

Western  Graduate&PostdoctoralStudies

Western University  
**Scholarship@Western**

---

Electronic Thesis and Dissertation Repository

---

12-14-2015 12:00 AM

## Lacan's Cybernetics

Svitlana Matviyenko

*The University of Western Ontario*

Supervisor

Nick Dyer-Witthford

*The University of Western Ontario* Joint Supervisor

Allan Pero

*The University of Western Ontario*

Graduate Program in Theory and Criticism

A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

© Svitlana Matviyenko 2015

Follow this and additional works at: <https://ir.lib.uwo.ca/etd>



Part of the [Arts and Humanities Commons](#)

---

### Recommended Citation

Matviyenko, Svitlana, "Lacan's Cybernetics" (2015). *Electronic Thesis and Dissertation Repository*. 3461.  
<https://ir.lib.uwo.ca/etd/3461>

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact [wlsadmin@uwo.ca](mailto:wlsadmin@uwo.ca).

LACAN'S CYBERNETICS  
(Thesis format: Monograph)

by

Svitlana Matviyenko

Graduate Program in the Centre for the Studies of Theory and Criticism

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy

The School of Graduate and Postdoctoral Studies  
The University of Western Ontario  
London, Ontario, Canada

© Svitlana Matviyenko 2015

## Abstract

This project explores the synchronicity of psychoanalytic and cybernetic practices from the mid-to-late nineteenth century by recovery and analysis of a shared material media culture. This project takes as a starting point the work of French psychoanalyst Jacques Lacan, who observed the affinity between cybernetics and psychoanalysis, “two roughly contemporaneous techniques,” related to the emergence of the two distinct types of sciences: exact and “conjectural.” I investigate their shared patterns of figuration in the two fields, before they developed significant, and even irreconcilable, differences. This project demonstrates that what Lacan discussed explicitly in the 1950s, particularly, in his “cybernetic” *Seminar II*, was an expression of a more implicit connection between cybernetics and psychoanalysis *ab initio*. It offers a media-archaeological account of the pre-history of psychoanalysis (or proto-psychoanalytic practices) that considers the development of the psychoanalytic technique both through and against the technological mediation. The final part of this dissertation switches from the subject of the architectural and institutional panopticon of the nineteenth century to the “interpassive” user-subject of the perverse panopticon of the social media network. My discussion resonates with the current concerns expressed both within academia and in the Lacanian clinic about the degree of mediation, the limits of surveillance, the capacity of the network to exploit the subject, the automation of the gadgets that manage our lives, and the symptoms produced by all these aspects of the human-machine assemblages or even the erasure thereof in the capitalist discourse of global economy.

## Keywords

Cybernetics, psychoanalysis, information, entropy, structure, conjectural sciences, exact sciences, automation, unconscious, Freud, Lacan, Wiener, Shannon.

## Acknowledgments

I would like to express my gratitude to Dr. Nick Dyer-Witheford and Dr. Allan Pero for their support, feedback and guidance, for helping me shape my thoughts and find my way in and out of this search for the traces of cybernetics and psychoanalysis centuries before the two fields were established.

I thank the participants of the “Lacan, Media, Capitalism” reading group that ran during 2013-2014 at the University of Western Ontario: in discussions with them the preliminary outline of this project was designed.

## Table of Contents

Abstract.....	ii
Acknowledgments.....	iii
Table of Contents.....	iv
List of Tables.....	vi
List of Figures.....	vii
<b>Introduction:</b> Psychoanalysis and cybernetics, <i>ab initio</i> .....	1
<b>Part I – Demons and Automata</b> .....	17
Chapter 1 – The Cybernetic Episteme.....	18
1. Lacan For and Against Cybernetics.....	18
2. Freud, Lacan and the Question of Writing.....	40
Chapter 2 – The Subject of Science.....	57
1. Patron Saints of Cybernetics and Psychoanalysis.....	57
2. Automation in the Human, the Animal and the Machine.....	68
Chapter 3 – Freud’s Circuitry.....	80
1. Freud of and against Thermodynamics.....	80
2. From Thermodynamics to Structure.....	96
Chapter 4 – Lacan and Automatisms.....	109
1. Automatic Phenomena.....	109
2. Automatic Writing.....	118
<b>Part II – Writing the Body</b> .....	130
Chapter 5 – Fragmentation and Mobilization.....	131
1. Converging Matters.....	131
2. Machines of Graphocentrism.....	142

