# Introduction: An Activist Neuro-aesthetics Reader

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> Artistic activism and activist art are not only directly persecuted by repressive state apparatuses because they operate in the neighboring zones of art and revolution, they are also marginalized by structural conservatisms in historiography and the art world. As a consequence of the reductive parameters of these conservatisms, such as rigid canons, fixation on objects and absolute field demarcations, activist practices are not even included in the narratives and archives of political history and art theory, as long as they are not purged of their radical aspects, appropriated and coopted into the machines of the spectacle. In order to break through mechanisms of exclusion like these, the as yet missing theorization of activist art practices not only has to avoid codification inside and outside the conventional canon, it also has to develop new concept clusters in the course of its emergence and undertake to connect contexts not previously noticed in the respective disciplines.
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> —Gerald Raunig, *Art and Revolution*[1]

Before any account of activist neuroaesthetics can be enunciated it is essential to first understand the word activist (or activism), especially in the art context. Key to understanding activism is the word *activate*. The *Cambridge Dictionary* defines *activate* as the capacity to make something start or to speed up a process already in progress. Therefore, a political activist in the classic sense is someone who wants to change the world through social, political, and environmental activation. Like the word activate, the word activity connotes *action*; to do something to something. Artistic and cultural activism then follow as the process through which an artwork could change the world, oftentimes changing the art world (context) in the process. Art

1 Gerald Raunig, *Art and Activism: Transversal Activism in the Long Twentieth Century* (Los Angeles: Semiotext(e), 2007), 19.

activism (or activist art), as the above quote of Gerald Raunig suggests, is directed against the power structures at hand; those that in the past had marginalized and suppressed its radical framework. As this volume will propose, today that power is constituted within cognitive capitalism, wherein the brain and mind are the new factories of the twenty-first century. We are no longer proletariats working together on assembly lines to produce objects, but cognitariats working on computer terminals and mobile phones to produce data that is bought and sold to corporate, military, and policing entities. Formal subsumption, in which the definitions of labor and the working day were limited in time and space to the industrial shed, has been transformed into real subsumption in which the unrestricted activities of life in the world have become work. As such, the definition of what constitutes activism must evolve and new forms of resistance along with it.

In the past ten years, another crisis has begun to emerge that is almost as significant as the one caused by the advent of cybernetics and immaterial labor. Just as the pioneers of the idea of cognitive capitalism (such as Antonio Negri, Silvia Federici, Franco "Bifo" Berardi, Maurizio Lazzarato, and Mario Tronti, among others) realized that the then coming digital economy would have serious consequences for labor and the production of subjectivity, so too will the imminent transition from the information economy to full-blown neural capitalism in which the material brain is at the center of capitalist commodification. This transition requires a new epistemological understanding with which to unpack, expose, and resist the consequences of this coming age. Activist neuroaesthetics is one such methodology.



## FROM POSITIVIST NEUROAESTHETICS TO ACTIVIST NEUROAESTHETICS

A positivist neuroaesthetics attempts to explain the aesthetic field and its production (artworks) by referring to neuroanatomical models focused on the material brain sequestered inside the bony skull, aided by technology such as neuroimaging. The goal of positivist neuroaesthetics is to explain artworks, such as paintings, through their effect upon the brain's neural processing itself, generated as a result of innate genetically prescribed instructions and early intracranial developmental events. At stake is the idea that a microbiological neural architecture is responsible for aesthetic production rather than something happening independently or outside of the material brain's jurisdiction—for example, in relation to events and processes happening in the world of art.

The artistic field is contested and the interpretation of art—the inscription of its trials and tribulations both individually and collectively—is constantly changing and unstable. It is an ontogenetic, evolutionary process. Individual artists build upon their own succession of works and generations of artists reflect upon past collective productions; directly or indirectly remarking upon it, disrupting and re-interpreting its meaning. For example, Josiah McElheny's work *Model for Total Reflective Abstraction (after Buckminster Fuller and Isamu Noguchi)* (2003) illuminates his own past abstract glass works (such as *The History of Mirrors,* 1998), while at the same time intervening with the work of Buckminster Fuller and Isamu Noguchi to create a new way of seeing. In an article McElheny wrote for *Cabinet Magazine* in 2004, he quotes Buckminster Fuller: "In the brain of the viewer there would be induced a composite constellation of pattern information permitting the secondarily derived recognition of individuals sculpture's presence and dimensional relationships."[2] Yet positivist neuroaesthetics has no appreciation of this sense

2 Josiah McElheny, "Artist Project / Proposal for Total Reflective Abstraction," *Cabinet Magazine*, Summer 2004, https://www.cabinetmagazine.org/issues/14/mcelheny2.php.

of ontogeny. The changing spectator's responses and reactions that write the field's history are considered inessential and unimportant to an artwork's value as a scientific resource.

Two proponents of a positivist neuroaesthetics position are Semir Zeki and Eric Kandel.[3] As Zeki states in "Art and the Brain," "The overall function of art is an extension of the function of the brain."[4] Here the brain is a material brain confined within a bony skull rather than a cooperative and collective brain. Positivist neuroaesthetics understands art as an assemblage of non-changing essences linked to outdated Eurocentric and patriarchal concepts of beauty:

> The emphasis on line in many of the more modern and abstract works of art does not, in all probability, derive from profound knowledge or geometry but simply from the experimentation of artists to reduce the complex of forms into their essentials or, to put it neurological terms, to try and find out what the essence of form as represented in the brain may be.[5]

For Zeki, concepts of beauty can be experimented upon to produce neuroanatomical facts rather than artistic ones. He explicitly states, "An approach to the biological foundations of aesthetics is likely to enhance the sense of beauty—of the biological beauty of the brain."[6] As such, this limited concept of beauty belies art as a means for social and mental emancipation. Scientific facts linked to a scientific epistemology with its own determinant and reductionist rules and ideas of truth, ignorant of liminal attributes and the role of the unconscious, normalize art's most alarming values and attention-grabbing effects—capacities essential for art's competitiveness in the attention economy (as Yves Citton will later elucidate).

3 See, for example, Semir Zeki, *Inner Vision: An Exploration of Art and the Brain* (Oxford: Oxford University Press, 1999) and Eric Kandel, *Reductionism in Art and Brain Science: Bridging the Two Cultures* (New York: Columbia University Press, 2016).
4 Semir Zeki, "Art and the Brain," *Daedelus* 127, no. 2 (Spring 1998): 71–103.
5 Zeki, "Art and the Brain," 13.
6 Zeki, "Art and the Brain," 18.



Conceptual art's refutation of beauty and focus on ideas, especially irrational ones,[7] is outside the jurisdiction of a positivist neuroaesthetics understanding of art. Positivist neuroaesthetics is also incapable of understanding art movements such as punk, in which the desire to shock or perplex the viewer overtakes the desire to please, sometimes even creating revulsion. Positivist neuroaesthetics discounts the artist as a provocateur, much less the social, political, economic, or cultural *becomings* that provide the context of the artwork's production—as seen, for instance, in Russian Constructivism and agitprop.

Artworks, and the findings and inventions they elicit, are the product of artistic methods that use their own histories, apparatuses, methodologies, practices, and performances to investigate the sensual (and now also the virtual) world—in the end producing their own system of artistic facts which are not subject to peer review in a conventional scientific sense. Artworks are valorized not in accordance with statistical verification, but as a result of the impact they have on other artists' work as well as how they affect the viewer's sensibility. A single artwork like Marcel Duchamp's *Fountain* (1917) or Niki de Saint Phalle's *Shooting Paintings* (1961) can alter the history of art.

