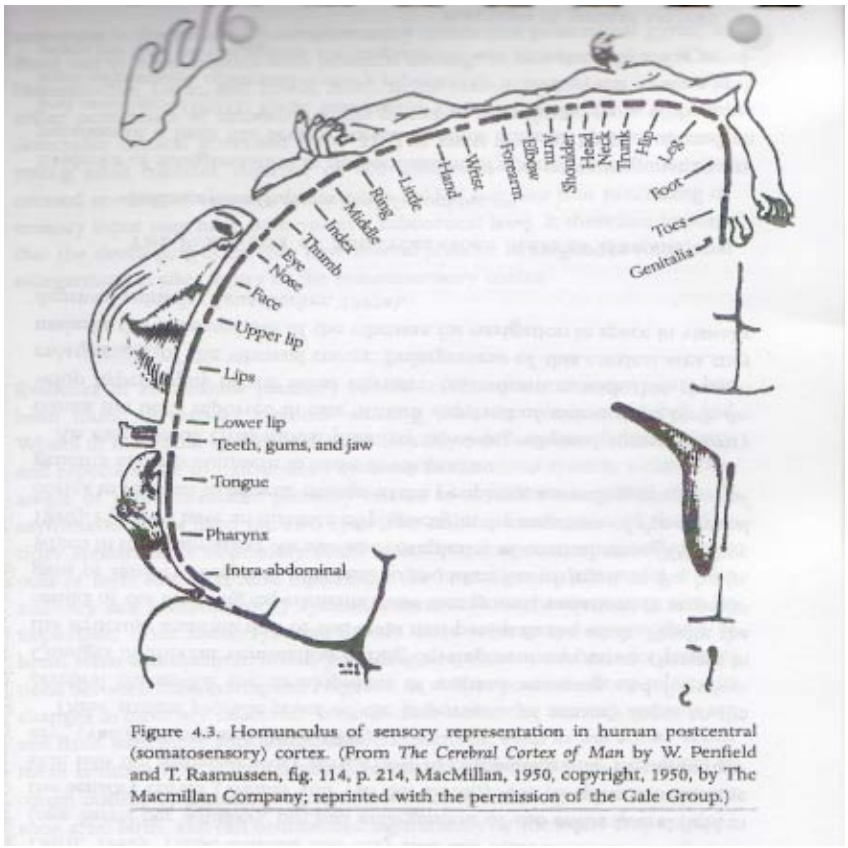


Figure 4.3. Homunculus of sensory representation in human postcentral (somatosensory) cortex. (From *The Cerebral Cortex of Man* by W. Penfield and T. Rasmussen, fig. 114, p. 214, MacMillan, 1950, copyright, 1950, by The Macmillan Company; reprinted with the permission of the Gale Group.)

When the lower arm is amputated its representation becomes reconstituted inside another alternative map, the map of the area around the mouth. Because of a lack of incoming competing stimulation from the now missing arm, the adjacent area of mouth usurps its map's functional territory and incorporates the area of the arms former representation into itself. As a result of this 'remapping phenomena', stimulation of the area around the mouth, called the vermilion, where the upper and lower lips come together, will therefore incite a real sensation in the phantom lower arm. (16) But the remapping may have implications beyond its purely material manifestation of a kind of mistaken experience. The issue of how the remapping might also generate an alteration in a subject's constructed phenomenal self as fantasy - after all it isn't called a phantom limb for nothing - is appreciated by V.S. Ramachandran in his paper *Perceptual Plasticity and Freudian Psychology* in which he reports that contiguity of the foot and the genitalia in the same somesthetic area of the precentral gyrus of the cerebral cortext create an unusual phantom foot phenomena. The neural connections of the now amputated foot are remapped upon the area that subserves the genitalia. Stimulation to the area of the leg adjacent to the genitals causes sensation in the missing phantom foot. Patients also have reported that during defecation and copulation they feel tingling in the phantom foot. He states, 'The hypothesis might also explain the widespread prevalence of foot fetishes and the relative scarcity of say hand or nose fetishes…We prefer this neurological explanation to that of Freud's psychodynamic interpretation.' (17)

FIGURE: 19

[124]

Figure 19. Warren Neidich, *Phantom Limb*, 2003, pencil on paper, 16" x 20"

The phantom limb, a condition in which a missing limb is experienced as present, is sometimes associated with a phenomenon called "remapping." In this condition, the absent limb is remapped upon another part of the body. The part of the body chosen is contingent upon its location in the body's representation as the homunculus. In this drawing, the fingers of the hand are remapped onto the cheek that is adjacent to the missing hand in the somatosensory cortex.

The effects of neuroplasticity and their effects are not only limited to a small area of contiguous structures as the above statement would imply. I would rather interpret

these findings in another way. The foot and genitalia are linked in complex ways to historically derived culturally and neural biologically selected and constructed maps, which, in the former, bind social, psychological, artistic, and economic relations together that are then superimposed upon active neural biologic genetically inscribed predispositions called modules because they are a conglomeration of innate processors inside the head sometimes as psychodynamic performances. Think of the cultural memory mentioned above. How about if it was inflected by psychodynamic paradigms finding their way into the cultural landscape vis-a-vis surrealism? Freudian psychoanalysis is known to be one of the important influences on surrealist art. The transcription of psychodynamic apparatuses like word association and dreamwork become, in the hands of the surrealists, automatic writing and collage. Surrealism also created text works, photographs, fashion, architecture, and design that were psycho-dynamically inflected, and together, these art works created implicit and explicit mutations of the cultural landscape as they moved from the gallery to the public space. But of considerable import for surreal art was the effect it had on the audience. Whether one considers Tristan Tzara's play *The Gas Heart* in which a member of the audience is actually an actor who continually throws out insults towards the stage; Kurt Schwtter's *Merzbau*, where artist and audience are enclosed equally in the space of the transformed domestic environment; or Antonin Artaud's *Theater and Its Double,* in which he describes the operation of the ideal theater upon the community of spectators as a plague, the affect on the art-aesthetic production is directed towards a spectator who is then changed. 'Later, retaining the powerful persistent physicality of these images but shifting their focus as he concentrated increasingly on films, he compared the effect of film upon the audience to the operation of a poison which works directly upon the grey matter of the brain.' (18) One might hypothesize that this reference to the 'grey matter' is then a cumulative (community) effect of his art upon the neural plastic brain itself. Was the poison killing off parts of an indoctrinated brain or was the poison like a form of contamination inciting changes created by the artworks? Equally, was this an example of a brain being sculpted by the conditions of this now surreal inflected cultural landscape and its now imbedded psychodynamic networks that acted as their inspirational gasoline? The effects of the socio-cultural environment acting upon the brain was elaborated by the

famous Russian psychologist Lev Vygotsky who argued, through the example of the child, that in ontogenesis natural and socio-cultural lines of development interact: The growth of the normal child into civilization usually involves a fusion with the processes of organic maturation. Both planes of development - the natural and the cultural - coincide and mingle with one another. The two lines of change interpenetrate one another and essentially form a single line of sociobiological formation of the child's personality. (19)

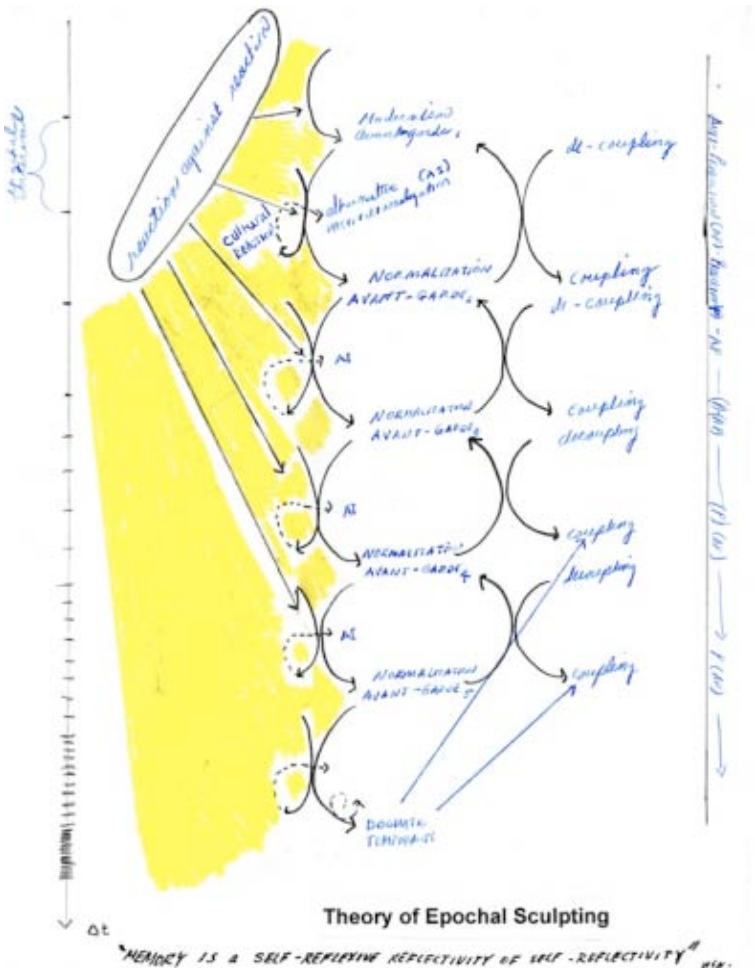
Is the question that Deleuze and Guittari ask in 1000 Plateaus, *How Do You Make Yourself a Body Without Organs*, a cry for a kind of emancipatory gesture? (20) In other words, how might the body release itself from the bonds of any particular despotic organization, be it the society, the Catholic Church or psychoanalysis or all three bundled together? How can a body in a state of arrested development, a body already determined in its context as a people and specified, be turned back upon itself to its moment of pluri-potential exuberance? How can the fixed body return to a body unspecified?

Could architecture become an instigator of this return, transforming itself from concrete planned form into a plastic modifiable program for the display of somatic cultural memory? I am calling this the true nature of an architectonics of resistance. The Body without Organs and a brain without modules has as its 'counter intuitive counterpart' *the building without a plan* or better yet, *the building without a program* as it relinquishes itself to a pure dynamic and participatory condition. 'Program is the framing script for how people will engage with a spatial system over time, or over a day, or simply from one place to the next. It is the prescriptive imaginary for how the architecture as a whole will co-perform its functions, however defined, with those people and things that it will live with and house. Hospitals are planned in a certain way because medical programs demand it. Prisons have regimented partitions and interfaces because penal discipline uses these as its physical methods of punishment and surveillance. Warehouses are planned and coded as they are to support the efficient movement and display of transient inventory: a program of logistics. Whereas successful carnivals (or riots) take advantage of whatever parts of the city they can to upset everyday mores of work and function. That is, program is not just about strict functionalism. It is more about setting up the terms (designing) by which the built environment (hardware and

software) can participate well in an intelligent, active, if even somewhat indeterminate events, performances and economic intercourse.' (21) Could a residency incite this carnivalesque in order to return the cultural habitus to a state of continuing transformation?