Part III – <b>Extimate Machines</b> .....	159
Chapter 6 – Complicity and Interpassivity.....	160
1. Ideology of Tracing.....	160
2. Prosthetic Extension.....	169
<b>Conclusion:</b> Psychoanalysis and cybernetics, <i>après-coup</i> .....	192
Bibliography.....	196
Curriculum Vitae.....	221

List of Tables

**Table 1.** “Two modalities of our relation with technology” .....169

## List of Figures

<b>Figure 1.</b> “Freud’s schema of the case of Emma from his <i>Project for a Scientific Psychology</i> , 354.” .....	87
<b>Figure 2.</b> “René Magritte, <i>The Use of Speech</i> , No. 64 (1928).” .....	126
<b>Figure 3.</b> “René Magritte, <i>The Empty Mask</i> (1928).” .....	126
<b>Figure 4.</b> “René Magritte, <i>The Place of Curtains</i> (1928-29).” .....	127



## Introduction

### Psychoanalysis and Cybernetics, *ab initio*

This project elicits the synchronicity of psychoanalytic and cybernetic thought from the mid-to-late nineteenth century by recovery and analysis of a shared material media culture. I take as a starting point the work of French psychoanalyst Jacques Lacan: his “return to Freud” in the 1950s and particularly, in his “cybernetic” *Seminar II, The Ego in Freud’s Theory and in the Technique of Psychoanalysis* (1954-1955), where Lacan observed an affinity between cybernetics and psychoanalysis related to the fact that they are “two roughly contemporaneous techniques” (295) both rooted in the time of emergence of the “exact” and “conjectural” sciences. He “looked upon cybernetics and information theory as an alternative intellectual framework for rethinking Freud” (Liu 158). Lacan insisted that cybernetics highlighted “the radical difference between the symbolic and the imaginary orders” (*Seminar II* 306), and he elaborated this difference by using cybernetic notions, specifically, “the machine” as a continuous automatic circulation initiating the exchange between systems. “There is no cycloid in the imaginary. The cycloid is a discovery in the symbolic. And whereas the latter can easily be produced by a cybernetic machine,” Lacan explained that in the radical non-identity of the subject caught by the inertia of the immobile imaginary plane, “one encounters unprecedented difficulties ... in getting one circle to correspond to another by means of a dialogue between two machines” (306).

From this point, I go back almost a century, to a time when both cybernetic and psychoanalytic practices were only about to emerge in order to investigate “certain shared patterns of figuration” before the two fields developed what may seem as “very considerable, indeed irreconcilable, differences in their basic assumptions”<sup>1</sup> (Elmer 108). I read various cases of nineteenth- and early twentieth-century scientific and artistic practices as well as published research on neurology, psychiatry, and biology, where I distinguish the instances that show similar concerns of early cybernetics and psychoanalysis which reveal that they were shaped by similar epistemological frameworks, a fact often overlooked by conventional readings of both fields. In other words, I demonstrate that what Lacan discussed explicitly in the 1950s was an expression of a more implicit, although not articulated, connection between the two practices *ab initio*.