As exhibitions such as *Black Male* (2015) curated by Thelma Golden at the Whitney Museum of Art as well as documenta 11 (2002) curated by Okwui Enwezor—and, more recently, *Grief and Grievance: Art and Mourning* (2021), originally conceived by Enwezor and presented posthumously at the New Museum—point out, positivist neuroaesthetics' limited concept of beauty denies art's role as a means of political activism and promoting social justice. Positivist neuroaesthetics is interested in the now of the experiment sequestered in a laboratory, impounded by the rules and regulations of the scientific method, which are antithetical to those of the artistic method and isolated from its past incarnations and future

7 As Sol LeWitt wrote in "Sentences on Conceptual Art," "Irrational thoughts should be followed absolutely and logically." See Sol LeWitt, "Sentences in Conceptual Art," *0–9* (January 1969): 4.

reincarnations. Like any other phenomenon in science, in whatever guise, positivist neuroaesthetics has the right to use its tools and methods to explore artistic production, but in no other case is its inadequacy as a tautology made apparent.

Aligning itself directly with capitalist modes of production, positivist neuroaesthetics attempts to codify what has not yet been codified in order to recuperate divergence and singularity. It is, in fact, the enemy of real creativity, enlisting it only to feed the algorithms of deep learning and generating heterotopias of the new upon which capitalism feeds. Along with neural consumerism and neuroeconomics, positivist neuroaesthetics contributes to the production of the perfected cognitariat (digital laborer), mentally working on the many visual, optimized, and designed virtual platforms of the World Wide Web.

Positivist neuroaesthetics aids the governmentalization and policing of the sensible, especially in our world of pattern recognition, algorithmic surveillance, and Big Data. As described in the appendix to Jacques Rancière's *The Politics of Aesthetics*, the "distribution of the sensible" (*le partage du sensible*) is the "implicit law governing the sensible order that parcels out places and forms of participation in a common world by first establishing the modes of perception within which these are inscribed."[8] Implicit in this statement is the way that (neural) sovereignty—the entity, whether absolute or popular, local or global, that has jurisdiction over a territory or group of people—aided by research emanating out of positivist neuroaesthetics, produces a system of perceptual scientific facts that are regulated and, in turn, regulate its constituents as perceptual bodies. Conversely, activist neuroaesthetics and artists who are its practitioners redistribute the sensible and make it strange: "Artists, in the most utopian sense of the word, using their own materials, practices, histories, critiques, spaces, and apparatuses create alternative distributions of sensibility or

8 Appendix to Jacques Rancière, *The Politics of Aesthetics: The Distribution of the Sensible*, ed. and trans. Gabriel Rockhill (London: Bloomsbury, 2013), 89.



redistributions of sensibility that call out to different populations of neurons and neural maps, potentially producing different neurobiological architectures."[9]

More recently, positivist neuroaesthetics (in purposeful collaboration with cognitive capitalism and the military-industrial-entertainment complex that funds the research) is engaged with substituting sensory and perceptual facts—which have until recently been used to normalize bodies and minds—with artificially simulated facts created by intelligent machinic entities. As Hito Steyerl describes in *Duty Free Art: Art in the Age of Planetary Civil War*, "The spectrum of human vision only covers a tiny part of it. Electric charges, radio waves, light pulses encoded by machines for machines, are zipping by at slightly subliminal speed. Vision loses its importance and is replaced by filtering, decrypting, and pattern recognition."[10] Even our memories and the humanity they conjure are at stake. As Hal Foster writes in *What Comes After Farce?*, "Along with the fear of the machine becoming human, we confront a concern about the opposite condition. My iPhone regularly signals to me 'You have a new memory' and retrieves a photo from its file that it summons, a photo-memory that I do not remember at all. In those moments I am its replicant."[11]

Furthermore, new technologies of the wired brain currently being produced by DARPA are creating co-opted false memories similar to what Hito Steyerl calls "inceptionism"—a term named after Christopher Nolan's 2010 film *Inception*, concerning corporate dream theft. According to the DARPA website: "The RAM program aims to develop and test a wireless, fully implantable neural-interface medical device for human clinical use. The device would facilitate the formation of new memories and retrieval of existing

9 Deborah Hauptmann and Warren Neidich, eds., *From Biopolitics to Noopolitics: Architecture and Mind in the Age of Communication and Information* (Rotterdam: 010 Publishers, 2010), 571.
10 Hito Steyerl, *Duty Free Art: Art in the Age of Planetary Civil War* (London and New York: Verso, 2017), 47.
11 Hal Foster, *What Comes After Farce? Art Criticism at a Time of Debacle* (London: Verso, 2020).

ones in individuals who have lost these capacities as a result of traumatic brain injury or neurological disease."[12] Cloaked in the language of caring for the ill, the power to delete, retrace, and make memories uncovers a nightmare scenario of advanced neuropower, an advanced form of biopower in which the governing of populations of brains is now the focus. Steyerl's work is, on the one hand, exposing the conditions of this new reality as well as creating a set of practices and vocabularies to confront the conditions of this imminent threat to subjectivity. Her understanding of the art world as the "cultural refinery for the set of the post-democratic oligarchies"[13] and her desire to shift the focus of the emancipatory capacity of art to things rather than the subject is a step in the right direction.

In fact, Steyerl's statement that "to participate in the image as thing means to participate in its potential agency" could be a mantra for activist neuroaesthetics.[14] Activist neuroaesthetics is against positivist neuroaesthetics' engagement with the industrial/military/mediated components of neural capitalism and its totalitarian inclinations. In other words, activist neuroaesthetics believes that DARPA-funded brain-computer interfaces and memory-disrupting technologies like optogenetics are not to be embraced but critiqued. They are not only being invented to help humankind or cure disease but are part of insidious, diabolic schemes toward new and future methods of subjectivation and neural enhancement on the battlefield.[15] Positivist neuroaesthetics is part and parcel of a right accelerationism as described by

12 "DARPA and the Brain Initiative," Defense Advanced Research Project Agency, accessed September 27, 2021, https://www.darpa.mil/program/our-research/darpa-and-the-brain-initiative.
13 Hito Steyerl, "Politics of Art: Contemporary Art and the Transition to Post-Democracy," *e-flux* 21, December 2010, https://www.e-flux.com/journal/21/67696/politics-of-art-contemporary-art-and-the-transition-to-post-democracy/.
14 Hito Steyerl, "A Thing Like You and Me, *e-flux* 15, April 2010, https://www.e-flux.com/journal/15/61298/a-thing-like-you-and-me/.
15 In 2008, the United States Army gave researchers from UC Irvine, the University of Maryland, and Carnegie Mellon University a four million dollar grant to create what was then dubbed "synthetic telepathy," or a system to translate brain signals configured as code between the helmets of soldiers. See Noah Shachtman, "Army Funds Synthetic 'Telepathy' Research," *WIRED*, August 18, 2008, https://www.wired.com/2008/08/army-funds-synt/.



Nick Land in *Fanged Noumena,* in which the "high road to thinking no longer passes through a deepening of human cognition, but rather through a becoming inhuman of cognition, a migration of cognition out into the emerging planetary technosentience reservoir, into 'dehumanized landscapes.'"[16] Alternatively, activist neuroaesthetics is attuned to left-leaning accelerationist ideas in which a sharing economy predominates postcapitalist models and restages tragic Landian nihilism as a comedic urban romance with technology. In their "Manifesto for an Accelerationist Politics," Nick Srnicek and Alex Williams argue that Land confuses "speed with acceleration" and misses an understanding of "an acceleration which is also navigational, an experimental process of discovery within a universal space of possibility."[17] Could an accelerated technology—one that, instead of what is prevalent today, proposes a glitch aesthetic, a noisy atmosphere, and a material phantomology—be up to the task of deregulating capitalist exploitation and recuperation?