Architecture, therefore, is not so much about the display of institutionalized ordering of cultural memory but rather, an immanent plateau whereupon cultural memory can become distributed in other conformations. An important distinction is made here. Cultural memory has a 'backstage' – a multiplicity that resides undercover and below the ground – but which, all the same, has the potential to create instabilities and express itself under certain conditions. The psychoanalytic paradigm of manifest and latent content is relevant here. Sovereignty attempts to stabilize the image of cultural memory in the form of distributions of sensibility which are senescent and static and which sculpt brains/minds during critical periods of neural development and then later calls on it to follow a pre-determined script. Architecture also has the potential to accentuate an emancipatory state of embodiment through which the brain and mind might be performed anew. This is, in fact, the other side of neuropower. Architecture creates a foundation or scaffolding for the redistribution of new forms and combinations of sensibility, and as such, the entropic and anarchic condition of creativity is anti-ergonomic as it produces new configurations of the cultural landscape. (22) It is not historically determined for a general and common audience of like-minded, ergonomically configured neurobiological architectures, but instead refutes it and produces conditions that are sublime and unseen to the sovereign order. Homi Bhabha in the The Location of Culture expresses it differently: The scraps, patches and rags of daily life must be repeatedly turned into the signs of a coherent national culture, while the very act of the narrative performance interpolates a growing circle of national subjects. In the production of the nation as narration there is a split between the continuist, accumulative temporality of the pedagogical, and the repetitious, recursive strategy of the performative. It is through this process of splitting that the conceptual ambivalence of modern society becomes the site of writing the nation. (23) We will revisit Bhabha's work in our discussion of cosmopolitanism.

Important for this discussion is the disparities of the temporal/metric of the other and its relation to the historically normalized gestalts of the host nation. These are subverted through the uses of the visitor cultures' different sense of rhythms and understanding of space and volumes, which, when phenomenologically superimposed upon those of the host nation, produce spaces and blanks as alt forms of processing for the brain/mind complex to utilize as required. To make sense of this incomplete data, other neural pathways and configurations are therefore necessary as the neural architecture is reconfigured according to other cultural logics. As we will see later, in order to make sense of this new data configuration, new patterns of synchronized neural rhythms will be required with important consequences. For now, it is enough to say that novel, re-contextualized distributions of neural energies processing time and space, whatever their source, sometimes moving in abstract, non-linear, rhizomatic network flows join those coupled to narrative sovereign distributions of sensible information that are coherently ordered and hierarchized. If these artistically driven and architecturally displayed re-distributions gain tenacity as cultural modifiers and begin to appear over and over again in the cultural landscape and manage to create alliances with other similarly modified distributions, new time-based synchronized oscillatory potentials will develop and with them the possibility for alternative neural sculpting and modulation becomes conceivable. This neural sculpting might have implications for thought itself, opening it wide open to other forms of imagination which now form complex amalgamations of thought quite different than that which might be possible in a pure institutionally-controlled, pedagogical context. As a result, behavioral shifts – the consequence of these novel alignments of signification – might loop back upon the cultural environment itself restructuring it in ways that limit the damage of slippages and fractures that are the results. This is another example of what Vygotsky called 'internalization' or the internal reconstruction of a formerly external activity. (24) But, with an additional twist: each new generation internalizes the social conditions of its parent's generation but each generation also changes those conditions. That is the key to my idea of 'generational epochal sculpting'.



Warren Neidich, Theory of Epochal Sculpting, pencil on paper, 20x26 cm, 2008

Sculpting is first, as Gerald Edelman has told us, a condition of experiential selection in which repetitive, intense stimulations emanating from the world, or culture, inscribe concurrent patterns on the neural biological architecture. (25) Importantly, it is these effects of sculpting that effect changes to the environment that that individual will make later on. It is a bidirectional sculpting that continues throughout life and one might say over history. The quotation below implies this relationship in terms of a coupling of habit and habitus:

> First, program needs to be understood in relation to a reflexively generative relationship between bodies (singular and plural) and the physical spaces they inhabit. The notion of habitus is perhaps at the crux of this, and Henri Lefebvre and Pierre Bourdieu employ this notion differently to analyze this very reflexivity. Habitus as the root from which both habit (as in bodily

> habit) and habitat are derived. It can be seen (especially for Lefebvre's usage) to site how one informs the other, how bodily habits especially of large populations wear grooves into space producing habitats in their image. For one, this is how archaeologists are able to divine social practices from reconstructed architectural debris: the forms imply what made them. Conversely, space frames and constrains the action that it houses, training bodies and thereby program in its image. To be sure, habit and habitat emerge at once, a conjoined machine, not in some never ending representational reciprocity. Program can be understood as the prescriptive or analytical image of this emergence. (26)

When the mind, as a place for the conception of future mobility, stands in for the body, prescribing its future trajectory, then this idea of habit and habitus is released from the despotism of the material to become idea. In the attention economy, the punctum of the world picture is effervescent, equivocal and historical. The punctum is not univocal or stationary as has been described in a photograph but instead sequential, a series of indications that mark a path in time resulting in a series of followings. These followings can take two forms: a pictorial narrativity as in classic film in which one image is followed by another related one ad infinitum, and their connections link together to form a coherent story or a distributed pattern provoked by multiple ephemeral circulations that create flows of experience and nodes of intensification. This is the key, as we will see, in the transition from early neo-liberalism with its connection to late modernism and cognitive capitalism formed in the context of post-modernism and hyper-modernism. The body habit is now the memory architecture inscribed in the neural network configuration of the plastic brain. The troughs are no longer grooves worn in the habitus but hyper-stimulated neural efficiencies in the memory architectures of the mind's eye. The sovereign-induced epistemological trajectories embedded as a series of linked events of attention engineered in the designed space of the distributed urban topology now calls out to the brain/mind preferentially in the end creating distributions of intensities in neural networks. The institutional program is beyond the physical trace that instructs the body as it was in Fordism and is instead embedded in forms of immaterial laboring, now

called cognitive laboring, that promote cognitive dispositions. This is one aspect of the new conditions of Post-Fordism as it functions in the transnational networks of neo-liberal capitalism. When this immaterial laboring is intense, omnipresent and continuous, it produces recurrent dynamic potentials that form cognitive habits. This is what the Theory of Neuronal Group Selection (27) and Neural Constructivism has taught us. (28)

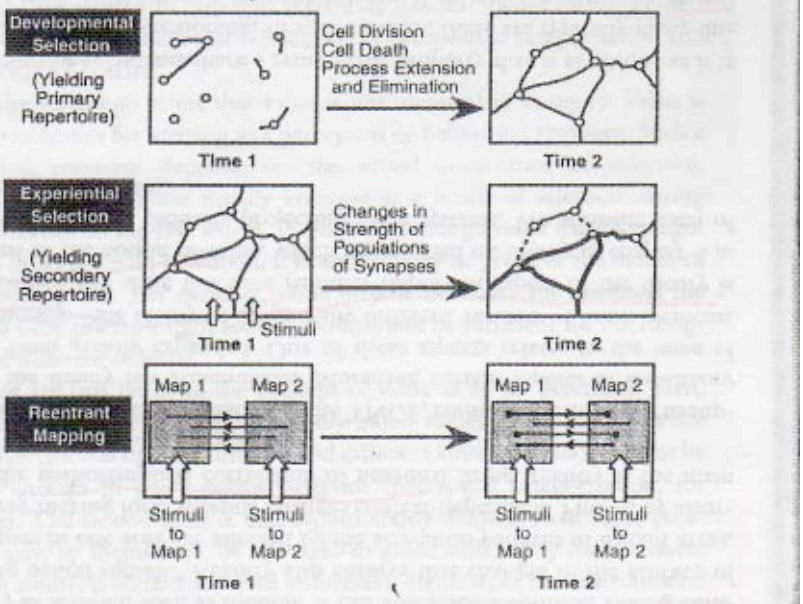


FIGURE 7.2 DIAGRAM OF THE THREE MAIN TENETS OF THE THEORY OF NEURONAL GROUP SELECTION. (1) Developmental selection leads to a highly diverse set of circuits, one of which is shown. (2) Experiential selection leads to changes in the connection strengths of synapses favoring some pathways over others (see the black lines). (3) Reentrant mapping. Brain maps are coordinated in space and time through ongoing signaling across reciprocal connections. The black dots in the maps indicate strengthened synapses.

These theories, although quite different in their mechanisms, both understand the brain's transformational potential. Through a process of epigenesis, the unfolding brain is sculpted by those events in the world that occur repetitively and intensely. Today, cognitive habits are specifically engineered with the human brain in mind and many don't occur naturally. They are simply not occurring in the singular individual at a particular time but in masses of populations linked concurrently. This is the later stages of the society of control called 'Noo Politics' by Marizio Lazzarato: In the societies of control,

power relations come to be expressed through the action at a distance of one mind on another, through the brain's power to affect and become affected, which is mediated and enriched by technology. (29)Architects using their own methods, practices, critiques, apparatuses, and performances re-route the distributions in the cultural habitus reworking the abstract real. This process of reworking has implications for the attention economy and thus, the memory architectures formed in the brain. I use the term 'abstract real' to infer the totipotential condition of the object and its relation to a multiplicity of other stories that form the fuzzy conditions of meaning surrounding it, especially those constituted in capitalism. Totipotential meaning comprises the total dynamic conditions of that object, think here of a bottle of Coca-Cola, that metamorphose its physical inert presence, made up as it is of all the phantom patterns that that object provokes in the working memory of the subject. These abstract meanings buzz around the object and its impression in the mind like a swarm of bees pollinating flowers or the multiple and evanescent pathways formed by orbiting electrons of an atom around a nucleus. The working memory is the place in the conscious mind that calls up long-term memories to interact with short-term memories, created as it is in the previous seconds by the ephemeral present, in order to plan future action. Therefore the abstract real is essential component of the mind. In cognitive capitalism it is the territory where sovereignty is now focusing its armamentarium of techniques and apparatuses. It sculpts the abstract real to concretize the motions of the memories in the working memory to create the context for specific associations that, in the end, focus attention. Artist, architects, filmmakers, and poets - just to name a few - create purposeful distortions that contaminate the abstract real and enfeeble and make delirious the institutional logics of neo-liberalism at play. Salvador Dali's *Paranoid Critical Method*, Guy Debord's *Derive*, and Andre Breton's automatic writing and exquisite corpse are examples. Sarat Maharaj's idea of xeno-epistemics is also pertinent here: visual art knowledge becomes a matter of inventing other ways of thinking-knowing, other epistemological engines… These modalities enable both "other" ways of knowing and ways of knowing "otherness". They are counter-epistemological gear-"xeno-equipment" rigged out for attracting, conducting, the well-worn, 3-D geometries of the discursive disciplines and countering them head-on. (30) When artists are from other countries with other artistic and cultural traditions and

take up residencies, they have the potential to mutate the host nations' distributions even more so and Contaminate – with a big C – the cultural habitus in ways unforeseen and initially sublime. I am thinking here of the lasting effect of Okwui Enwezor's Documenta XI on the cultural terrain through the introduction of artists such as Zarina Bhimji, Touhami Ennadre, and Chohreh Feyzdjou. Working memory and the mind's eye, the space in the mind where the cinema projected on the imaginary screen inside the head is reviewed and inspected, is a space of political contention where this cultural Contamination, with a capital C, infiltrates with new languages and means of expression to battle the crystalized and powerful institutional programs in place. As we will see later in the discussion of my performance work, *The Noologist's Handbook*, the power of art is a power to sculpt immaterial resonances in the dynamic potentials that create the images of thought. How much more powerful are those images when they are informed by multi-cultural platforms?

Art after Marcel Duchamp shifted its production from forms of mimesis to its general social technique. No longer was art about drawing or making the object but instead, art focused on the conditions of its meaning in the social milieu which was malleable and plastic. It was this switch in the status of the work of art, from its purely material aspect to one that is socially derived that changed it into a totally cognitive and metaphysical condition. John Roberts in *The Intangibilities of Form* puts it best, 'With the rise of the readymade there emerged an irreconcilable displacement of the link between handcraft and skill. This initiated a huge explosion in revolutionary thinking about the social form of art beyond the artisanal production of the conventional studio.' (31) The work of the Dutch situationist, Constance is relevant here as well. Utilizing such devises as the derive and detournement as negotiated in play and chance through practices of building and designing and experiencing the city architecture mutated from a purely physical condition to a metaphysical one in touch with its totipotentiality. His New Babylon, 1959-1974, was what he called an 'antithesis of a society of lies'. The question then is: is art and architecture real, or a manufactured condition consisting as a metaphysical logic circulating in both cultural distributions of thoughtfulness and existing as parallactic concatenations in our mind's eye where we reflect upon our mental

cinema? This will have implications in how we relinquish our ideas about what a residency is and what it might become.