As David A. Mindell has noted, “the term *prehistory* implies a certain teleology that is abhorrent to the historian of technology” (*Between Human and Machine* 6). However, instead of validating the historical narratives, the prehistory I outline here subverts them by revealing their multiple shortcomings. For example, at the time between the 1830s and 1880s, when a number of scientific fields such as physiology, neurology, and psychology were in formation, there was a peculiar “noise” in attempts to articulate their individual agenda and methodology. This noise constituted the “grey areas” and “overlaps” between sciences that would not fit the subsequent historicisation. Although

---

<sup>1</sup> Jonathan Elmer makes this observation in regards of the similarities between Lacan and systems theorist Niklas Luhmann. A similar attempt was made by Canadian theorist Anthony Wilden in *System and Structure: Essays in Communication and Exchange* (1972).

uncovering the “archaeological depth” or recovering the “repressed memories” by excavating the piles of dispersed records that were not previously associated with cybernetics or psychoanalysis does help, such strategy does not reflect the purpose of this project. Rather, my work is based on deciphering a new, more complex and diverse archive, which I see as a dynamic storage that “does not diachronically consist of layer above layer but from time to time reconfigures the order of memories,”<sup>2</sup> to use Freud’s description of a psychic mechanism in his letter to Wilhelm Fliess in 1896 (Ernst, “Archive in Transition” 101; Freud, *Letters to Fliess* 205-215). In order to address the shared prehistory of psychoanalysis and cybernetics, my project seeks to mobilize such a reconfiguration.

To achieve this goal, I follow Lacan’s suggestion that both cybernetics and psychoanalysis operate upon “the subject of science” which emerged by means of the epistemological shifts of the seventeenth century. To explore Lacan’s concept “subject of science,” I employ the media-archaeological method as “an epistemologically alternative approach to the supremacy of media historical narratives,” which, according to Wolfgang Ernst, also draws on Michel Foucault’s notion of “archive” as “the set of rules governing the range of what can be verbally, audiovisually, or alphanumerically expressed at all” (“Media Archaeology” 55). Ernst defines the method of media archaeology as

...a kind of epistemological reverse engineering, and an awareness of moments

---

<sup>2</sup> To quote Freud’s letter, he reports the following,

I am working on the assumption that our psychic mechanism has come into being by a process of stratification: the material present in the form of memory traces being subjected from time to time to a *rearrangement* in accordance with fresh circumstances – to a *retranscription*. Thus what is essentially new about my theory is the thesis that memory is present not once but several times over, that it is laid down in various kinds of indications. (Freud, *Letters to Fliess* 205).

when media themselves, not exclusively humans anymore, become active “archaeologists” of knowledge. This means that when media archaeology deals with prehistories ..., this “pre-” is less about temporal antecedence than about the technoepistemological configurations underlying the discursive surface (literally, the monitors and interfaces)... (55)

The prehistory I draw in my research secures a possibility of keeping the name “cybernetics” to refer to these early practices that do not fully fit the definitions of cybernetics proposed between the late 1940s and early 1950s.<sup>3</sup> It is important, I argue, to distinguish between the cybernetic *practice* and *discourse* with their own time frames that do not coincide and even different representative thinkers.

This distinction speaks to the difficulty of mapping the relation of psychoanalysis and cybernetics that arises immediately when we say “cybernetics”: due to its interdisciplinary status and a very long history of transformation, cybernetics has been too many things and until today, there is no consensus on what it is. In the *Johns Hopkins Guide to Digital Media*, Bernard Geoghegan and Benjamin Peters note that it has been variously identified as

...a science of communication and control (Wiener 1948), a universal science (Bowker 1993), an umbrella discipline (Kline, n.d.), a Manichean science (Galison 1994, 232), and a scientific farce founded on sloppy analogies between computers and human organisms (Pierce 1961, 208-227). (Geoghegan, Peters 109)

Cybernetics has always been associated with a complex approach for exploring self-regulatory systems, their structures, constraints, and possibilities. Cybernetics studies the assemblages of the human-animal-machinic in their entirety: while it acknowledges the distinctions between organisms and inanimate systems, it treats such assemblages as autonomous operating units always in connection with their environment. Cybernetics

---

<sup>3</sup> However, as I will argue in this dissertation, some notions of systems theory that developed as a consequence of the Macy conferences’ discussions reveal a homological structure with psychoanalysis.

does not ask the question of what these units are, but rather, how they work. Therefore, in its essence, it is a *practice*; but, of course, it is also a *discourse*.