16 Nick Land, *Fanged Noumena: Collected Writings 1987–2007*, ed. Robin Mackay and Ray Brassier (Falmouth/New York: Urbanomic/Sequence Press, 2011), 293.
17 Nick Srnicek and Alex Williams "Manifesto for an Accelerationist Politics," *Critical Legal Thinking*, May 14, 2013, http://criticallegalthinking.com/2013/05/14/accelerate-manifesto-for-an-accelerationist-politics/.
18 Charles T. Wolfe, "Three Neuroaesthetics," in *The Search Drive: A Hack-ography* (Brussels: Zero-desk Publications, 2016), 94–96.
19 Gilles Deleuze, *Cinema 2: The Time-Image*, trans. Hugh Tomlinson and Robert Galeta (Minneapolis: University of Minnesota Press, 1989).

As discussed by Charles T. Wolfe in "Three Neuroaesthetics," an idealist neuroaesthetics model recognizes how things like neural plasticity and epigenesis play a role in the brain's adaptations and evolution as responses to changes in the socio-political aesthetic field.[18] Much like Gilles Deleuze writes in *Cinema 2: The Time-Image*, idealist neuroaesthetics recognizes that creating new circuits in art means creating new circuits in the brain.[19] While engaging with the co-evolutionary pressures that idealist neuroaesthetics proposes, activist neuroaesthetics takes it one step further by actively and purposely engaging with the techno-cultural milieu as it appears in its real, imaginary, and virtual guise, to instigate changes in

the brain's materiality. In this way, activist neuroaesthetics entangles the brain's variation at birth—its dendrites and axons with different tuning capacities—with an ever-expanding techno-cultural variation resulting from activist artistic production in the space and time with which it is linked. Through activist neuroaesthetics, the political power of art is redefined as the capacity to increase neural variation indirectly through its action upon cultural variation, increasing the range of its forms and their relations. This variation—through the combined processes of Hebbian neural dynamics in which "Neurons that wire together fire together"[20] (especially when they are linked in time and the action of epigenetic synaptogenesis, as understood by Jean-Pierre Changeux) and in which experience acts as a modifier of the neural synaptic architecture of the brain—increases the brain's complexity and neural variation.[21] Activist neuroaesthetics understands the networked brain in this expanded sense: as a linked intracranial and situated extra-cranial system. It is a rhizome that is "always detachable, connectable, reversible, modifiable, and has multiple entryways and exits and its own lines of flight."[22] As a result, the brain is a brain without organs (as I will discuss in depth later), and neural plasticity is its agent.

This leads us further into an understanding of how activist neuroaesthetics is an activist activity. A key component of activist neuroaesthetics is to make visible what Catherine Malabou refers to as the concept of the brain as an ideological screen linked to power.[23] Quoting Luc Boltanski and Eve Chiapello's *The New Spirit of Capitalism*, she interrogates the parallelism between transformations of capitalism and our view of the operations of neural functioning: "This is how

20 Donald O. Hebb, *The Organization of Behavior: A Neuropsychological Theory* (New York and London: Wiley and Sons, 1949).
21 Jean-Pierre Changeux, Philippe Courrege, and Antoine Danchin, "A Theory of the Epigenesis of Neuronal Networks by Selective Stabilization of Synapses," *Proceedings of the National Academy of Sciences of the United States of America* 70, no. 10 (October 1973): 2974–78.
22 Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 21.
23 Catherine Malabou, *What Should We Do with Our Brain?* (New York: Fordham University Press, 2008).



the forms of capitalist production accede to representation in each epoch, by mobilizing concepts and tools that were initially developed largely autonomously in the theoretical sphere or in the domain of basic scientific research. This is the case with neurology and computer science today."[24] In the introduction to Malabou's book, the French cognitive neuroscientist Marc Jeannerod describes it this way: "Humans make their own brain but they do not know that they do so. We are entirely ignorant of brain plasticity. Yet we are not at all ignorant of a certain kind of organization of labor—part-time jobs, temporary contracts, the demand for absolute mobility and adaptability, the demand for creativity . . . The brain is our work, and we do not know it."[25]

Activist neuroaesthetics attempts to make the processes of digital dominion and governmentalization—which are becoming more and more prominent in late-stage cognitive capitalism (or neural capitalism)—opaque, visible, and known. In this way, activist neuroaesthetics is a form of consciousness-raising that endeavors to subvert positivist neuroaesthetics' attempts to co-opt the very neural basis of autonomous action and normalize it. In the introduction to her book *The Brain's Body*, Victoria Pitts-Taylor reiterates this point, stating that "although it is not framed as such in scientific accounts, the plastic, social brain also reveals neurobiology to be political—that is, capable of change and transformation and open to social structures and their contestation."[26] In short, while positivist neuroaesthetics attempts to sculpt the brain according to an institutional logic aimed at producing people that are easy to govern, activist neuroaesthetics understands that this plastic social brain is a source of inspiration and emancipation.

This collection is divided into four interrelated parts. Part one, *Cognitive Capitalism: Provocations and Dispositions*, lays out the context of cognitive capitalism, in which the apparatus of activist

24 Malabou, *What Should We Do with Our Brain?*, 41.
25 Marc Jeannerod, foreword to Malabou, *What Should We Do with Our Brain?*, xii.
26 Victoria Pitts-Taylor, *The Brain's Body: Neuroscience and Corporeal Politics* (Durham, NC: Duke University Press, 2016), 5.

neuroaesthetics emerges. Part two, *Cultural-Neural Plastic Entanglement and the Emerging Recombinant Brain,* is organized around the importance of both cultural and neural plasticity and their co-evolving relationship. The description of different components and capacities of *Activist Neuroaesthetics* make up part three. Part four, *Artistic Practices as Case Studies*, focuses on artistic practices in order to delineate different forms of activist neuroaesthetics.

## COGNITIVE CAPITALISM: PROVOCATIONS AND DISPOSITIONS

In her essay "Distended Nervous System: Networked Media and its Neurological Turns," Anna Munster critiques two aspects of what has been termed the neurological turn that delineates our network society in cognitive capitalism. Following the work of Nicholas Carr, she explains how networked media affects the material of the brain—especially its neural plasticity—thus enfeebling its capacity for thinking deeply. She states, "I am referring mainly to the recourse to neuroscience by non-scientists, journalists, and commentators as evidence of the ways in which, variously, the internet, gaming, screens in general, databases, and artificial intelligence, as well as all manner of informatic devices are changing the 'wiring' in our brains . . . literally turning our 'wetware' to mush . . . bloating rather than extending our central nervous system." In this first account, neuroscientists, journalists, and commentators point to how the ill effects of computer gaming, the internet, and screens in general are changing the brain and, in many cases, debilitating it. Secondly, Munster addresses what is referred to as neuro-perception, in which specially designed algorithms (like Google's Prediction API tool) preempt our thoughts and feelings about things before we ourselves can and do. In other words, these algorithms insinuate themselves in the grey area of the territory of the precognitive. Echoing Berardi, she writes: "All those 'we recommend' emails, those 'like' icons and those privacy settings we forget to activate are harbingers of a 'neuro-perceptual' soft apparatus that will lay claim to know what we want to think, where we want to go, what we want to purchase before we do." Quoting Google CEO Eric Schmidt's report on the company's intentions, Munster writes that "In five years, Google will have built 'the product I've always wanted to build—we call it "serendipity"' . . . it will 'tell me what I should be typing.'"