2. Cultural Pluripotentiality and Neuroplasticity: Parallelactic Continuity and Discontinuity.

For a residency, like a body, a brain and a building, needs to be unlocked and become unspecified again. This is the key to the concept of *Residency without Walls*. Hospitals are planned and built like they are to satisfy the operations within, as are prisons and warehouses. And how about the residency? Is there a design plan of domestic spaces, administrative offices, studios, media areas and social spaces that satisfy certain specific conditions of its being? Are these plans explicit in the formatting of what architectural spaces can do to mimic other predominate plans or apparatuses as they function in the molar institutional social, political and psychic context? Or, is it more implicit coming from within as an auto-regulation of the conditions in the programmatic pragmatics of creating a secure and isolating environment for an island of otherness? Institutional programs infiltrate the residency plan with conditions or rules that organize flows of information according specified routes, which loop back upon itself in auto-poetic completeness rather than flowing outward to contaminate nativist positions. These institutional programs are used not only to weaken minority voices holed up in residence but also to weaken their artistic position, to enfeeble their production, to silence their voice or finally to demystify the power of their works. Instead should the building be turned inside out so that its inside organs are expressed outward?

The *Residency without Walls* must unshackle the conditions of its zones of conformity by reinventing itself and embracing the idea of its role as a space of cultural contamination. Cultural contamination, according to Kwame Anthony Appiah was 'a mode of writing' first used by the black slave poet Publius Terentius, 'which involved freely incorporating any number of earlier Greek plays into a single Latin one.' To Roman litterateurs this form of writing was known as 'contamination'. (32) But today this contamination must be understood in terms of what it means to the production of difference, the mutation of homogeny and to the birth of zones of autonomy. In tertiary

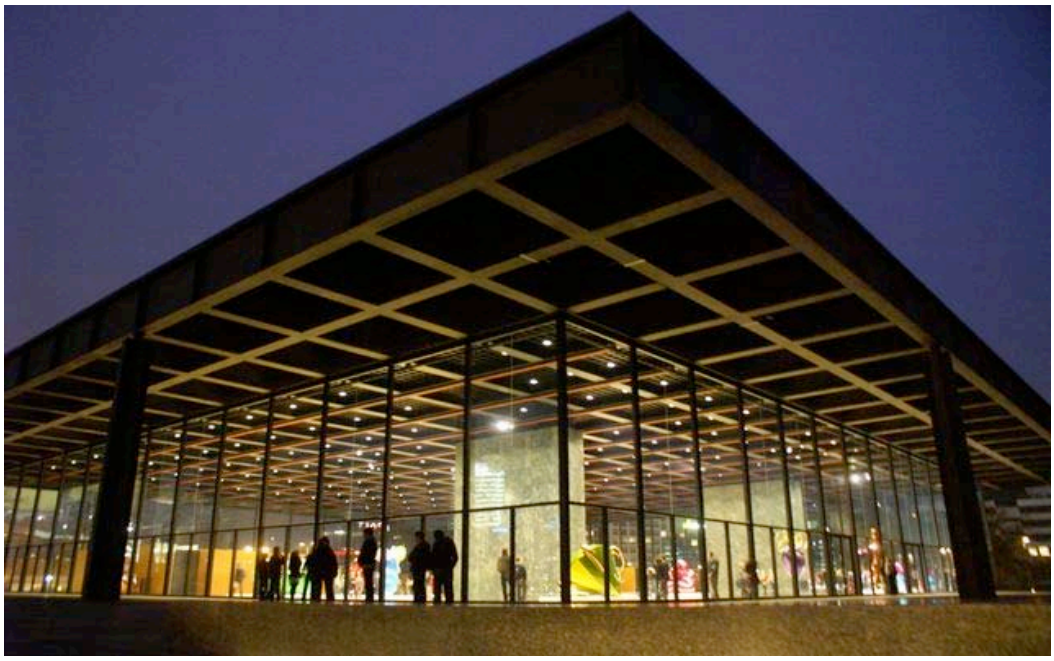
economies defined by immaterial labor and mass intellectuality in which living labor mimics or is absorbed into the creative industries, this generalized move to the condition of heterogeny and difference, which non-conformist thinking engenders, is essential for the production of new ideas and products that reinvents the cultural landscape of 'thingness' and the abstract real. Rather than present a negative and subversive condition in the context of the nation state in which the purity of the national heritage might have been put at risk by an information age demarcated by immaterial labor, this contamination produces mutations in built and abstract spaces that are recoded into new forms of semiolinguistic capital. Here again we need to quote Homi Bhabha, 'The analytic of cultural difference intervenes to transform the scenario of articulation - not simply to disclose the rationale of political discrimination. It changes the position of enunciation and the relations of address within it; not only what is said but where it is said; not simply the logic of articulation but the topos of enunciation. The aim of cultural difference is to rearticulate the sum of knowledge from the perspective of the signifying position of the minority that resists totalization - the repetition that will not return as the same, the minus-in-origin that results in political and discursive strategies where adding to does not add up but serves to disturb the calculation of power and knowledge, producing other spaces of subaltern signification.' (33)

This transformed symbolic landscape calls out to the brain according to different systems of logics and sets up resonances in different distributions of the neural substrate in the end producing, if they take, alterations in the image of thought itself. This will be very important to the brain's functional complexity. Enriched, differentiated environments with many choices set up the possibility of producing what are referred to as degenerate networks. 'Degenerate' means that different pathways of nervous stimulation can cause similar effects. (34) Different nervous pathways in a distributed network can take over the function of a debilitated circuit so that the same action can be activated and performed. Different thoughts can occur using different routes in contemplative schemes. Different lines in a poem with different words, meters and word orders can incite the same thought. Degenerate nervous systems are produced by complex environments, which also make them complex. 'Degeneracy is a well-known characteristic of the genetic code and immune systems. Here, we point out that

degeneracy is a ubiquitous biological property and argue that it is a feature of complexity at genetic, cellular, system, and population levels. Furthermore, it is both necessary for, and an inevitable outcome of, natural selection. Degeneracy and complexity in biological systems.' (35) Only when we appreciate this idea of complexity in relation to degeneracy can the real value of cultural capital – embedded in the notion of the residency – be realized, that of preparing the insular cultural mind for the cosmopolitanization of society and the disappearance of the closed model based on, for instance, the nation state. Residencies as nodes in the networks of information flow that respect no borders, situated in cities can infiltrate semio-capitalism with new languages, grammars and alterity that reverse normalized flows of information from dominating centralized hegemonies towards the periphery. They play an essential role in producing the necessary mindsets to compete in this forthcoming world situation effectively: a culturally degenerate situation with maximum variability and heterogeneity. (Of course I am not naïve to the homogenizing effects of globalization, which is institutionally circumscribed in its most cynical manifestation.) Let us look more deeply into the reasons why and let us create a theory that affirms these autonomous zones as potential sites for neural-modulation.

When Fredrick Jameson stated in 1991 that the subject whose habits were trained in the cultural field of modernism enters into the post-modern space(s) of the Bonaventure Hotel, Los Angeles, he or she is mystified and stupefied. That individual does not have the perceptual-cognitive apparatus to make sense of this new sublime space and time. (36) He posits that, in fact, it will take a subject born and raised in post-modernism to truthfully interpret these new architectural conditions. Modernist architectural strategies that were based upon Euclidean postulates and common notions have given way to those referred to as Reimanninan, in which curved smooth spaces varying from point-to-point create the topologies one sees in contemporary buildings favored by, for instance, blobitecture where building have an organic bulging form. This type of geometry is at the heart of computer-assisted design programs and leads to very different looking buildings that are continuous and distributed. Think about the difference between Miles Van der Rohes' Neu National Gallerie in Berlin and Frank Gehry's Guggenheim Museum in Bilbao or Future Systems' 2003 Selfridges department store.

Guggenheim Bilboa, Frank Gehrey, Bilboa, Spain



Neue National Gallery, Mies Van der Rohe, Berlin, Germany

The perceptual habits necessary to perceive and comprehend these spaces are very different so one's first encounter could be disorienting. This is Jameson's point. The perceptual habits formed and developed in modernist spaces are so radically different than those necessary to comprehend post-modern spaces that for the modernist observer, the post-modern spaces are incomprehensible. It will take the next generation whose

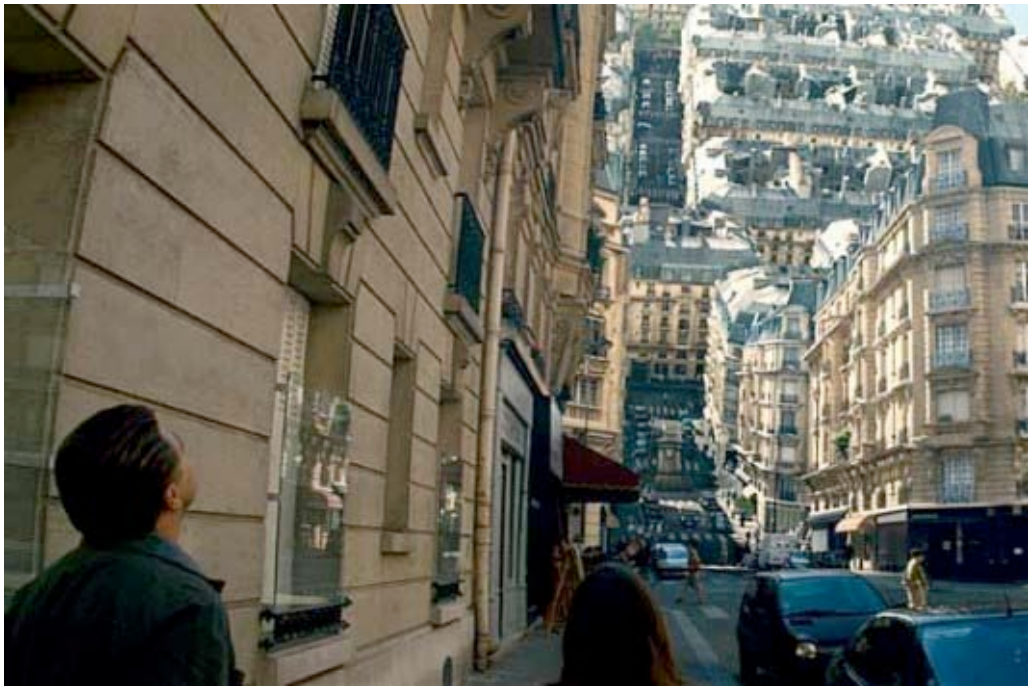
experience with smooth post-modernist spaces is much greater and whose brains would be sculpted according to its logics during their critical periods of the appreciation of space to truly understand them in all their complexity.

Architecture is itself a mirror or auto-representation of the changing socio-political-economic relations that constitute an epoch. That is to say that the Neu National Gallery is a picture/reflection of its epoch as much as the Guggenheim Bilbao is in its own time. Both are constitutions of the social, political, economic and psychological as well as dissocial, apolitical, anarchic and psychotic relations of which it is a part. The Guggenheim Bilbao is a poster child for its epochal conditions formulated in the age of neo-liberalism. It is a destination in what is referred to as 'art tourism'. Frank Gehry is a 'star-chitect' and as such relates to the global strategy of branded fame. The surface of the building becomes a projection surface for new media. The museum itself is part of a corporate global strategy in which Guggenheim Museums and its partners in Abu Dhabi, The United Arab Emirates; Vilnius, Lithuania; Venice, Italy; Las Vegas, Nevada, USA; and Berlin, Germany form a network for the distribution of its collections and influence. These relations are inflected through the tectonic history of architecture and altogether, they produce models of what architecture can be made. In this way architecture is a product of an epochal machinic intelligence that produces a generational general intelligence.