As a *discourse*, cybernetics arrived into the world shaken by the horrors of World War II as an Esperanto<sup>4</sup> for science: to bridge the gaps and to establish collaboration between and among the humanities and the exact, natural, and social sciences. It was indeed an expression of *hope* to combine efforts for the work across disciplines towards the fast and effective solutions for urgent problems. In a world that was once again immersed in sorrow and discontent, the absence of a common language for different disciplines revealed what seemed to be the “blank spaces on the map of science” which could only be filled in “by a team of scientists [with] each specialist in his own field but each possessing a thoroughly sound and trained acquaintance with the fields of his neighbors,” as Mexican physician and physiologist Arturo Rosenblueth<sup>5</sup> was known to say (Wiener, *Cybernetics* 3). As Norbert Wiener explained:

If the difficulty of a physiological problem is mathematical in essence, ten physiologists ignorant of mathematics will get precisely as far as one physiologist ignorant of mathematics, and no further. If a physiologist who knows no mathematics works together with a mathematician who knows no psychology, the one will be unable to state his problem in terms that the other can manipulate, and the second will be unable to put the answers in any form that the first can understand. (*Cybernetics* 2-3)

---

<sup>4</sup> The word “Esperanto” for “the most outlandishly successful invented language ever,” comes from the pseudonym of its creator, Ludwik Lejzer Zamenhof, a Polish-Jewish ophthalmologist, who published his first book on this subject, *Esperanto* (1887), under the imagined name of Doktoro Esperanto: “one who hopes.” See: <https://en.wikipedia.org/wiki/Esperanto>.

<sup>5</sup> Arturo Rosenblueth, one of the key thinkers and pioneers of cybernetics, was a colleague, collaborator and a friend of Norbert Wiener, with whom Wiener co-authored a number of important works including *Behavior, Purpose and Teleology* (1943) and *The Role of Models in Science* (1945), and to whom he dedicated his book *Cybernetics, or Control and Communication in the Animal and the Machine* (1948).

As a *discourse*, cybernetics emerges *in medias res*. As the *Encyclopædia Britannica* informs us, this Latin phrase refers to a narrative technique, based on the “practice of beginning an epic or other fictional form by plunging into a crucial situation that is part of a related chain of events.”<sup>6</sup> This is precisely what happens when it comes to cybernetics’ history: we always plunge into 1948, the year when Wiener outlined the necessity, orientation, questions and terms of the “new” field in his seminal work *Cybernetics, or Control and Communication in the Animal and the Machine*. Wiener’s book was conveniently published, again, *in the midst of things*: in the time when the annual Macy Conferences were taking place in New York City between 1946 and 1953, which were always described by the historian of cybernetics as a think-tank for the researchers who explored the behavior of self-governing micro- and macro-systems and questioned the boundaries between objects, systems and disciplines (Heims 1991, 1982; Hayles 1999; Mindell 2002; Dupuy 2009; Liu 2010; Halpern 2015; Kline, 2015).

The *discourse* of cybernetics aimed at popularization of the cybernetic approach as well as justification and institutionalisation of this “scientific newspeak.”<sup>7</sup> The 1950s was a historical movement when a jargon was transforming into an ideology, “cyberspeak,” to use Slava Gerovitch’s term (*From Newspeak to Cyberspeak 2*). Distinguishing between

---

<sup>6</sup> See the entry here: <https://www.britannica.com/EBchecked/topic/284369/in-medias-res>.