In "Ordinary Psychopathologies of Cognitive Capitalism," Tiziana Terranova introduces important ideas for cognitive capitalism. First she describes the new nature of work and its new sources of value in living labor. Cognitive capitalism produces an accumulation of capital through implementing new forms of capitalist extraction of surplus value. Importantly, this work is not confined just to cognitive laborers, but includes the entire population of global inhabitants working for free by posting photographs and comments on social media platforms. Here, formal subsumption is transformed into real subsumption of the whole of life. Following Gilles Deleuze and Félix Guattari's argument that "the molecular biology of the brain constitutes a better image of thought than the psychoanalytic unconscious," she then describes the advent of two psychopathologies of cognitive capitalism from a neuronal materialist point of view (rather than a psychoanalytic one). She finds the causes of these psychopathologies of cognitive capitalism, such as attention deficit disorder and anhedonia, in the relation between the brain and information technologies, deploying terms like *hyper-* and *hypo-* to classify their quantitative variations.

In "The Psyche and the Carion: On the Logic of Drive and Subsumption," Reza Negarestani further discusses the concept of subsumption (an important theme that permeates this collection) from a developmental point of view. In this way, he creates a window for the reader to peer into the roots of neural subsumption through its prerequisites of formal and real subsumption. Thereafter, he cleverly pivots to describe how technocapitalism subsumes psychic life into the neural to produce a materially based alien phantom traumatology that haunts the subject, turning them into the walking dead.

Neural capitalism is defined by a set of socio-political cultural relations that generate an epochal and specific form of subsumption called neural subsumption. Beyond the definition of subsumption as the relation between a group of particulars to the universal (as in the case of whales to mammals), Negarestani posits that there are gaps—spaces that allow for the invocation of the irrational—between these particulars in the rational construct of the psyche that techno-capitalism has created. He calls the infiltration of this alien irrational systematics a possession, silent domination, or subsumption. Neurocognitive (or neural) subsumption erupts out of what is left over from both Marxian formal subsumption and psychic, real subsumption. Neurocognitive subsumption, based on the preemption of our wills by the alien technocapitalist apparatus of Big Data and the Big Other, is in its early stage and awaits the conception of new wired-brain technologies (such as those in development by Elon Musk's neurotechnology company Neuralink) to inflict its paranormal damage: "First by pretending that it is in fact part of the person's will, part of its desires and goals. Once the encroachment phase is successfully accomplished, it then initiates a thoroughgoing destruction of the person's psyche step by step." This is the case because each form of subsumption reaches a point of crisis whereupon the designated epochal form of subsumption can no longer adequately operate within a particular and unique, changing socio-political-technological milieu—as was surely true of Sigmund Freud's unconscious cosmological thanotropism.

Essential to the thesis Luciana Parisi develops in "Automated Cognition and Capital" is that in cognitive capitalism, intelligence has been colonized by nonconscious or preconscious decision-making. Along with N. Katherine Hayles, she understands that the algorithmic infrastructure we are now entangled with qualifies as a form of nonconscious cognitive operation. Furthermore, in neoliberal cognitive capitalism, its operations are directed toward the nonconscious and precognitive as new territories of capitalization, especially as such algorithms



govern through speedy connections. This condition marks the beginning of the end of an ontological condition of philosophy that once rested upon reason and logic, but today, in our age of automatization, rests instead upon contingency and nonconscious cognition. In fact, these nonconscious cognitive abilities are situated within the apparatuses of fixed capital. Therefore, this contingency and nonconscious cognition is embedded in the socio-political-technological milieu and is especially important to the pathologies of attention and distraction. This automated machinery is transforming the neural plasticity of the brain and insinuating itself into the very structure of those brain centers important for affective response occurring in the gap between preconsciousness and conscious responses. As a result, there is a facilitation of these nonconscious affective abilities that sidestep deductive orders of logic. Parisi then turns to what Gregory Chaitin calls experimental axiomatics, in which the augmentation of entropy produces new truths that cannot be predicted in advance. These new axiomatics give a new degree of autonomy to automated cognition where indeterminacy has now become an essential part of computational processing. According to Parisi, this leads to a second non-deductive form of thinking she refers to as "abductive modes of reasoning," an inferential creative process that cannot be included in the transcendental schema of deduction and the contingent model of induction.

The title of Cécile Malaspina's essay "The Subversion of Subversion: Reloading the Emancipatory Potential of Creative Practices Now" underlines the words of Shion Naveh, former general in the Israeli army and director of its Operational Theory Research Institute (OTR): the state becomes the "subvertor of subversive theories."[27] In cognitive capitalism, avant-garde strategies of disruption and subversion—for instance, *détournement*—become deterritorialized from their original conceptual framework as forms of cultural emancipation and are hijacked and rebooted as geopolitical strategies and disruptive communication

27 Eyal Weizman, "Soldiers as Architects in the Israeli-Palestinian Conflict," *Radical Philosophy* 136 (Mar/Apr 2006): 8–22, https://www.radicalphilosophy.com/article/walking-through-walls.

tactics. This, she states, fuels strategic interests in modern and contemporary art and "constitutes a (political and military) *subversion of* (artistic and intellectual) *subversion.* It provides a critical edge in an emerging attention economy that is embroiled in non-conventional communication warfare."

One apparatus of the subversion repertoire is the politics of noise and, especially in the context we are attempting to circumscribe, the mental state of noise, which generates a phenomenon of social distress; a form of entropic dissolution. After surveying imminent technics like brain-computer interfaces and their neuromorphic models, and cruising into other capacities like memory transplants, narrative cohesion, and narrative transportation, Malaspina dives into the consequences of these noisy maneuvers for the neural economy, especially dealing with the attention economy and attention engineering. With the reference to Gilbert Simondon's apparatus of critical disadaptation ("a field that dedifferentiates itself externally, so that internally and essentially, it potentiates itself") as a potential tool for mental emancipation, Malaspina positions noise as that which does not totally destroy its material prerequisites, but rather demodulates existing structures and converts what appeared as stable into metastable entities. As such, Malaspina sees noisy potential as recharging.

In the last sentence of his essay "Neuroaesthetics and the Unimaginable," Franco "Bifo" Berardi performs a kind of unexpected reversal, having first suggested that we are experiencing the aftermath of the great acceleration of the infosphere in which the rate of technological advancement has greatly outpaced the commensurate ability of the human brain to adapt. This ever-accelerating speed of the infosphere has made consistent government impossible: "The human brain has grown unable to process the complexity of the world of its own making. The info-neural stimulation has grown too fast for conscious elaboration—and for emotional elaboration, too." He explains that this is the reason for the chaos that surrounds us. Aesthetics, he suggests,



has replaced ethics in this moment of shifting instability and is replacing political determination as an apparatus of healing the sickly will—a situation made worse by the pandemic, as the cognitariat becomes more and more dependent upon the virtual and its credo of connectionism replaces the solidarity of conjunction. But out of this situation the unexpected has occurred, which accordingly has put the neuroaesthetic metamorphosis in motion. Simultaneous with this mutation of life itself is the birth of the self-construction of intelligent artificial units that interact and are entangled with the brain's neural plastic potential, possibly elaborating new variations of its variable architecture. Berardi sees the neuroaesthetic harmonization of the rhythm of breath and its assertion of a new embodied cognitariat solidarity as a possible answer to our moment of checkmate. Yet, he wonders: Is consciousness able to govern the reshaping of consciousness itself? Is the contingency and variation of the ever-evolving cultural landscape mirrored in an evolving neurobiological counterpart—one that has implications for the image of thought and consciousness—making opaque once invisible solutions?