Every such epoch, and the architectural events that delineate it, are part of a continual process of transitory 'becoming into being' or materialization that in this case architecture represents. So too for the brain, which is modulated through a process of neural Darwinism or neural constructivism (these are the best theories we have to date) by the same social, psychological, economic and political complex and the cultural forms it mediates. Each meshwork of the above stated relations manifest themselves in the display of cultural memory on architecture's skin, and just as we saw for psychoanalytically inflected surrealism, these memories have implications for how the brain is sculpted. Distributed neural network architectures are the result of tertiary economies of distributed information. Different cultural contexts sample different concatenations of cultural tendencies that are collaged with local and transnational influences to form a meshwork. Today it is these influences that sculpt the brains of its

subjects' neural plastic potential differently. As suggested earlier, by neural plasticity I am referring to the quality of the brain's neural tissue, especially early in life but continuing throughout, to be able to be modified by internal and external conditions. For early man living in the wild the strongest force of that modeling was nature. Today for urban man living and working in the city, it is culture found in the mediated and cyber landscape.

Architecture is part of the make-up of the generalized cultural imagination, one that is coupled to the imagination inside our heads. Christopher Nolan's *Inception* (2010) is a case-in-point. Dynamic and mutable architectonics shot in the anamorphic format of 35 mm film and then accentuated in post-production studios create a hyper surreal environment in which memory espionage can take place.



Scene from, Inception, 2010, Christopher Nolan

The architectonics is a stand-in for the social and political conditions they attempt to illustrate. For instance, Nolan is quoted as saying: "the idea of people sharing a dream space... That gives you the ability to access somebody's unconscious mind. What would that be used and abused for?" (37) Whereas films like *The Matrix* picture a world that is

authoritarian and computer-controlled, which in fact alludes to the political theories of Michel Foucault's disciplinary society, Nolan's world has more in common with the distributed, smooth, rhizomatic world described by Deleuze and Felix Guittari. They lack the functional articulations that I call 'components of passage, which cause other coordinates of existence to emerge suddenly, allowing for a way out. Lapses, parapraxes, and symptoms are like birds tapping at the window. It's not a matter of "interpreting" them, but of tracking their trajectory to see if they can serve as indicators for new universes of reference susceptible to acquiring sufficient consistency to change the direction of the situation.' (38) Different forms of culture are inflected as re-makings and redistributions of cerebral energies that form the stable and dynamic conditions of the neurobiological substrate. Just as there are 6,700 languages spoken on the planet, the brain is capable of learning all but depending on the local linguistic ecology chooses one or two. So too can culture couple itself and impress itself upon the pluri-potential quality of the brain, sculpting it according to its particular networks of meanings. It was once thought that there were specific areas for language learning in the brain like Broca's area for motor speech and Wernicke's area for comprehension. We now know that there is what is referred to as a language system in which areas like the limbic system and areas of both right and left cerebral hemispheres are involved with the classic areas to create it. (39)

But in actuality, language affects the structure of the whole brain and once the seed of language has deposited itself in the neural substrate, adoptions to its new contingencies and abilities erupts throughout it. 'On the other hand, if language has been around for a good deal of our evolutionary past, say a few million years, or even a million years, that's adequate time for it to have structured and reshaped the brain to be better satisfied to the problem of processing and using language in real time. Similarly, language will have adapted. We will have adapted this language process to be better fit to our own constraints as we go along. The two will, in a sense, be in tandem, converging towards each other.' (40) Culture, according to Clifford Geertz, shares many properties with the languages that help form it and is defined as 'an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in

symbolic forms by means of which men communicate, perpetuate and develop their knowledge about their attitudes toward life'. (41) Thus it seems reasonable to suggest that the same neural modulating potential found in language might also be found in culture as well.

Section 3: Neurobiopolitics: The Mind's Eye as a Place of Political and Social Contention.

Our brains are genetically-endowed, developmentally-responsive entities that unfold in a language-contaminated cultural stew. Memes are one form of linguistic contamination that act similar to a virus injecting its DNA into a cell's nucleus and taking over its biosynthetic machinery and the mind's gnostic facilities temporarily. But memes have limited applicability; of more importance is the idea of cultural memory. As we have already acknowledged, cultural memory constitutes the way that generationally-created, culturally-contrived artifacts are added and then coupled to the conditions of somatic evolution found in the neural plastic potential of the brain. Each 'cultural brain', as I referred to it as early as 2000, is formed by different cultural conditions in which it is produced and therefore, each is delineated by a different set of memories and cultural tools with which its imagination can be formed through its idiosyncratic cognitive work. (42) *The Mind's Eye* is the place of the imagination's formation, reformation and deformation. My project *The Noologist's Handbook*, 2008-2011, illustrates how the political fantasies of despots, the super abundance of democracy and the overwrought dialectic of agonism might remake the dynamic constitution of the 'image of thought' that is delineated in the mind's eye. I would like to take a small detour to describe this project as it was performed recently with students at Southern California Institute of Architecture (SCI-Arc) in Los Angeles. It describes how architecture might be used as a 'parallactic cultural device' to hold the image of thought and give it substance as new forms and derivatives of neural architectonic assemblages.

In the summer of 2011 as part of my overall project *University Without Walls*, which as the name suggests has strong parallels to *Residency Without Walls*, I took architecture students of SCI-Arc on a journey into their imaginations. The curriculum consisted of the following workshops: *Rehearsing the Diagram, Education of the Eye*, and *The Noologist's Handbook*. (Earlier renditions of this project entitled, *In the Mind's I*, were performed in Brussels, Copenhagen, Athens, and Los Angeles.) Each exercised different aspects of the imagination and taught the students how to think inside their heads, free of the encumbrance of immobile substances and laws of explicit nature. I believe that this manifestation of *The Noologist's Handbook* at SCI-Arc is a good model for rethinking the residency.

The workshop was made up of three parts:

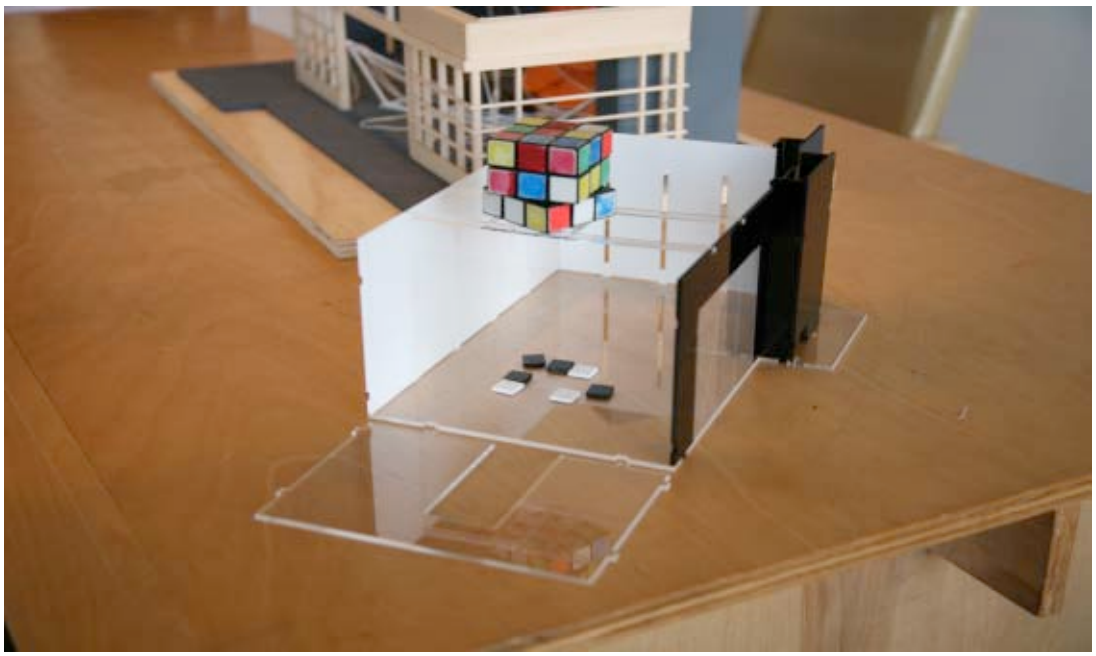
1. Visiting the Schindler House: In the week before the workshop, each student was asked to visit the Schindler House in Los Angeles and to choose a room to remember later for a performance. This room would become the imagined exhibition space for the work(s) that they would collaborate with me to create there.

Warren Neidich, Rudolph Schindler House, digital print, 20x26 cm, 2011

2. Performance of the work in the classroom: I asked each student in my class to bring three neutral objects that they were able to carry in one hand from home. We then sat across from each other upon a specially constructed stage in which the only illumination emanated from a single slide projector that projected colored slides upon us, producing a cinema of shadows on a semi-translucent screen, forming the front of the stage and separating us from the audience of other students. I then interviewed each student and asked him or her to describe the objects they had brought with them; I had them reveal associated personal memories. Each was then asked to recall in detail the room they had chosen on their previous trip to the Schindler House. With their eyes closed in front of the audience, I had them describe that room in detail whilst reflecting upon it in their mind's eye. This description delineated for the audience and myself knowledge, for instance, of the space's dimensions as well as its lighting conditions and layout paying attention to things like fireplaces and windows. Subsequently I asked each to collaborate with me in order to make an imaginary exhibition, with the objects that they had brought and that we had earlier discussed, in that space that they conjured in their mind's eyes. Together we created about three to four imaginary works of art and then installed them there, specifying, for example, their location, lighting and distance from each other. In my earlier renditions of the project, there were no conventional works of art only the memories of the works. In this case, however, two new conditions were added to the performance. First, I taught students to assume my role as the collaborator and curator. This entailed learning the method but each also learned to enact the work according to a pre-specified political agenda they chose, such as anarchist, democrat, agonist or despot. As such each directed the production and construction of their collaborators' make-believe exhibition according to the dictates of that specific political position. A despotic curator produced a constrained and limited exhibition in which the artist's voice was constrained and the exhibition inside their head was barren. The generous and democratic curator produced more complex and rich results. This reenactment therefore theatricalized the way in which sovereignty and governmental agency use their linguistic power to construct the imaginary. In other words the mind's eye stands in for the imaginary here, of the people.

Warren Neidich, The Noologist Handbook, digital print. 100x50 cm, 2011

3. The production of the model: After the performance each student was asked to make a model of what he or she had remembered. The next week they exhibited those models and talked about how they related to their performance with special emphasis on the difference between how they remembered it, and how, in fact, the model turned out.



Warren Neidich, Documentation of Hector's Model,The Noologist Handbook, Sci Arc, digital print, 20x26, 2011

Paolo Virno in his now famous book The Grammar of the Multitude delineates the differences between what he refers to as labor (or poesis) and political action (praxis) through the idea of virtuosity, distinguishing the former from the latter by the production of an object, in the case of poesis, and the lack of one, in the case of praxis. (43) In praxis the purpose of the action is found in the action itself and the virtuosic performance leaves no real product or trace. Once the performance or political rally is over, and the audience leaves, nothing is left to stand-in for the labor performed. In his opinion, information economies are defined by this virtuosity, as they do not produce material products but immaterial essences.