<sup>7</sup> This term, as the MIT theorist and historian of the Soviet cybernetics Slava Gerovitch explains, describes a type of “blending of scientific, philosophical, and ideological concepts in political and academic discourses of the late Stalinist period,” so called Soviet “ideolanguage” (as Mikhail Epstein named it) that was “spoken” in the Soviet Union before World War II (Gerovitch, *From Newspeak to Cyberspeak* 13, 26). He writes:

...cybernetic ideas developed by American and Western European scientists and engineers in the 1940s, viewing the diverse and eclectic analogies between the human brain and the computer, between human communication and information exchange, and between negative entropy and biological and social order through the prism of a shared metaphorical language that I call cyberspeak. (49)

the discourse of cybernetics and cybernetic practice explains how the cybernetic episteme remains crucial for psychoanalysis despite Lacan's straightforward criticism of cybernetics (as a discourse) in the end of his second seminar.

The "newness" of cybernetics for Wiener did not mean its complete disengagement from the past. In fact, he chose "a patron saint of cybernetics" among the thinkers of the seventeenth and eighteenth centuries: Gottfried Wilhelm Leibniz. The reason for Wiener's adoption of the philosopher, however, was not the method of Leibniz's thought, but rather his interest in the possibility of building a computing machine. According to Wiener, the earlier philosophers prefigured the cybernetic field, because their aim was to develop mathematical logic as a basis for machinic reasoning. Of course, Leibniz's idea of computing machines prefigured the key ambition of twentieth-century cybernetics – artificial intelligence. However, cybernetic psychoanalysis of the early days asked the question that was a reversed version of Leibniz's question: to what extent is the human intelligence "artificial," "mechanical," or "machinic"? Does the communication of the human, animal and other machines with their environments and each other occur automatically? What kind of exchange does it initiate? What boundaries does it transgress and on what conditions?

A prehistory of cybernetic psychoanalysis extends the individual and shared historical frameworks of the two fields. Some work that contests the accepted historical frameworks of psychoanalysis and cybernetics has already been done, but most of it considers each of the two fields separately. For example, Mindell's study of the history of control systems has extended the timeframe of cybernetic research back to the years between the two wars, from 1916 to 1948. Mindell explores the discourses and practices

of “blurring the boundary between pilot and machine,” “between mechanical and organic,” which would result in the uncanny “marriage of control and communication, a vision of the human relationship with machines” after World War II (*Between Human and Machine* 4, 2, 5). Christopher Bissell (“Not Just Norbert”) has demonstrated that the research on control engineering and its relationship with economics, social science and culture by a number of German scientists preceded Wiener’s research by almost a decade: for example, the work of German physicist Hermann Schmidt, control engineer Winfried Oppelt, electrical engineer Arnold Tustin, and biological cybernetician Karl Küpfmüller are rarely mentioned in the histories of cybernetic thought.

Lacanian analyst Eric Laurent has written extensively on the relation between psychoanalysis and neuroscience. Although he does not address the nineteenth-century contexts directly, his discussion of the “neural plasticity” (in response to French philosopher Catherine Malabou) and the “somato-physical plasticity” (in response to Swiss neuroscientist Pierre Magistretti and psychiatrist François Ansermet) in *Lost in Cognition: Psychoanalysis and the Cognitive Sciences* (2014) has provided the framework for my reading of the clinical practices at the very beginning of early neurological science and proto-psychoanalysis.

As far as the prehistory of psychoanalysis, I found Henry F. Ellenberger’s *The Discovery of the Unconscious: The History and Evolution of Dynamic Psychiatry* (1970) useful for its rich historical perspective; I have also benefited from Frank J. Sulloway’s study *Freud, Biologist of the Mind: Beyond the Psychoanalytic Legend* (1979), despite my disagreement with the author’s thesis. In his book, Sulloway suggests that Freudian psychoanalysis was a mere assemblage of the fragments of the work done by other



scientists and medical doctors. The multiple roots of Freud's thought were certainly undeniable, but I think Sulloway misses the point by claiming that Freud's own contribution in the formation of psychoanalytic thought of the nineteenth century was trivial. Sulloway overlooks the transformations of the various scientific notions and discoveries made by Freud when he used them in his work. It is precisely the nature of these transformations that allows me to place Freud within the *cybernetic episteme* and refer to Freud's practice as "cybernetic psychoanalysis." In his work, Freud intuitively grasped the specifics of "cybernetic communication" between systems and the environment, which, I believe, was important for establishing psychoanalytic practice.