## CULTURAL-NEURAL PLASTIC ENTANGLEMENT AND THE EMERGING RECOMBINANT BRAIN

In his essay "Plastic Brain," Dimitris Papadopoulos takes his cues from theories of embodiment found in neuroscience, developmental science, and psychology to lay a foundation for his description of the "hackable brain." He does so in order to address questions of difference through foregrounding the "socio-cultural making of body and experience." He understands the topos as a space of interaction, conflict, and negotiation where our "brain-body" is reshaped and remade. Papadopoulos refuses the hylomorphic tendencies of a priori individuation found in computational accounts and instead embraces connectionist tendencies that equate malleable brain matter with emergent qualities that allow actors to create activities that shape their own nonlinearly constituted brains.

Following Developmental Systems Theory, Papadopoulos defines embodiment as a process that transforms social and material realities that are in flux. Embodiment creates "different levels of organization—those genetic, neural, organismic, and environmental/social combinations that were not present before," but he also realizes that this possibility for transformation comes with a price. Power as control, in opposition to its emancipatory potential, can also be focused on this plasticity as an embodied form of modification of the brain's material existence. He introduces the term *ecomorphs* to describe stable configurations of ecological-developmental influences that act upon the genetic code with consequences for a regulated, institutionally derived process of individuation. In this context, he introduces the "hackable brain-body," which—like computer hacking—constitutes a possibility for liberation from post-liberal aggregates that act to stabilize the brain's processes of becoming.

In "A Brief Essay on the Transcendental Poetry of the Brain in Transition," Elisabeth von Samsonow traces various organ models and their transformations through history in order to contest the cerebral dominance model, outlining the historic role of the thymus, heart, liver, kidneys, nerves and ganglia, sex organs, and, finally, the brain. Tracing the brain mode from its initial prominence around 1600 AD with the general rise in literacy, she then pivots to understand its rhizomatic and extended capacity as it comes to entangle itself with language-based culture. In conclusion, she speculates as to what a follow-up to the brain model would look like and spotlights the potential future role of the intestine.

Her strategy parallels other such challenges emanating from post-humanism and the post-Anthropocene which understand and enlighten us to other forms of intelligence and consciousness emerging from the animal, plant, and microbiological world. Important in this context is the role she describes for the virus in our pandemic situation:



> This type of undercover "non-opposition" performed by viruses challenges (expands) the idea of the brain, putting to the test its capacities of self-organization, learning, auto-plasticity, and other features of supreme intelligence. In a way, the virus plays the role of the assassinator within the total model of the brain, forcing us to rethink the brain itself in order to evolve its ontological line of potentials, perhaps away from the brain model altogether.

One might even speculate that the mighty virus itself, through a form of parasitic employment, is responsible for the controversies surrounding vaccination as a secondary phenomenon of its invasion into thought and rationality.

Bonaventure Soh Bejeng Ndikung challenges the neoliberal model of the individual brain and its selective optimization in his essay "Mangué Brain: Crabs With Brains as Collective Cultural Brains." He begins by invoking the Martinique writer, poet, philosopher, and literary critic Édouard Glissant's idea of *Tout-Monde*. *Tout-Monde* (the world in its entirety) is a neologism that joins two others, *Echo-Monde* (the world of resonating with each other) and *Chaos-Monde* (the world that cannot be systematized), to create a tripartite conceptual framework in order to understand the relations of the chaotic world in their entirety.

Ndikung uses this concept to understand the Manguebit movement and their "Crab With Brains" manifesto as the result of the emergence and bubbling up of ideas from the chasm/abyss/*gouffre*. As quoted from Édouard Glissant and Patrick Chamoiseau in Ndikung's epigraph: "In the abyss there are cemeteries of slave ships, many of their sailors. The rapaciousness, the violated borders, the flags, raised and fallen, of the Western world. (. . .) But these deported Africans have broken down the barriers to the world. They too have opened up, with bloody splashes, the spaces of the Americas."[28] In other words, from those

28 Édouard Glissant and Patrick Chamoiseau, "L'intraitable beauté du monde," in *Manifestes* (Paris: La Découverte, 2021).

monstrous reminders and material remains existing in the very depths of the abyss have emerged an intractable beauty, valid for all. Rather than being suppressed and marginalized, this alternative expression of beauty has now merged and altered the dominant modes of cultural becoming.

With these tools in mind, Ndikung embarks on his central thesis: the notion of an "Intergenerational Collective or Social Brain." For this, he builds upon the work of Michael Muthukrishna and Joseph Henrich in their paper "Innovation in the Collective Brain," especially as it delineates how collective brains are constructed upon the edifice of misappropriated and subverted technological innovations. This forms the basis through which Indigenous peoples and the history of suffering at the hands of colonial slave oppressors create the threads that produce the fabric of the collective brain—in this case, of Recife, Pernambuco in Brazil. In the closing remarks of the essay, the Manguebit movement returns as a metaphor of mangrove solidarity and coexistence where beings, plants, and animals subsist together, forming a collective brain: "This brain is crafted in the spirit of co-dependence and not the myth of singularity and individualism . . . And the medium of negotiation, of cultivation of this brain, is the mangrove."

We must await the central thesis of Slavoj Žižek's "The Idea of a Wired Brain and its Limitations" (first published in his book *Hegel and the Wired Brain*) until almost its end, but significantly he first asks: Does BCI not offer itself as the ideal medium of (political) control of the inner life of individuals? The answer follows a provocative Hegelian discussion on the centrality of language and its complex associations in the formation of "our thoughts and of our inner life," especially as they relate to one of the basic premises of Neuralink (the corporation recently formed by Elon Musk to link brain-computer interface technology to the internet) that somehow the imminent telepathic capacity of devices would be independent of language: "So that if I connect my brain directly with another's brain, the



other individual will experience my thoughts directly in all their wealth and finesse, not distorted by the clumsiness and simplification of language." Yet, it is just this clumsiness that actually creates the wealth of what makes us who we are: a web of meanings attached to a single phrase can strengthen the expression and richness of what we enunciate.

Žižek then pivots to the political implications of Neuralink when he asks: Will our individuality survive this passage into singularity? While Elon Musk responds by suggesting that because the individual will not be totally immersed in the technology they will have to consent to it ("We could act as one in a collaboration when it served us, but technology has thus far enhanced human individuality . . . People won't be able to read your thoughts—you would have to will it. If you don't will it, it doesn't happen."), Žižek refutes, "Since when I think, I am not aware of the neuronal processes in my brain, how should I know if I am plugged in or not?" First of all, these new technologies might code the electrical activity of the brain in digital ways very different than those used by the brain for introspection and self-reflection—ways that are specific to machinic processes that don't require language as humans know it and therefore will be sublime to human introspection and awareness: humans will most unlikely be unaware that it is happening. So, how could they dissent? New forms of telepathic surveillance will become part of the nonconscious background noise and, as such, work out its nefarious plans incognito.

The core thesis of my essay "Simulated Memory and the Wired Brain: The Emerging Superordinate Precariat" concerns the evolution of the cognitariat into what I refer to as the superordinate precariat resulting from conditions exacerbated by our excessive pandemic dependence upon digitality. New technologies already in use and in the process of being developed (such as brain-computer interfaces linked to the internet and virtual reality, cortical implants, and optogenetics) will transform our information—and knowledge-based economy of

cognitive capitalism into an economy that is neural-based and integrated into neural capitalism.