In my work *The Noologist's Handbook*, I argue that something is, in fact, left behind. I am reasoning for a new kind of materialism that leaves residual traces in the neurobiological matrix in the minds of the collaborating artist and the members of the audience. The virtuoso performance produces a material change as 'mental memory sculptures' and architectures manifesting themselves as subtle stabilizations and destabilizations of the structural and dynamic neuro-bio-chemical conditions of the brain. What the artist and audience listening to my performance 'take home with them' is not a real object or artwork but an immaterial and imaginary one: a concretion of memories that may last a lifetime. When, in addition to the original *In the Mind's I* performance, a political voice was assumed by the curator-student, a different kind of make-believe exhibition resulted inside their heads. As we saw in the example of the despotic curator, the resulting exhibition was limited and anemic. Sovereignty using its own apparatuses constitutes the mind's eyes of its subjects, especially today in the information economy. The Bologna Accord is a case-in-point: by limiting the educational curriculum you limit the general intelligence and thereby, limit the complexity of the intellectual habitus. The image of thought becomes barren and distressed.

The last phase of the project tested the nature of memory in relation to actual production.

Section 4. The Cultural Capitalism / Cognitive Capitalism Ratio and its Relationship to Cerebral Complexity

To acknowledge the existence of relations of power and the need to transform them, while renouncing the illusion that we could free ourselves completely from power – this is what is specific to the project we have called 'radical and plural democracy.' Such a project recognizes that the specificity of modern pluralist democracy – even a well-ordered one – does not reside in the absence of domination and of violence but in the establishment of a set of institutions through which they can be limited and contested. (44)

1. Cognitive Capitalism

Cognitive capitalism is defined here as a system of information production and distribution. It utilizes the powerful capacities of the Internet such as software agents and tracking systems as well as new software programs for the construction of static and moving images in specially engineered optic, aural and haptic simulated environments to create specialized contexts for the production of attention and dys-attention. With these contemporary apparatuses systems of power administrate normalcy and produce systems of homogenized thinking amongst its constituency. Linked to scientific methodologies cognitive capital systems are based on methods of creating constancy and repetition in the cultural context. It assimilates difference into similarity and attempts to accentuate normalcy through the reiteration of consistent and synchronous patterns in the distributions of sensibility. 'These oscillations occur during the encoding of perceptual objects, when coherent representations of the various attributes of these objects have to be formed. The oscillations are consistently observed when subjects direct their attention toward an object and retain information about it in the working memory. And finally, the oscillations are a distinctive correlate of conscious perception…Eventually advanced analytic methods may reveal the semantic content, the actual meaning of such state vectors, and it **may become possible to manipulate these states and thereby alter the contents of consciousness**…' (45)

Cognitive capitalism is a machinic assemblage that tethers together an assortment of institutions which jointly administer the brain and mind with the new technologies of the 21st century. The new territory for profiteering and dominance is the brain and mind. In this regard a number of agencies are important for the transition from neo-liberal global capitalism to late capitalism as neo-liberal cognitive capitalism. The military-industrial complex, a term developed during the Eisenhower administration, brings together legislators and politicians, the armed forces and the technology to create possible advantages in the realms of information technology and methods of interrogation, including mind altering medications and attention. The neuroscience industry including researchers in universities and brain-mapping companies are actively pursuing research in what is referred to as 'consumer neuroscience' in which individual choice and the control of future decision-making processes are at stake. The pharmaceutical corporations are creating new medications for the specific pathologies that cognitive capitalism generates such as Attention Deficit Disorder and Depression as well as creating memory drugs. The special affects industry, including the manufacturers of computer programs and special effect cameras like anamorphic cameras as well as the studio themselves, are creating ever more intense cinematic experiences. These experiences contaminate other mediated events such as the use of fast-cutting techniques seen in ESPN, MTV rock videos and commercials. Finally the advertising industry continues with ever more success to design phatic and intense images that require our attention in urban spaces through the use of video billboards, projections on the skin of architecture and recently through heterochronously, unfolding in time, experienced navigation routes, pre-programmed temporal trajectories on web pages and computer games.

Cognitive capitalism is generally characterized by post-autonomy and post-operaismo literature by the following conditions: (46)

First, it is defined by a condition of precarity. Precarity refers to the widespread condition of temporary, flexible, contingent, casual, and intermittent work in post-industrial societies. It is the result of the conditions of neo-liberal global capitalist markets since the 1980's. The term Flexible Exploitation or Flexiploitation is used to describe jobs that have low, insecure and unsteady pay. It is also defined by the term 'existential precariousness' because of the results of Flexiploitation in which the laborer

experiences social exclusion because of the low pay and ennui of loneliness that working intermittently and at home creates. Intermittent and itinerant labor is isolating. The subjection of the worker within the production process is no longer imposed in disciplinary fashion by direct command (foremen); most of the time it is interjected and developed through forms of conditioning and social control. Individualized contractual relations are the order of the day, and this tends to introduce individual competitiveness into people's working behaviors. Precarity affects youth, woman and immigrants the greatest.

Secondly, it is characterized by the socialization of labor in which prosumption and crowdsourcing play pivotal roles. Prosuming describes the transition of the consumer to a producer, and in a world of excessive products in the marketplace, the mass customization of a product in which the consumer picks and chooses his or her personal requirements becomes paramount. But most importantly it is these choices as they occur, for instance, in Google search engines, that provide the free data used by Google to make their search engine more relevant. In other words, our choices become a form of free labor. Crowdsourcing is related to prosuming. In crowdsourcing, a problem is broadcast to a random and unknown group of individual users distributed on the world-wide web, who, through their group effort, provide solutions for a specific problem and then sift through them to determine the best one with or without remuneration. 'Crowdsourcing taps into the global world of ideas, helping companies work through a rapid design process.' (47) This is usually available at relatively no cost, as people are always willing to share their ideas on a global scale. In other words, wealth is no longer based solely and exclusively on the production of material goods but is based increasingly on immaterial elements, such as raw materials, that are intangible and difficult to measure and quantify, deriving directly from employment of the relational, affective and cerebral faculties of human beings.

Thirdly, it is characterized by what is called 'becoming-profit-rent'. It reintroduces a contemporary kind of Feudalism into the every day life. During the period of Fordist industrialization, rent became marginalized and industrial capitalization became widespread. According to Carlo Vaercellone, this situation was reversed at the onset of cognitive capitalism for the following reasons: (1) the key role of different

forms of property such as shareholders' ownership of patents and credits that correspond to the collection of part of the generated value from a position that is external to production and (2) direct command over the processes of production tends to be substituted to persuading and commanding markets. Two trends ensue from the above statements. Firstly, value now resides in living labor rather then in fixed capital and the routine of work execution. Secondly – and as a result – the wealth of nations rest on productive cooperation and lies not inside the factory but outside the company grounds. 'To paraphrase Veblen's prophetic expression, "large companies have become a place of business rather than of the creation of industry", and in this respect company profits could increasingly become assimilated to rents'. (48)

Fourth, cognitive capitalism is characterized by a breakdown in the classic division between fixed and variable capital. Human resources are the new fixed capital and fixed capital is in our heads. This is related to the definition that I would like to reinforce concerning cognitive capitalism: it attempts to conquer the new territories and markets provided for the brain and mind. 'In the second half of the twentieth century intellectual labor completely changed its nature, having been progressively absorbed into the domain of economic production. Once digital technologies made the connection of individual fragments of cognitive labor possible, the parceled intellectual labor was subjected to the value production cycle.' (49)

Fifth, cognitive capitalism is defined by a semiotic turn in which the products of capital are produced by the mind and language. 'In the sphere of digital production, exploitation is exerted essentially on the semiotic flux produced by human time at work.' (50) The production of wealth is no longer based on standardized and homogenous models for the organization of the labor process regardless of the types of goods produced. Production in cognitive capitalism takes place through a wide variety of labor-process models made possible by the development of new technologies of linguistic networking. Christian Marazzi puts it this way: Communication's entry into a "talking" production, which uses linguistic machines whose importance resides much more in their data-collection abilities (software) than in their physical configuration (hardware) or their value as fixed capital, is the historic consequences of the crisis in the classic relationship

between the spheres of production and distribution. (51) One very important model that describes this talking production is just in case production and just in time production.

Finally, related to definition five, cognitive capitalism is also necessarily a networked reality. It is important to note that cognitive capital uses the global apparatuses of the informational technologies that do not respect national borders. It is not constrained by local space or time.

To these definitions I would like to add another two categories that I feel subsumes many of the above distinctions and conflates them with the knowledge of an inflected, deterritorialized neuroscience. Through terms like Neuropower, Neurobiopolitics, Cognitive Ergonomics and Cognitive Labor I would like to redefine the issues surrounding cognitive capitalism. This essay is not the place to give an in-depth account of these processes but rather I would like to add these terms to the definitions given above in the hope of producing a broader and more expansive account of the new apparati that power has in its contemporary repertoire. Secondly, I would then like to create a theory called the 'Cultural Capital / Cognitive Capital Ratio' in order to assess each culture's potential as a producer of peoples or multiplicities. I will argue that a high ratio reflects a flexible cultural environment well tooled to deal with the fluctuating expectations and contingencies of our new world economy. A low value reflects a despotic context in which the status quo is maintained. I would like to argue that the residency in the 21st century is a cultural apparatus that pushes this equation towards high values and the multiplicity. This high value describes high levels of variability, autonomy and complexity in the cultural field and this has implication for the brain. This complex brain I will argue is a better fit to the pluri-potential world we are now living in and will continue to do so. In this regard I would make a similar argument for art and architecture. In open societies where there is much choice, freedom and difference the ratio is large. In closed societies characterized by homogeny and lack of choice the ratio is low. When art and architecture are set free, in its most utopian guise, they create the opportunity for the emancipation of the brain/mind/world triangulation and create high ratios. The residency as we will see is a conduit in which this might happen and in fact