Regarding the terms and notions that I use in this project to indicate the differences between – what we can call – *proto-cybernetic thought*, *early cybernetic thought*, *cybernetics*, and *post-cybernetics*, I place them all under the umbrella term "cybernetic episteme." For the sake of a major argument, this project does not focus on their differences which, I admit, often indicate small yet significant changes as well as obvious and undeniable ruptures in understanding of the relation between objects and subjects, between things, words and environments. To give an example, I argue there is no epistemological rupture between *proto-cybernetic thought*, which could be observed in medical practices of the 1860s (i.e., when German philosopher, physicist and experimental psychologist Gustav Fechner founded the field of psychophysics) and *early cybernetic thought* of the first third of the twentieth century (i.e., when most of the scientific research that led to the foundation and articulation of cybernetics as a field was conducted). In this project, however, I only distinguish them as different *forms of awareness*, which they reveal in various practices as well as through the *different degrees*

*of articulation* manifested in the process of their institutionalization. Very often these different forms of awareness exist simultaneously within a certain time period; sometimes, they are present in a more concentrated form than other times. In this, my project demonstrates a certain *afterwardness* in my reading of the history of the ideas, but certainly, not *teleology*.

One of the leading German media-materialists, Friedrich Kittler, suggests that Lacan's work should not only be put in the contexts of media and information systems, but also that it has always been there (1985; 1993). In *Discourse Networks 1800 / 1900* (1985), he argues that Freudian psychoanalysis belongs to one of the material discourse networks constituted by the connections between historical moment, social structure, technology, and communication systems. In his later works, Kittler also addresses Lacanian psychoanalysis and suggests that the difference between these two versions of psychoanalysis can be read through the transition from analog to digital, which situates Freud and Lacan within different discourse networks. In my reading, the difference Kittler establishes plays an important role for identifying what I call different *forms of awareness* and *degrees of articulation* of writing practices, the key of which is what Lacan calls "writing in speech": the continuous digital and analog production of relation between subjects and objects, between things, words and environments. Therefore, despite the different regimes of technical media, the cybernetic episteme, as I see it, quite comfortably occupies the realms of both the Discourse Network 1800 and the Discourse Network 1900, each providing different conditions of possibility for the emergence, development and, now, hegemony of the global *graphocentrism*.

The work of Lydia H. Liu is crucial in this regard: the question she posed in *Freudian Robot* (2010), “Where is the writing of digital media?” (15-37), and her choice of answering this question by turning to the work of Lacan significantly impacted this project. I do, however, think that the answer requires extending the scope to the early stages of psychoanalytic practice, i.e., at the moment of its formation in the end of the nineteenth century. By reading early Freud’s speculations through the lens of cybernetics, which recognized the function of the abstract machines, as Lacan does in *Seminar II*, I demonstrate that psychoanalysis, already in its very early forms, began as a manifestation of *intuition*, if not yet *awareness*, that led to his exploring and engaging with the *materiality* of the *written-in-speech*.

The work of several German media theorists influenced by Kittler’s reading of the emergence of psychoanalytic practice in terms of the changes of media regimes has helped me in exploring the media archaeology of psychoanalysis. Bernhard Siegert’s theory of *cultural techniques*, which uses Lacan’s differentiation between the registers of the real, imaginary and symbolic, has been crucial for distinguishing different levels of materiality in the media history of psychoanalysis.<sup>8</sup> Wolfgang Ernst’s incisive observations on Freud’s conception of memory as a dynamic archive (“Archive in Transition” 101) have been very useful along with his outline of the difference “between the symbolic (in Lacan’s sense: writing, letters) and the mathematical real (computing)” (“Discontinuities” 116). Reading the processes of digitization in the cases of photographic documentation of Charcot’s patients, I benefited from Ernst’s discussion on

---

<sup>8</sup> Specifically, see Siegert’s essays “Door Logic, or the Materiality of the Symbolic” and “Medusas of the Western Pacific: The Cultural Techniques of Seafaring” in *Cultural Techniques: Grids, Doors, and Other Articulations of the Real* (2015).

the relation of digital and analog in relation to Freud's concept of a "psychic apparatus," as it was re-conceptualized by Lacan, so that it embodied the principle of a triode tube,<sup>9</sup> which suggests that the digital regime did not substitute for the analog, but rather, both became a complex machine that not only receives, transmits and stores data, but also processes it.