In section one, I introduce the term *brain without organs* to understand the brain as an entity, like the body without organs, that is free of the imprisoning intensities of the material arrangements created by the genetic code on the one hand and the politicized socio-political-technological milieu (today represented by the plethora of expressions of machine learning and wired-brain technologies) on the other. The problem for the brain without organs is, like its bodily counterpart, to make an alternative brain without organs, which unleashes its unformed, "unstable matters, by flows in all directions, by free intensities or nomadic singularities, by mad or transitory particles."[29]

In section two, I define and trace the idea of the superordinate precariat from its origins in the Thatcher-Reagan era as a form of the *lumpenproletariat* who engaged in unstable labor, "for example, itinerant, short-term workers with zero-hour contracts whose safety was at best perilous because they relied on wages without non-wage benefits." In the third section, I describe the imminent technologies of neural capitalism, especially those that form the armamentarium of the wired brain. In the fourth section, I utilize the concept of suturing, which originates in the film theory of Jean-Pierre Oudart and Stephen Heath, to elaborate a system of mediation in the twenty-first century, beginning with virtual reality and extending to neural technics like the wired brain. I argue that the wired brain is and should be treated as a new form of media entertainment and, as such, many of the apparatuses that tie the subject to the narratology produced by these older technologies can be used in an amended form for these new technologies.

Section five begins with the definition of epiphylogenesis, which is the process through which the phylogeny of the technical species or the evolution of technical apparatuses in time is transmissible. Through a process of multiple exteriorizations, human matter becomes entangled with technics or organized inorganic matter. The sixth section refers to a specialized concept of epiphylogenesis and is entangled with concepts emanating from neurobiology and cognitive neuroscience. In cognitive capitalism, in which the proletariat has mutated into the cognitariat and now the superordinate precariat, the milieu of the screen and its algorithmic environment is sculpting the architecture of the brain. Finally, I propose that the mutation of the cognitariat to the superordinate precariat is based upon their relationship to technics, generating simulacra and an irreal type of memory that competes with other forms of (authentic and prosthetic) memory in the production of scenario visualizations in the mind's eye to produce a new form of precarity and, as a result, a schizo-affective state.

29 Deleuze and Guattari, *A Thousand Plateaus*, 40.



## ACTIVIST NEUROAESTHETICS

"Three Neuroaesthetics" by Charles Wolfe was originally written for *The Search Drive: A Hack-ography*, an exhibition catalog published in 2016 concerning my work. Included here in an expanded form, Wolfe introduces three forms of neuroaesthetics—the positivist, the idealist, and the militant—as a means to clear up the "accretions and obscurities" that have laid siege to the concept. The positivist regime is linked to "scientism," which generates facts about the brain without any regard to its social, political, and cultural becomings and instead understands art as a product of a static and crystallized microbiological architecture without regard to intra- and intergenerational evolutionary processes. Accordingly, cubism became a model for how we see rather than the result of the social, political, cultural, and historical relations in which the artist is immersed and to which they respond.

Essential for Wolfe is the difference between artistic and scientific methods and the species of knowledge forms they produce. He is both shocked and offended by positivist

neuroaesthetics pronouncements such as those made by Damien G. Walter in "What neuroscience tells us about the art of fiction": "I picture a future for writing that dispenses with mystery wherever it can, that embraces the astounding strides in thought-organ research. Ideally, a future where neuroimaging both miniaturises and becomes widespread, augmenting the craft of authors, critics, agents and publishing houses."

Wolfe's second category, idealist neuroaesthetics, does not try to explain the field of painting by the field of scientific research, whose facts are produced using incompatible methods. Rather, it especially focuses on the mind and its contents and admires complexity without privileging science over art. Idealist neuroaesthetics understands the power of culture to influence and modify connections in the brain, or, as Deleuze famously pronounces, "Creating new circuits in art means creating them in the brain."[30] For Wolfe, the idea of scaffolding is essential to idealist neuroaesthetics in which "Our brains and cognitive abilities have evolved, but so have the environments that *scaffold* the development of our skills."

Last but not least is Wolfe's concept of militant neuroaesthetics, which sees the brain as full of potential to become an instrument for positive political and social change. As the word "militant" implies, this category of neuroaesthetics is a combative and aggressive form of counterinsurgency against the governmentalization of the late stage of cognitive capitalism in which the brain's neuroplastic power is the site of capitalist commoditization and control. Here, artistic interventions become confrontational methods.

In her first-person account "What the Hell is Activist Neuroaesthetics?," Elena Agudio reflects on her ten-year curatorial relationship with neuroaesthetics as it has unfolded through her position as Artistic Director of the Association of Neuroesthetics (AoN)

30 Gilles Deleuze, "On The Time-Image," in *Negotiations*, 1972–1990, trans. M. Joughin (New York: Columbia University Press, 1995), 60.



founded in 2008 in collaboration with the Medical University of Charité and Humboldt University's School of Mind and Brain, alongside her recent work at SAVVY Contemporary in Berlin. What is noteworthy is her early intuition to create distance between herself and the positivist perspective of neuroaesthetics, with its reductionist and instrumentalizing dogma. Instead, she has initiated a variety of programs that trouble the normative and positivist position of scientific objectivity.

In 2020, she collaborated with the artist Ivana Franke to install a laboratory at SAVVY Contemporary under the title *Your Country of Two Dimensions Is Not Spacious Enough: Limits of Perception Lab.* Part art studio and part scientific laboratory, the project used multidisciplinary techniques to explore experience and deterritorialize knowledge production. With reference to Edwin Abbott's novel *Flatland: A Romance of Many Dimensions* (1884), Agudio engaged with the possibility for mental expansion in multiple directions in order to go beyond what Harvard physicist Lisa Randall calls the "pervasive but quite possibly mistaken assumption that we live in a three-dimensional world."[31] As Agudio states:

> In the end, the gallery-turned-laboratory problematized the potential of "epistemological ruptures" that break with "normal" science, challenged existing common modes of knowledge production, and questioned the "hegemonic assertions of Enlightenment ideals of the liberal white male subject,"[32] to crack open preconceived ideas of reality and lend it other dimensions that are decidedly fictitious, imaginary, and cosmic.

Borrowing from Édouard Glissant, this leads her to suggest we need to adopt an extradisciplinary mode of inquiry in order to initiate a process of unlearning in an attempt to learn something new.

31 Corey S. Powell, "The Discover Interview: Lisa Randall," *Discover Magazine*, July 29, 2006, https://www.discovermagazine.com/the-sciences/the-discover-interview-lisa-randall.
32 Thomas S. Kuhn and Ian Hacking, *The Structure of Scientific Revolution* (Chicago: University of Chicago Press, 2012), 7.

In “Machine-Fictioning Neuroculture: Methods for Critiquing Neuroscientific Interventions in Art and Philosophy,” Tony D. Sampson embarks on a project that begins with Santiago Ramón y Cajal’s contribution to brain anatomy before going on to analyze neural culture, which he defines as “neuroscientific-inspired managerial interventions and business thinking related to labor and consumption.” Neural culture continues a trend that began in Fordism to rid the workplace of inefficiency through finding ways in our digital age to intervene upon the neuron and the brain: to put them to work. Sampson discusses two streams of neuroscientific inquiries that have made themselves available to capitalism—rationalist cognitive neuroscience and affective neuroscience—which have recently manifested in the colonization of aesthetics and the work of artists alongside a crisis of the hegemonic rationalist model in general.