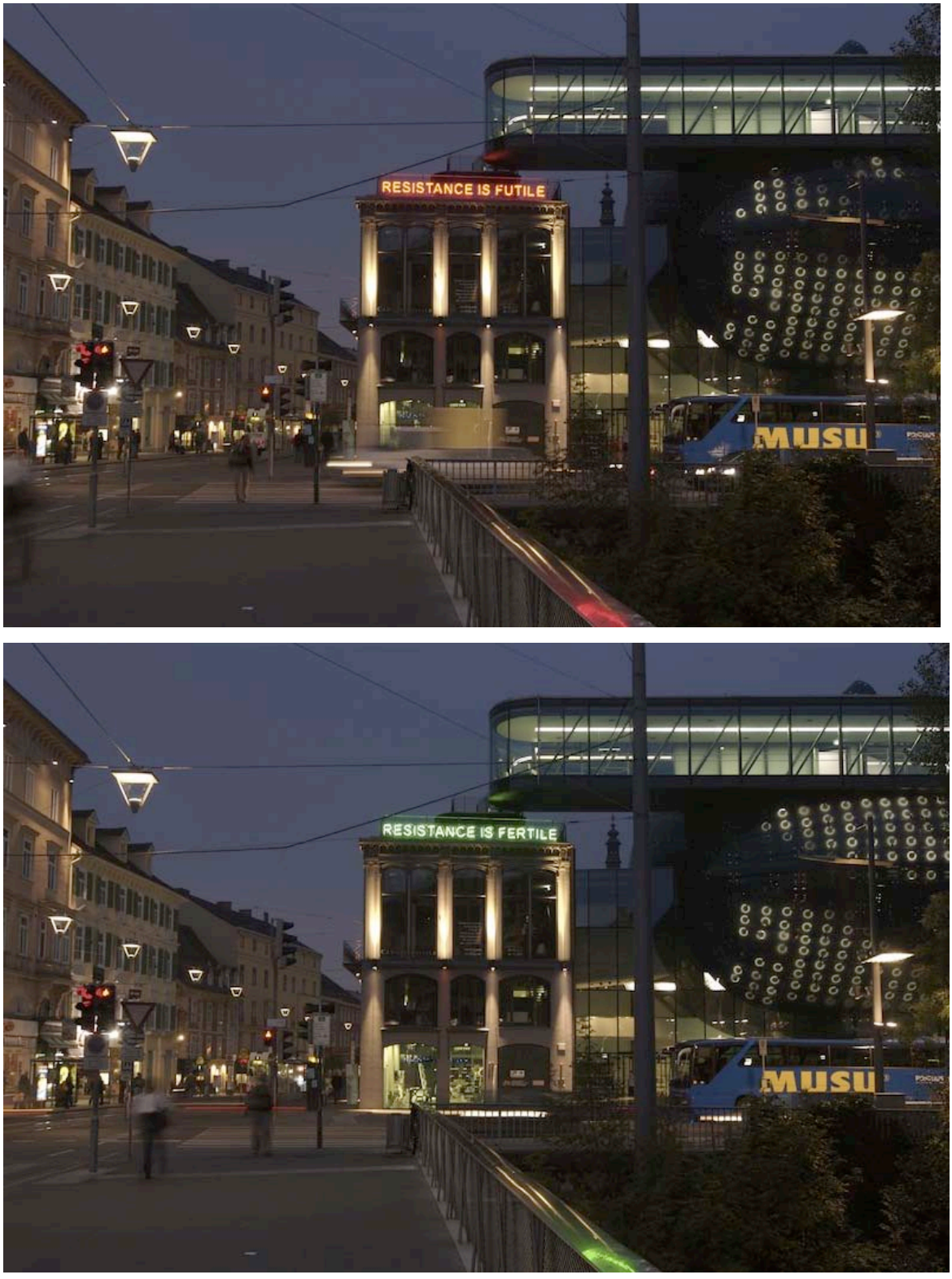
exacerbates this emancipation as it brings together the other, the immigrant living at the margins, and the artist in one package. The question is how could we increase this potential through new forms of residencies that are more permeable? Maybe we need to dispense with its walls altogether to emancipate the container, and as mentioned before, get rid of the containers that constrict people and idea flows from other countries and other continents. In the end, I would like to make the claim that a distributed and rhizomatic transnational condition matches and is more cognitively ergonomic for the processes through which the brain operates. A flexible neural architecture that is also non-hierarchical and diffusely organized has a disposition suited for a global consciousness operating in a distributed non-hierarchical cultural environment. 'What do we gain by saying that the neuronal correlate of consciousness is a particular metastable state of a very complex, highly dynamic, non-stationary distributed system - a state characterized by sequences of ever-changing patterns of precisely synchronized oscillations.' (52)

2. Cultural Capital

In this section, I aim to build on the notion of cultural capital that was originally conceived by Pierre Bourdieu and used to explain how economic obstacles were insufficient to explain disparities in the educational success in children of different social classes. Bourdieu argued that factors such as cultural habits and dispositions inherited from the family are fundamentally important to a child's success in school. (53) Culture was no longer understood as what binds society together in shared norms and values but as a form of economic capital. Cultural capital is acquired in the home via exposure to cultural practices but is perceived as embodied and inborn. This is coupled to an already incorporated system of education called scholastic achievement, and therefore the child born into cultural capital will be advantaged. I find it difficult to resolve this strict definition of cultural capital in the context of the recent importance of low culture in the production of cultural dispositions. Certainly the image of white rappers and DJ's is not commensurate with the above notion of the advantages of cultural capital. Are ghetto kids at an advantage in this cultural milieu?

I also find that this definition is somewhat enfeebled as it does not account for the emancipating aspects of cultural capital. Therefore, I am extending cultural capital to include the idea that creative practices (which artists and architects have attained through direct schooling or naturally through an osmotic familial context) provide these cultural practitioners with the potential to produce novel intellectual products and discourses, especially in the cognitive realm, that interact with the conditions of cognitive capital and mutate them. Artists and architects using their own practices, apparatus, materials, spaces, times, non-spaces and in-between times mutate the conditions of the distribution of sensibility both as it is appreciated physically but also metaphysically, which has repercussions as we will see for the brain and mind. In other words, unlike cognitive capitalism, which is connected to ideas of recurrent phenomena and constancy in order to crystalize ideas of what is empirically true and what is deemed therefore relevant and important, cultural capital produces the unique and inconstant singularity of a happening. In the Wolff Singer model, ephemeral connectivities, which are embedded in the distribution of sensibility, stimulate synchronicities in the brain of differently programmed attentive audiences. On the one hand, powerful institutionalized resonances incite coupled oscillatory potentials in people's brains that attempt to out-compete those resonances not so contrived. Perhaps artists and architects create other forms of synchronization that integrate the cultural world differently. Their artworks, architectures, designs and urban planes remap the cultural context in ways that call out to assemblages of neural networks causing different rhythmic concoctions and meshes, eliciting different kinds of attentions and thoughts, thus promoting different actions. The implications for brain sculpting is real as those networks of synchronized activities and the neural architectures that support them, which are repetitively stimulated, will be selected preferentially over those that are not. Although I am aware of the Post-Fordist notion of just in time production and just in case production, which are key elements in lean economies and the special conditions of the creative industries that attempt to rationalize and instrumentalize artistic production, in the most utopian and pure condition of artistic production, it is towards an image of the cultural landscape that is heterogenous, highly differentiated, and autonomous that artistic production strives. Linked to, for instance,

what is new, or what engages curiosity, like shock in the works of Maurizio Cattelan's sculpture *Frank and Jamie* (2002), in which two New York City policemen are turned upside down and propped against a wall in a posture that has been interpreted as a visual parallel to the sense of vulnerability that permeated the country in the wake of the terrorist attacks of September 11, 2001. When these works are mapped together with other such works into grand trans-historically elaborated networks of otherness, they create their own landscape of synchronized energies; when perceived repetitively, through their production in cultural media, these become adequate to the task of engaging attention of a specific audience, first one with cultural capital but then a wider more diverse one. Cultural capital is distributed beyond its original social habitus to the public, as we saw with the example of surrealism in which psycho-dynamically inflected objects mutated the conditions of the shared cultural landscape to create other attention networks for its observing populace. Conversely, sovereignty attempts to recoup its power through its later reiteration of these potentially dangerous sensations inside the safe haven of curated museum collections. In this regard I previously mentioned that the Guggenheim Museum, Bilbao was more then a static material structure but operated in the immaterial world of branded identities, global art tourism and distributed collectibles moving continually moving around the globe from one presentation site to another. This is at the heart of my work *Resistance is Fertile / Resistance is Futile* first shown at the Kunsthaus Graz in *Protections*, curated by Adam Budak in 2006. The power of art as a source of neural modulation that can compete against institutionalized practices for the brain/mind's attention is what is at stake here. It is not one single artwork but their multiplicity ensembled together that elaborate the conditions for the possibility of a free imagination.



Warren Neidich, Resistance is Futile, Resistance is Fertile, Neon Sculpture, 10 meters x 1 meter, 2006, Kunsthaus Graz, Graz, Vienna

In tertiary economies, the mind's eye is a space of contention between the powers of institutionalization and that of creativity. Cultural capital cultivates difference. Cognitive capital reinstates the status quo over and over again limiting the possible choices for thinking, while cultural capital expands and complexifies the possibilities for thought. Cognitive capital is Darwinian and cultivates a marketplace of ideas in which those that conform to the contingencies of the pervasive thought-ecology survive, while those that do not are eliminated. Cultural capital is Bergsonian and cultivates, rather, a fractal and non-contingent field of knowledge where uncertainty reigns and the unexpected creates new and different connections that expand what is possible to think.

5. Further Elucidation of the Cultural Capital / Cognitive Capital Ratio and Neuromodulation.

Before we continue I would like to develop three lines of thought concerning cognitive capital as a modifier of the brain: (1) Neuroplasticity and its relationship to Neuropower, (2) Neuro-complexity especially its relation to complex environments that sculpt complex neuro-architectures, and (3) Models of attention and parallelactic coupling. First, let us look into neuroplasticity.

Today more then ever, culture has replaced nature as the primary force of epigenesis. Epigenesis is defined as the means by which the unfolding of genetically-prescribed formation of the brain experiences alteration by its interaction with the environment. When one considers brain function in this context, the term neural plasticity is used. Neural plasticity refers to the ability of the components of neurons – their axons, dendrites, and synapses, plus their extended forms as neural network systems – to be modified by experience. The neurobiologist Marcus Jacobson defined neural plasticity as a process through which the nervous system adjusts to changes in the internal and external milieu. (54) Adjustments in the internal milieu can occur after brain injuries. For instance, a child is able to recover the function of language production and reception after trauma or stroke to the left dominant language hemisphere of the brain. The right hemisphere, not normally an active part of that system, is capable of being modified so as to assume these language functions with little deficit if the onset of left hemisphere

dysfunction occurs at an early enough age. Adjustments can also occur in response to changes in the external milieu. The heterochronous unfolding of the genetically determined neurobiological time table creates what are called 'critical periods of development' in which certain regions and systems of the neurobiological substrate are extremely sensitive to the conditions of, for example, the linguistic-cultural milieu that predispose it to language acquisition during a particular time window. And therein lies the bigger question of which language will be acquired of the 6,700 in the world that the child's brain has the potential to learn? Which one is actually learned depends upon the close coupling of the child's brain-mind to his or her linguistic field. (55) As we will see in what follows, this condition of neural plasticity will be key in understanding the rapprochement of Rancière's distribution of the sensible and its concomitant regulation of the pluri-potentiality of the brain's neural plasticity. I will argue that when the Cultural Capital / Cognitive Capital ratio is small, for instance when subsidies to the arts are decreased or when all ethnic groups are not represented in cultural outputs, an 'Institutional Stabilization' of the distribution of sensibility occurs. This has the effect of restricting the potential heterogeneity and the complexity of neural connections, called differentiation, in the plastic brain that represses the implicit pluri-potent character of the neurobiological substrate resulting in the production of a people. When the Cultural Capital / Cognitive Capital ratio is high, an effulgence of cultural products infiltrate the cultural landscape creating complex and culturally heterogeneous patterns of sensations and meanings. This as we will see has implications for the neurobiologic architecture and as we saw in the *In the Mind's I* performance, create very different platforms upon which to organize the data of our imagination.

In tackling the concept of complexity, two terms need to be first explained. Elements in a system are highly functionally segregated or specialized if they can take on many different states and these states can have an effect on the rest of the system. On the other hand when these elements express states that effect the rest of the system, the system is said to be integrated. According to Tononi and Edelman, 'Thus, we reach the important conclusion that high values of complexity correspond to an optimal synthesis of functional specialization and functional integration within a system. This is clearly the case for systems like the brain - different areas and groups of neurons do different

things (they are differentiated) at the same time they interact to give rise to a unified conscious scene and to unified behaviors (they are integrated). By contrast, systems whose individual elements are either not integrated (such as a gas) or not specialized (like a homogeneous crystal) will have minimal complexity.' (56)

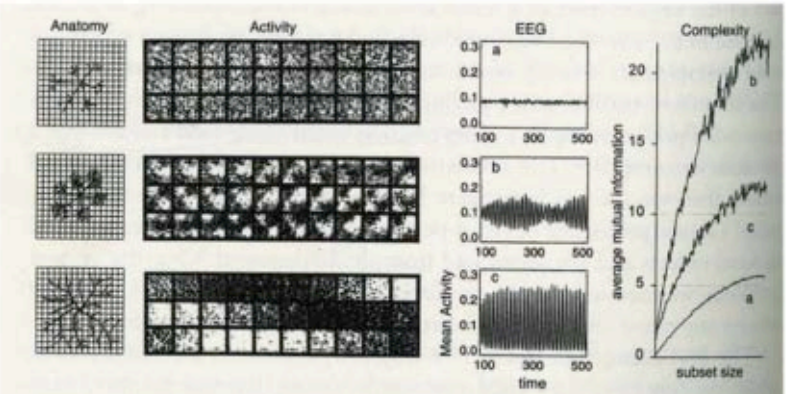


FIGURE 11.3 HOW COMPLEXITY VARIES, DEPENDING ON NEUROANATOMICAL ORGANIZATION. Complexity values were obtained from simulations of a primary visual cortical area. The figure shows three cases. In the first case (upper row), the simulated cortical area has sparse connectivity (first column: Anatomy). Neuronal groups fire almost independently (second column: Activity): the 30 small squares within the rectangle indicate the pattern of firing every 2 milliseconds (from left to right and from top to bottom) of 512 neuronal groups that are spontaneously active. The third column represents the EEG, which is essentially flat, indicating that the neuronal groups are not synchronized. Complexity (the area under the curve in the fourth column) is low. In the third case (lower row), the simulated cortical area has random connectivity. Neuronal groups are completely synchronized and oscillate together. The EEG shows hypersynchronous activity reminiscent of slow-wave sleep, epileptic seizures, or anesthesia. Complexity is low. In the second case (middle row), the simulated cortical area has a patchy connectivity that corresponds to the one found in the cortex. Neuronal groups display continually changing integrated activity patterns. The EEG shows that synchronization waxes and wanes and that different groups of neurons synchronize at different times. Complexity is high.