In *Medium, Messenger, Transmission: An Approach to Media Philosophy*, Sybille Krämer has asked "what psychoanalytic transference reveals about the nature of transmission" by addressing the invention of a proto-psychoanalytic technique in the clinical practices of hypnosis. She described the practices conducted by French psychologist and psychotherapist Pierre Janet, as well as by Josef Breuer and Freud,<sup>10</sup> as the process of "transmission through affective resonance" (126-143; 235).

In *Psychosomatic: Feminism and the Neurological Body*, Elizabeth A. Wilson, too, draws our attention to Freud's early studies in biology as well as Charcot's clinical practice as strong cases suggesting, "via hysteria," that "the psychological tenets of psychoanalysis are indebted to somatic symptomatology – that the psyche is always already of the body" (Wilson 1). She has based her discussion of "the somatic compliance" on the work of Monique David-Ménard, *Hysteria From Freud to Lacan: Body and Language in Psychoanalysis* (1989), which addresses the specifics of the organization of the hysterogenic body in terms of the obstruction of the physical body by the material

---

<sup>9</sup> Referring to Lacan's *Seminar II*, Ernst writes about Freud's "psychic apparatus": "It is thus the electron tube of all things – that media-epistemological entity, serving both as analog amplifier and as digital switch..." (Ernst, "Destroy" 169).

<sup>10</sup> For example, the notorious case of psychoanalytic transference, Freud's and Josef Breuer's patient Anna O., who subsequently gave psychoanalysis the name "talking cure," was probably one of the first patients whose desire to talk about her suffering was seriously taken into consideration by her doctor.

character of the signifiers that become “fused” to certain bodily movements, which could be summarized by the words of Kittler that could also serve as an epigraph to my project: “The discourse of psychoanalysis runs through two parallel-switched feedback loops, one feminine and one mechanical” (Kittler, “Dracula’s Legacy” 52). My exploration of these automated loops seeks for the instances of what could be identified as psychoanalytic and cybernetic practices.

The discussion of technologies, techniques, and notions that early psychoanalysis and early cybernetic thought both engage is inspired by Lacan’s interest in and engagement with cybernetics, information and games theory for his re-reading of Freud’s theory of the ego and the unconscious in the 1950s. Thus, I call this early “cybernetic psychoanalysis” “Lacan’s cybernetics,” which has given the title to my dissertation.

My dissertation is organized in three parts and six chapters. Part I, “Demons and Automata,” is focused on the notion of “automation,” crucial for both cybernetics and psychoanalysis, which is found in a variety of practices and discourses from the seventeenth to the twentieth century. The opening chapter, “The Cybernetic Episteme,” introduces this notion by following Lacan’s discussion of cybernetics in *Seminar II* and his use of cybernetics for his project of “returning to Freud.” Here I also explore Lacan’s notion of “writing,” which I situate in the context of nineteenth-century graphocentrism. Chapter two, “The Subject of Science,” outlines the conditions of mediality in which such a subject emerges. Drawing on Lacan, I suggest these conditions were shaped by the new, automated world order, where man found himself in the seventeenth century. Chapter three, “Freud’s Circuitry,” investigates Freud’s engagement with and his departure from the contemporary medical discourses and practices. This chapter also

looks at the main correlations between early psychoanalytic and cybernetic concepts in the work of Freud. I discuss Lacan's genealogy of Freud's thought from the "Project for a Scientific Psychology" to Beyond the Pleasure Principle" in *Seminar II* (1954-1955), where Lacan shows that Freud's work already carried many intuitive discoveries that would eventually be formalized by cybernetics. Chapter four, "Lacan and Automatisms," brings us back to the early work of Lacan in the 1930s and 1950s. It begins with a discussion on automatism as "automatic phenomena" and "automatic writing."