Offering an erudite discussion of the sensational, conceptual, and functional models developed in Gilles Deleuze and Félix Guattari’s *What is Philosophy?*, especially with regard to the nature of the artistic and scientific investigation of chaos, Sampson returns, tools in hand, to critique neuro-rationalism. Revisiting an outdated two-culture worldview introduced by C. P. Snow, neuro-rationalism is first presented as a totalizing political project based on a rational social contract. Sampson states, “One major concern is that the freedom of philosophical concepts and the sensations of art to challenge the status quo with ferocity and passion are often subsumed by rationalism. This is an expansion that is already allied to the motivations of a similarly posed rational market capitalism or neoliberalism.” Secondly, neuro-rationalism aligns itself with a neuro-phrenological point of view “to draw up questionable neural-correlates between brain regions, behaviors, and mental states.” Continuing his argument, Sampson links this scientific rationalism to a rationalist neuroaesthetics. It is here that he confronts its positivist and reductive tendencies with astute aplomb, calling out V. S. Ramachandran’s limited viewpoint of art, based as it is upon the incomplete and naive tools at his disposal. His



critique of the work of Semir Zeki is no less brutal, challenging his constrained definition of beauty pinned to archaic ideas of art as high culture and Platonic ideal forms.

Sampson then pivots back and embarks on an analysis of the emotive and affective brain. Essential to this argument is the role that feelings and affect play in reason. Rather than being marginalized and considered as noisy interferences, emotions are embedded and entangled in the very networks of reason. In cognitive capitalism, where the brain and mind are the new factories of the twenty-first century, affect and emotions are commoditized and brain-somatic relations are put to work. As Sampson writes, “It is this affective capacity that is ultimately ‘transformed into assets, goods, services, and managerial strategies.’”

In “Digital Transition/Neural Capitalism of the Brain: What Can Art Bring?,” Yann Moulier Boutang introduces his analysis of cognitive and neural capitalism by first comparing labor power during the Industrial Revolution to mental labor in today’s cognitive capitalism. Manual labor is binary (activity/rest) and cognitive labor, although not totally forgoing the body, does refocus the logics of embodiment according to a different rationale. The brain never rests and, until now, the unconscious and nonconscious brain have been beyond capitalism’s capacity to commoditize. After all, what is the temporal window of mental labor power? How can one be sure when and where an idea one contemplates originated? Does the cognitariat clock in like the proletariat? As of today: not yet, although one can trace the temporal window of a Google search.

We are in the midst of a transition away from a knowledge economy into an economy that is brain-based. While our brains work in mysterious ways and thinking remains elusive and transparent, we are aware of the digital revolution as a technological fact. The brain-based economy, focused on the brain and its collective arrangement, is another story entangling us as the brain’s now exteriorized functions are dissipated in the collective

industrial network of machinic intelligence, Big Data, and the Big Other. The neural commons is under siege and our futures are at stake: "Therefore, the passage from the exploitation of bio power to that of neuro power is marked by the conquest and attempted colonization of the brain by artificial intelligence in its successive and future versions (weak or strong)."

How can we resist? Like those forms of resistance invented in industrial capitalism, such as the refusal to work and the sabotage of the workplace, forms of resistance to cognitive capitalism have their own special character and manifestation:

> The refusal of work becomes the disentanglement of the cognitariat from online platforms, their refusal of guided attention, the sabotage of the control of life, and alternative uses of the power of the digital. In turn, all of these behaviors serve as powerful stimuli to capitalist recuperation resulting in an extension of the sphere of commodification and in a more subtle automation.

Essential for Boutang is that the succession of stages that bring about what he calls the third phase (or neural stage) of capitalism are delineated by a digital subsumption of cognitive laboring. Especially important for the present condition of work are those tasks involving language, particularly the analytic capacities that characterize a left-hemisphere dominant style in comparison to one described as a right-hemisphere creative mode. Boutang explains, "complex tasks (those in which the whole is different from the sum of its parts, there is simultaneous multidimensionality, or a very large number of variables) where the right hemisphere of the brain is at the helm or in leadership, have become more valuable (see the creative class and traders)."

In "Attentional World-Making, Meta-Attentional Derivatives, and Hyperstional Ambivalence," Yves Citton makes some powerful intellectual moves to link and delink the capacities and apparatuses of the attentional economy to the immanent power of



aesthetic production as a contemporary dispositive of emancipation. As an expert on attention and the attentional economy, Citton embarks on a thesis to expand what activist neuroaesthetics is and does. He understands that the neural system of the material brain is not limited to the personal borders of the skin, but expands outward to entangle with our collective media network system, also referred to as "algorithmic governance."

Using arguments cultivated in the works of Bernard Stiegler and Lev Vygotsky, Citton understands that the system of *mediarchies* engages with our perceptions and affects via the attentional system through processes of exteriorization (in the case of Stiegler) and internalization (for Vygotsky). Citton expands on their ideas through his concept of the "intrastructure" that, according to him, provides the basis through which our material external sociotechnical apparatuses condition and structure our experiences. He posits a theoretical tour de force by proposing that this mediarchical dynamics should be understood in light of principles of neural plasticity, especially the idea put forward by the Canadian neuropsychologist Donald O. Hebb that "Neurons that fire together wire together." This can be read as the basic building principle of all "intrastructural dynamics: contiguous (salient) stimuli provided to our attention by our mediarchies tend to result in necessary associations (even if their co-occurrence may be originally contingent). This principle accounts for the wide (although not unbounded) plasticity of our collective world-making attentions."

Citton then goes on to discuss how we are in the midst of a captological system in which capitalist commodification is directed through attention and meta-attention upon the neural biological networks that produce the sculpted networked brain. Even Shoshana Zuboff's concept of the Big Other is not beyond Citton's epistemology, as he suggests that the behavioral surplus through which our future needs are scripted is related to tracking what the cognitariat pays attention to. He concludes the essay with a lengthy analysis of the "social logic

of derivatives," which are reassembled according to the dictates of meta-capital. He argues that art provides remediating experiences that estrange and refunction attentional intrastructure and, as a result, neurobiological architecture as well: "One of the main tasks of activist neuroaesthetics may be to mobilize the virtues of meta-attentional aesthetics in order to help us cope with the ambivalences of hyperstitional activism."

## ARTISTIC PRACTICES AS CASE STUDIES

In the opening paragraph of "On the Art of Florian Hecker," Ina Blom uses a curious visualization to introduce the work:

> Two hundred and seventy-seven pages, column after column of digits so tiny and so densely packed that, even with my reading glasses on, I have to use a magnifying glass . . . Leafing through the volume, I am lost in what feels like an endless, undulating expanse of ciphers I cannot possibly hope to make sense of, abstractions more brutal than most conceptions of modern art could ever have prepared me for.

One might be perplexed by such an opening salvo, but the reason becomes clear as Blom unveils a synesthetic conceptual window of timbre with which she pivots from sublime visuality to its auditory analogue. Timbre is an elusive quality of auditory texture that reminds one of another phenomenon: *duende*, a quality of passion and inspiration that is also difficult to define but leaves traces in the nonconscious parts of the brain that are not easily steadied and inscribed in our mystic writing pads. According to Blom, the "libretto" can reimagine and reenact various computational processes generating the new technological sound environments of AI and the Internet of Everything that lead to a new form of acousmatics at the crossroads of neurology and computer science. The machinic unconscious buzz of the future not yet to pass, contingently unavailable yet somehow linked to the deep history from which we all spring, is the beginning—if only for a moment—of a counterinsurgency of the psycho-acousmatic preemption of Big Data.

As Blom discusses, Florian Hecker teamed up with Joakim Andén and Vincent Lostanlen to retro-engineer "time frequency scattering" in order to find a way to approximate the multifaceted encoding of sound as a sensation to enunciate the quantum mechanics of a shimmering—a microscopic analogue of timbre—which is responsible for the reddish shade of sunset. Notably, it took an artist (Hecker) to break out a phenomenon isolated to the field of science and make it sensible to an aesthetic hermeneutics and a neural physiological system hungry for new forms of chimeral inputs.