They use three different models of organization of the visual cortex to illustrate the effects of differentiation and integration: the old diseased brain, the immature brain and the normal adult brain. In the old diseased brain, individual groups of neurons are still active but the connections between areas are absent. In such a system, which appears like an improperly tuned TV or acts like a gas, the EEG pattern shows absence of synchronization among its groups. Even though the subsets of the system manifest many

different states there is little effect on the rest of the system. The value of shared and mutual information is low and so is the complexity. Accordingly, such a system is noisy but undifferentiated. In the immature brain the situation is almost opposite. The differences in the subsets of neural groups are low, although their connectivity is very high. The neuronal groups are connected to each other and in simulations, all groups oscillate together. The EEG mimics slow-wave sleep or a seizure. The entropy is low in the system and so is the complexity. The system is highly integrated but not differentiated. The last example is the normal human visual cortex in which groups of neurons follow two sets of rules. First, neural groups are associated that have similar visual orientation specificities. For instance, groups that are stimulated by a vertical light moving from left to right tend to be more connected. Secondly the strength of those connections is directly related to the topographic distance. In this example, the dynamic behavior is very complex as groups of neurons show overall synchronous behavior, but at the same time, group and regroup according to the stimulus condition. For instance, different groups would respond differently to a horizontal, vertical or diagonal moving light from left to right. In the normal adult brain there are many different groups and each group's behavior is significant to the entire system. It is highly differentiated and integrated. Therefore the larger the number of activity patterns that make a difference to the system, the higher the complexity. In conclusion, the complex system has high values that are both functionally specialized and functionally integrated neural groupings. By contrast, systems approach zero complexity when their elements are completely integrated, orderly and homogenous and completely independent. 'By contrast, complexity, as we define it, is low or zero for systems that are composed of elements that are either completely independent (disorderly) or completely integrated (orderly and homogeneous).' (57)
The next important question to ask is how are complex brains formed? Is there a relationship between the level of complexity found in an external environment and the level of complexity of the neurobiological substrate? Are they co-extensive with each other? This is Edelman's answer: Moreover, everything else being equal, the more complex the environment, the larger the complexity of the systems that achieve high values of matching (for example the brain). It is thus the adaptation of the brain's reentrant circuits to the demands posed by a rich environment, based on principles of

natural, developmental, and neural selection that leads to a high complexity, as reflected by increased values of matching and degeneracy. (58)

Re-entrant systems refer to reciprocally connected systems of distributed neurons that have related properties, such as responding to a vertical edge. The visual cortex has at least three dozen different processing areas which handle such diverse stimulation as movement, color and form, just to name a few. However we do not see a fragmented world. Instead we experience it seamlessly. Re-entry is important for what is called 'binding' in which these diverse forms of information are bound together in a seamless package. Re-entry is also important in making local synaptic changes context-dependent by ensuring that synaptic efficiency in one area is affected by activation patterns in a distant area. Re-entrant systems respond to the recurring conditions of the real world. Those recurring systems can be institutionally-contrived distributions of the sensible and are socially constructed. As such, dynamic patterns linking other patterns in networks of such relations selected for concomitant dynamic systems in the brain and intensify them at the expense of networks that are not constructed in this manner undergo apoptosis or cell death. In the world of emphatic, engineered, and branded stimuli concocted in advertising firms' backrooms and displayed through a network of media including billboards, television screens and Internet flat screens, the opportunity for sculpting the brain is great. This is the new means through which governments sculpt the brains of its people. Surely resistance is futile. However, as we saw before, disruptions of these cultural circuits – and the production of alternative ones that first compete in the cultural arena and then in the brain – create other possibilities for configuring neural network architectures. Resistance is Fertile. Let us look more deeply into this issue.

'By contrast, in evolutionary systems, where there is no design, the term ''irrelevant'' has no a priori meaning. It is possible for any change in a part to contribute to overall function, mutations can prompt compensation, stochastic interactions with the environment can lead to strong selection, often there is no fixed assignment of exclusive responsibility for a given function, and, unlike the engineering case, interactions become increasingly complex. A theoretical analysis suggests that this increase in complexity results not only from selection in rich environments (which include other species) but also from the prevalence of degeneracy.' (59) Degeneracy, as we saw earlier, is an

important term for us to understand complexity. It describes the way that in selectional systems, like the brain, there are multiple ways by which an output can occur activating the same function. Unlike redundancy in which the same function is carried out by identical elements, degenerate networks, for instance, are non-identical. In other words structurally different neural systems can produce similar outputs. In the extremely variable nervous system made up of millions neural connections it is only inevitable that degenerate circuit would arise. Degeneracy protects the organism, in that if one of the systems of output fails because of, say, a stroke, another route is still available. Degeneracy is also important for creativity as it gives artists the ability to express an idea in many ways and to invent new combinations of circuitry with which to create completely novel ideas. A ratiomatic derivation of these two regimes as the Cognitive / Cultural Capitalism Ratio is different for each cultural context, and the brain and mind are hailed by different attentional concoctions which result from their mutual contamination and which, therefore, activate different neurologic tool-boxes. (By regime I mean the symbolic reordering of social relations in the wider context and therefore much more than a mere form of government.) (60)

The global workspace theory and the neuronal recycling hypothesis, working separately or together, are examples of such cerebral toolkits which may give us an inkling about how eruptions in the cultural milieu that result from the interaction of these two systems generate consequences for the brain and mind. 'The global neuronal workspace theory tries to account for these essential properties by emphasizing the role of long-distance reciprocal connections among brain areas. According to this theory, conscious processing crucially involves a set of neurons, the 'workspace' neurons, which can work in synergy through long-distance reciprocal connections. Those neurons, which can access information, maintain it online, and make it available to virtually any other process, although particularly numerous in frontal-parietal areas, are distributed throughout the brain, thus constituting 'global workspace'. This state of global availability is, according to the theory, just what is to be conscious of a piece of information…The particular set of workspace neurons involved in this mutual amplification process at a given time, would code for the current conspicuous content, and would delineate the possibilities of conscious manipulation, intentional actions and

reports.' (61) According to this theory, only a single representation can be processed sufficiently by the workspace at any time rendering it conscious whilst the other competing stimulations remain implicit or unconscious. (62)

Warren Neidich, Cultural Contamination/Decontamination, Installation photograph, size variable, 1994, Villa Arson Nice, France

Thus the relationship between cognitive capitalism and cultural capitalism, as it influences, first, the conditions for cultural attention - what is culturally important in a specific cultural context - and, subsequently, through activating specific conscious representations, as in the global neuronal workspace, has implications for what the brain and mind will give attention to, remember, and therefore be sculpted by cultural epigenesis. One could argue that in the transition from neo-liberal global capitalism to neo-liberal cognitive capitalism a reordering of the cultural landscape occurs in which an intensification of certain stimuli and not others results in making some stimuli more user-friendly to such models as the global workspace apparatus. Cognitive ergonomics then becomes the set of rules through which the cultural landscape is modified by the design industry to fit the conditions of the epigenetically revealed cognitive apparatus. Instead of the shape of a chair designed to follow the contours of the back or an office workstation formulated for the convenient manipulation of objects by an average arm-length and hand dexterity, built space is engineered with the subtle predispositions of the actively engaged intellectual apparatus in mind. The design of a website is a case-in-point. Websites for corporations tend to be easy to read and navigate; they interact with the viewer very differently then websites that are designed as artworks. The corporate websites of www.americanexpress.com or www.airberlin.com operates very differently than the many websites made as artistic adventures which can be found at http://rhizome.org/artbase/browse/.

In the first instance, clarity of purpose is its main goal and in the latter an interactive, creative proactivity is encouraged. Different forms of cognitive responses are required to navigate. Be that as it may, implicit in this concept is that these two opposed systems are not rigorously specified and have much overlap. Of course cognitive capital can engage artists to do its bidding and the creative industries usurp the power of art by engaging its workers to produce mimetic models embedded in capitalistic networks. The object and its meanings fashioned by cultural capital can become transformed by cognitive capital and used for very different purposes then originally intended. The appropriation of musical sound tracks, like Janis Joplin's *Oh Lord Can You Buy Me a Mercedes Benz,* as background music for commercials selling automobiles is a case-in-point. Products of cognitive capital can be shaped, modified and transformed by the

methods of cultural capital to gain other significances. One of the roles of neuro-aesthetics – the investigation by artists, using their own methods and paradigms, of the common subject matter it shares with neuroscience (think here for instance of the subject matter of memory) – is to utilize facts developed in neurobiological laboratories for its own purposes. Sometimes this treatment is in direct opposition to the facts' original intentions or reasons. Neuro-aesthetics therefore deterritorializes neuroscience. The détente or, if you will, the agonism between these two processes finds its rapprochement in how cultural capital and cognitive capital might together have long term effects on brain and mind. (63) In this regard, the neuronal recycling hypothesis provides us with the next step in this logical process, and it is an important key as to how long-term ontogenic changes might occur in the presence of sustained cultural niches. Cultural acquisitions such as reading (don't forget writing and reading are a fairly new abilities occurring in Mesopotamia in approximately 3,500 B.C.) must find their 'neuronal niche', defined here as a set of already existing neuronal circuits which have functions that can be easily adapted to the newly required function and are sufficiently plastic, thereby able to change if need be. (64) At the crossroads of competition and cooperation expressed by this ratio, the brain and mind are formed. Cultural acquisitions are real and they do happen. New tools are added to cognitive tool boxes set in motion by a coupling of cultural contingencies. As we shift from the local to the global what new cultural conditions will couple to already existing neural potentialities?