Juli Carson's "On Consciousness: Kerry Tribe's Performative Aesthetics" uses the example of Kerry Tribe's filmic work *H.M.* (2009)—based on a famous case of post-surgical loss of short-term memory following the bilateral removal of the hippocampus and surrounding area for treatment of epilepsy—to formulate what a contemporary "artwork on cognition—one equally mindful of the insights made by philosophy, metapsychology, and neurobiology—would look like." Entangling French structuralist film theory concerning the cinematic apparatus and theories of the neurological correlates of consciousness (as described by Christoph Koch), Carson produces an evolutionary reading of Tribe's work with which to understand the ontogenetic differences between a historical structuralist filmic technique and its contemporary post-structuralist counterpart. In that regard, she compares Tribe's film to Hollis Frampton's 1971 work *(nostalgia)* and, in doing so, exposes the differences of their conceptual underpinning: in the case of Frampton, an analogue position based on Fordist labor and, in the case of Tribe's *H.M.,* one that might be regarded as based on the conceits of performative activist neuroaesthetics in cognitive capitalism.

In a contrarian manner, Tribe adds multiple streams of visual content, including surrealist animation, philosophical rumination,

and narrative reenactment, creating a muscular work of political and social consequence. In Frampton's day, experimentation with time-based media was inherently political as an action against a Greenbergian medium specificity and purity of form—often through self-mutilation against the artwork itself or against the genre (think here of noise or Lucio Fontana's slashed canvases). Today, artworks are explicitly understood as political. Key to Tribe's work is how the assault upon memory experienced by HM is metonymic for political action against the corpus of history itself as a hegemonic patriarchal formation. As Carson states, "Frampton might be said to be working from the historical and cultural perspective of a behaviorist/cognitivist brain-body framework, while Tribe is working through a connectionist/embodiment brain-body framework."

Victoria Pitts-Taylor introduces her article "Embodied Entanglements in 'These Times': Reflections on Intercorporeality and Social Distance" with a visual description of an apartment seen from the view of a camera. This becomes a delineation of what "remote-entangled embodiment" means in our time of distanced sensing, learning, communication, and understanding. The distorted descriptions are of a home office where objects lose their affordances and become distanced and ascetic: "They shed their dimensions, changing shape and size through close-ups. The soccer ball becomes a flat square, a yellow and black abstract graphic print."

These images are mixed with screenshots and conversations between the filmmaker, Oreet Ashery, and her mother, Haya, who is confined to a nursing home thousands of miles away in Israel. Somehow, Ashery's work *Three Questions to Oreet Ashery* (2020) is reminiscent of Mark Leckey's video *GreenScreen-RefrigeratorAction* (2010), mentioned in Ina Blom's previous essay, in which remote auditory phenomena emanating from a smart fridge both comments on its role in the acoustics of a smart kitchen entangled in the Internet of Everything as well as its estranging effects upon our perceptions. In a similar way,



during the pandemic we are currently experiencing, remote vision and the memories it produces overwhelm the natural conditions of unmediated visual experiences. Pitts-Taylor uses Ashery's *Three Questions* as a platform to express a strained, disembodied connection across borders and at a distance.

Relying on an epistemology of holding and touch, Pitts-Taylor further concentrates on FaceTime and other technologies as apparatuses of lack that users are thankful for and getting used to. Quoting a hospital chaplain in San Francisco, she writes that "technology is really taking a new place in our work. In some ways, it's become the touch, voice and connection that we can't have." But is it? Pitts-Taylor then pivots to the real question of remote communication and empathy, which is whether through understanding this lack and the way that Big Data harvests these encounters we might "maximize their potential for enabling conviviality, so that they are cognitively and emotionally satisfying." This statement appeases neural reductionist frameworks of social cognition as entirely dependent on brain function rather than a situated, embodied view unfolding over time in meaningful contexts, as is the case proposed by a feminist epistemology in which knowledge is always generated from an invested, felt, and situated (rather than a neutral or truly objective) standpoint. Here the author calls in the theory of Alfred Schutz to explain the inherent difference between being at the deathbed of a loved one directly—as a living, bodily presence, holding the loved one's hand and smelling their body at a specific moment of time in a hospital room—and indirectly and abstractly, as an experience of the other as an object in a virtual and distorted visuality.

Like many essays in this collection, Anuradha Vikram's "Art and the Changing Human: Neuroaesthetics in a Crisis of Labor, Environment, and Embodiment" draws attention to the acceleration of digital technologies and their effects on human subjectivies, yet suggests an extreme position that "the simulated world is becoming as real as the physical world." Importantly,

she points out the increasing grotesque effects of artificial intelligence and its growing role as part of digital governance, which, as a result of deep learning, reiterates existing patterns of racism. Quoting Ghanaian-American computer scientist and digital activist based at the MIT Media Lab, Joy Buolamwini, Vikram highlights that "data is a reflection of our history, so the past dwells within our algorithms."

Vikram asserts that new forms of resistance will need to be mounted against these new forms of power. Building on Donna Haraway's framework of situated knowledges, in which identity is anchored in intersectionality, she begins to lay out the role of activist neuroaesthetics as offering a reprieve from the "disembodied space of information-driven networks." To that end, she introduces a number of artistic projects—including *Conversations with Bina48* (2014–ongoing) and *Secret Garden* (2021) by Stephanie Dinkens—that explore situated knowledges and echo Sara Ahmed's description of a phenomenology of embodiment constructed "through the culturally loaded interface of skin."

Key to Vikram's argument is that positivist neuroaesthetics has become implicated in digital bias by promoting and embracing a loaded concept—the beautiful—as a neutral given in its research methodologies. Accordingly, this form of neuroaesthetics belies its corporate underpinnings by its interest in these less diverse and convergent forms of beauty, giving up the possibility, as Vikram notes through quoting Alva Nöe, of art's power to reorganize ourselves. By allowing deviations and disorder to seep into our ontological categories of beauty (for example, by embracing the distressed surface or the punk aesthetic), can we have a chance against future forms of algorithmic consumerist governance? Recently this has, in fact, come to pass, as claims of beauty as the "proper" focus of art have been superseded by its more important role as a condition for and of political justice. Vikram echoes one of the core intentions of this collection when she says that activist neuroaesthetics must take a "vigilant stance against uncritical data collection and regurgitation without situated and subjective review to ensure fairness and reduce bias in the determination of aesthetic value."



## CONCLUSION

The present pandemic has accentuated digital trends already in play and, as such, has created cracks in our sense of solidarity and comradeship. This has made us easy prey to the predatory nature of algorithmic capitalism that has found ways to capitalize upon this reality. The NASDAQ stock market boom, especially in the field of new technologies of remote learning, shopping, conferences, and banking, is a case in point. What is for the moment under the radar is the acceleration of technologies that directly and indirectly intersect with the material brain (such as brain-computer interfaces, cortical implants, and optogenetics) in what is known as the late stage of cognitive capitalism. Furthermore, a general knowledge of the ways and means by which the brain's capacity for change can be directly engaged has become part of the armamentarium of digital governance. Through a variety of different methodologies linked to new technologies of the new economy, positivist neuroaesthetics now has the capacity to engage with the neural commons in an effort to normalize neural diversity in the construction of a people easily manipulated and governed. This collection attempts to unveil, unpack, and exhume the characteristics of this new reality. Activist neuroaesthetics constitutes a new ideological and practical apparatus with which to form methodologies of resistance.