Section 6. Conclusion: Residencies as Crucibles for New Global Concoctions

In the olden days, the residency was a place for a foreign artist to learn from a host nation. These artists would then return to their native countries in order to teach his or her fellow countryman (or woman) what he or she had learned. Today that has changed. The residency is now a place where artists might bring firsthand knowledge to the host country concerning their own homeland. As the global hegemony moves according to the new logics of the current economic order, perhaps these artists are, in some way, representing the return of the repressed to initiate their own form of retribution. The resident is a messenger from abroad bringing the seeds of other cultural

logics to plant in the local landscape and produce new forms of cognitive surplus. Cultural capital has the potential to mutate the conditions of the local general intelligence, the cumulative facts of the common knowledge that are circulating at any particular moment providing the opportunity for new combinations of thoughts. Local populations who do not see themselves as part of a global community have the potential to become agitated and afraid in the midst of this cultural barrage, which destabilizes the networks of semiocapitalism leading to xenophobia. Schisis and slippages caused by unstable and not perfectly superimposable cultural knowledge(s) and value create distress manifested in distrust of the foreign and protection of mother tongue. Many historical examples of this occur throughout history culminating with the Jewish extermination during the Second World War and the Islamophobia now part of everyday life in America. I am arguing that in the pre-Internet society dominated by the notion of the nation state in which physical borders were necessary to maintain cultural purity, this reaction to difference was consistent. However, I am also claiming that our present conditions are quite different. Even today cultural contamination can be incendiary. The sympathetic overload it engenders needs to be redistributed through alternative cultural circuits. Instead of defense and fight against the different, an alternative response is more productive. In late capitalism, in the age of neo-liberal cognitive capitalism, the new contingencies of mass intellectuality call for us to reflect upon the new possibilities of the materiality of complex contemplation. Cosmetic billboard ads in Germany featuring slightly dark-skinned adults with full lips and slightly slanted eyes makes no sense unless one understands the power of cosmopolitan representation of an Earthling attesting to the material power of the other in the global circumstance. As such, a reappraisal of the residency as a crucible and a conduit for information exchange is vital for any sovereign looking to be relevant in the future. David Cameron wake up!

End Notes

1. F. Berardi, 'The Soul at Work', *Semiotexte*, 2009, page 98.
2. Ibid. 100.
3. Mirja Hubert and Peter Kenning, 'A current overview of consumer neuroscience', *Journal of Consumer Behavior*, Volume 7, 2008, page 272-292.
   "Erk et al. (2002) reasoned that the relative activation in the ventral striatum can be seen as an indicator for how attractive a visual stimulus (i.e. product design or shape) is evaluated to be. Assuming that there is a relation between product design and purchase decision, we can hypothesize that activity changes in the regard system of the brain induced by an attractive product design can partly be applied in order to predict purchasing behavior. Knutson et al, (2007) supported these findings: results from their study provided evidence that activation of the nuclecus accumbens correlates with individual product preferences and that activation in this area during product presentation may at least partly predict subsequent purchasing decisions".
4. Berardi 21.
5. Gilles Deleuze, 'Postscript on Control Societies', Negotiations, 1972-1990, Martin Joughin (trans.) New York: Columbia University Press, (1995), page 177-82.
6. Michel Foucault, The Birth of Biopolitics, 2010.
7. Paolo Virno, 'A Grammar of the Multitude', Semiotexte, 2004, page 41.
8. Pierre Bordieu, 'The Forms of Capital', http://www.marxists.org/reference/subject/philosophy/works/fr/bourdieu-forms-capital.html
9. Michael S. Gazzaniga, 'Who's in Charge', *Ecco*, 2011, page 33.
10. Ibid. 33.
11. Ibid. 71.
12. Gilles Deleuze and Felix Guattari, 'A Thousand Plateaus, Capitalism and Schizophrenia', *Continuum*, 2003, page 158.
13. Ibid. 150.

14. Peter R. Huttenlocher, 'Neural Plasticity, The Effects of Environment on the Development of the Cerebral Cortex', Harvard University Press, 2002, page 5.
15. Terrance Deacon, 'Multilevel Selection and Language Evolution', Evolution and Learning: The Baldwin Effect Reconsidered, eds. Bruce H. Weber and David J. Depew (Cambridge, MA: MIT Press, 2003).

    "…The most extensive modification to take place in human brain evolution - the disproportionate expansion of the cerebral cortex, and specifically of the prefrontal cortex - reflects the evolutionary adaptation to this intensive working memory processing demand imposed by symbol learning. So the very nature of symbolic reference, and its unusual cognitive demands when compared to non-symbolic forms of reference, is a selection force working on those neurological resources most critical to supporting it. In the context of a society heavily dependent on symbol use - as is any conceivable human society, but no nonhuman societies - brains would have been under intense selection to adapt to these needs. …This, then, is a case of selection pressure affecting the evolution of a biological substrate (the brain) and yet which is imposed, not by the physical environment, but ultimately from a purely semiotic realm."
16. M. M. Merzenich et al, 'Topographic reorganization of somatosensory cortical areas 3 b and 1 in adult monkeys following restricted deafferentation', *Neuroscience* 8, 1983, pages 33-55.
17. V. S. Ramachandran, 'Perceptual Plasticity and Freudian Psychology', Selectionism and the Brain, Edited by Olaf Sporns and Giulio Tononi, Academic Press, 1994, pages 316.
18. Nahma Sandrow, Surrealism: Theater, Arts Ideas, Harper and Row, 1972 page 83.
19. James V. Wertsch, Voices of the Mind, Harvard University Press, 1991, page 47.
20. Deleuze and Guittari 149.
21. (https://archimorph.wordpress.com/tag/benjamin-bratton/)
22. Warren Neidich, 'Blow-up: Photography, Cinema and the Brain', *DAP*, 2003

    "And recently cognitive ergonomics, which takes into account perceptual and cognitive strategies in the design of computer-worker interfaces, has come to be investigated. For the purposes of this discussion I would like to make the

following distinctions. Although cognitive ergonomics evolved from visual ergonomics it is differentiated from it. Visual ergonomics is a term that defines a composite of strategies through which nature is represented in the non-plastic art and is reformed and organized according to implicit and explicit knowledge of neural processing whereas cognitive ergonomics relates to the way that artificial information is reconfigured for the process of cognition occurring in the brain. Because as we have seen previously persistent strategies of representation found in painting and drawing continue to be important in newer strategies such as photography, cinema and new media visual ergonomics continues to operate p resently along side cognitive ergonomics many time serving as its foundation and at others serving as its schemata. Cognitive ergonomics is especially important in the creation of virtual reality programs as the need for information parsimony is the greatest."

23. Homi Bhabha, The Location of Culture, Routlege, 1985, page 14.
24. L.S. Vygotsky, Mind in Society, Harvard, 1978, page 56.
25. Gerald Edelman, The Remembered Present, Basic Books Inc., 1989, page 45.
    "Three fundamental mechanisms in neuronal group selection. (1) Developmental selection occurs as a result of molecular effects...(leading to, my words) the primary repertoire. (2) Selective strengthening or weakening of particular populations of synapses as a result of behavior leads to formation of variant circuits, a secondary repertoire of neuronal groups…(3) Reentry, a process by which linkage of maps occurs in time through parallel selection and correlation of neuronal groups in different areas receiving disjunct inputs."
26. Benjamin Bratton, 'In What Do We Mean by Program', Interactions: Experiences, People, Technology, HCI Journal of the Association of Computing Machinery, Vol. XV.3, May-June 2008.
27. Edelman.
28. Steven R. Quartz and Terrence J. Sejnowski, 'The Neural Basis of Cognitive Development: A Constructivist Manifesto,' *Brain Sciences* (2004), 1997.
    "Our primary concern in this target article, however, is to examine the neural

processes regulating structural change and their implication for representational change. In particular, dendritic development fulfills important requirements for a non stationary learning mechanism, suggesting how dendritic development under the influence of environmentally-derived activity confors to cognitive schemes for the construction of mental representations."

29. Marizio Lazzaratto, 'The Concepts of Life and the Living in the Societies of Control', Deleuze and the Social, eds, Martin Fuglsang and Bent Meier Sorensen, Edinburgh University Press, 2006, page 186
30. Sarat Maharaj, 'Exno-epistemics', Documenta11_Platform 5: Exhibition Catalogue, Okwui Enwezor, Hatje Cantz Verlag.
31. John Roberts, The Intangibilities of Form, Verso, 2007, page 2.
32. Kwame Anthony Appiah, 'The Case of Contamination', *The New York Times*, January, 1, 2006.
33. Bhabha 162.
34. Gerald M. Edelman and Joseph A. Gally, 'Degeneracy and complexity in biological systems', *PNAS*, November 20, 2001, Vol. 98, No. 24, pages 13763–13768.
35. Edelman 13763-13768.
36. Fredric Jameson, Post Modernism, or, The Cultural Logics of Late Capitalism, Duke University Press Books, 1990.
37. http://en.wikipedia.org/wiki/Inception
38. Felix Guittari, 'Chaosophy', *Semiotext*, page 10.
39. Joaquin M. Fuster, Cortex and Mind: Unifying Cognition, Oxford, 2003, page 17936,1973d.
40. http://www.childrenofthecode.org/interviews/deacon.htm#Co-EvolutionaryProcess
41. Clifford Geertz, 'Religion As a Cultural System', *The Interpretation of Cultures*, Basic Books, 1973, pages 87-125.
42. Neidich, 2003.
43. Paolo Virno, 'A Grammar of the Multitude', trans. Isabella Bertoletti, James Cascaito, and Andrea Casson (New York: *Semiotext(e)*, 2004), 41.

44. Chantal Mouffe, The Democratic Paradox (New York and London: Verso, 2000)
45. Conversation between Wolff Singer and Thomas Metzinger, in The Ego Tunnel, Thomas Metzinger, Basic Books, 2009, pg. 66
46. The following definitions were collected during my attendance at The Labour of the Multitude Conference in Warsaw on October 22, 2011.
    Jeff Howe, 'Power of Crowdsourcing', *Wired Magazine*, 2006 quoted from (http://en.wikipedia.org/wiki/Crowdsourcing)
47. http://www.exinfm.com/board/crowdsourcing.html.
48. Carlo Vercellone, *Wages, Rent and Profit*, (http://www.generation-online.org/index.html)
49. Franco Berardi, 'The Soul at Work', *Semiotext*, page 29.
50. Berardi 22.
51. Christian Marazzi, 'Capital and Affects', *Semiotext*, 2011.
52. Metzinger, 2009.
53. Bordieu (http://www.marxists.org/reference/subject/philosophy/works/fr/bourdieu-forms-capital.html)
54. Marcus Jacobson, 'Developmental Neurobiology', (New York: Plenum Press, 1991), 26.
55. Huttenlocher, page 132
56. Gerald Edelman, Giulio Tononi. A Universe Of Consciousness How Matter Becomes Imagination, Basic Books, page 131
57. Edelman pages 135-136.
58. Edelman page 138.
59. Edelman et al pages 13763–13768.
60. Manuel DeLanda, Intensive Science and Virtual Philosophy (New York: *Continuum*, 2002, 19.
61. Claire Sergent and Stanislas Dehaene, 'Neural processes underlying conscious perception: Experimental findings and a global neuronal workspace framework,' *Journal of Physiology,* Paris 98, 2004: 379, 380.
62. Sergent and Dehaene page 381

63. Mouffe, The Democratic Paradox, 104.

"An 'agonistic' approach acknowledges the real nature of its frontiers and the forms of exclusion that they entail, instead of trying to disguise them under the veil of rationality or morality. Coming to terms with the hegemonic nature of social relations and identities, it can contribute to subverting the everpresent temptation existing in democratic societies to naturalize its frontiers and essentialize its identities. For this reason it is much more receptive than the deliberative model to the multiplicity of voices that contemporary pluralist societies encompass and the complexity of their power structure."

64. Stanislas Dehaene and Laurent Cohen, 'Cultural Recycling of Cortical Maps,' *Neuron Review* 56 (October 2007): 384-385.

"The neuronal recycling hypothesis consists of the following postulates:

1. Human Brain organization is subject to strong anatomical and connectional constraints inherited from evolution. Organized neural maps are present early on in infancy and bias subsequent learning.

2. Cultural acquisitions (e.g. reading) must find their "neuronal niche," a set of circuits that are sufficiently close to the required function and sufficiently plastic as to reorient a significant fraction of their neural resources to this novel use.

3. As cortical territories dedicated to evolutionary older functions are invaded by novel cultural objects their prior organization is never entirely erased. Thus prior neural constraints exert powerful influence on cultural acquisition and adult organization."