"Automatic phenomena," a psychiatric notion introduced by Lacan's teacher Gaëtan Gatian de Clérambault, addresses the patients' behavior entirely disconnected from their will. "Automatic writing" was practiced by Surrealists, a group to whom young Lacan was close, and it was an expression, according to André Breton, of an "inner discourse" in man. This discussion leads me to a conclusion that Lacan's notion of "structure" is influenced by his exposure to these discourses and practices to a greater extent than by structural linguistics.

The second part, "Writing the Body," is a detailed discussion of the pre-history of "psychoanalytic cybernetics." Chapter five, "Fragmentation and Mobilization," speaks to the question of how and why psychoanalytic technique has persistently depended on technological mediation. I address the clinical practices of Charcot and others to seek for the effects of inmixing of systems where patients act as parts of complex assemblages with a variety of "writing machines." The patients, I argue, inevitably engage in the *transferential relations* as the process by which emotions and desires originally associated with one person are unconsciously shifted to another person. They also engage in production of the symbolic, necessary for such processes.

The reason that such transference relations were not completely neglected and often even put into use by neurologists, psychiatrists, and physicians of the nineteenth century entails the existence of the *cybernetic episteme*, as a justified belief at the basis of the production of scientific knowledge. By keeping in mind the materiality of writing discussed in chapter one, here I offer a media-archaeological reading of clinical practices of the nineteenth century, many of which led to the formation of psychoanalytic technique. In the course of this discussion I focus on a selected number of “writing machines” and the conditions of mediality of the assemblages they enabled, which I identify as *graphocentrism*.

The following and final part, “Extimate Machines,” takes us to the present time of the over-connected world to explore the conditions of not-so-“immaterial” labor of a user synched with his machines. Chapter six, “Complicity and Interpassivity,” focuses on the “networked individual” (Mason, “I Tweet in My Dreams”), as an “interpassive user” (Žižek) or “the Freudian robot,” as Liu calls “any networked being that embodies the feedback loop of human-machine simulacra and cannot free her/him/itself from the cybernetic unconscious” (2). This chapter continues the discussion on the distinction between digital and analog as two inseparable modalities to explore the question of the materiality of information and of the signifier in relation to Lacan’s notion of structure.

I discuss how the production of the “the body-across-platforms as the body with the data” becomes “the body as the data it produces” (Clough, “Interview” n.p.). The body-across-platforms acquires the property of programmability when the users “actively participate in staging the scene of [their] own passive submission – and ... view such participation as a form of power sharing” (Andrejevic, *iSpy* 15). Slavoj Žižek identifies this as a relation

of “interpassivity” (102-124) – a forced pretense of being passive, while actually being frantically engaged in the production of data. In this context, I suggest that mobile apps as elements of cloud computing are a “media species” (Manovich) unlike other software; they impose a kind of “totalitarian interactivity,” as Lev Manovich described in 1996, which manipulates users by imposing its demand for attention, dedication, and complicity to and with the machinic network 24/7.

My discussion resonates with the current concerns expressed both within academia and in the Lacanian clinic about the degree of mediation, the limits of surveillance, the capacity of the network to exploit the subject, the automation of the gadgets that manage our lives, and the symptoms produced by all these aspects of the human-machine assemblage or even their erasure. This also echoes recent developments in the Lacanian clinic, specifically, rethinking the clinical approaches to neurosis and psychosis in the capitalist discourse of global economy.



## PART I

### Demons and Automata

*The machine is the structure detached from the activity of the subject.<sup>11</sup>*

– *Jacques Lacan*

---

<sup>11</sup> Lacan, *Seminar II*, 47.

## Chapter 1

### The Cybernetic Episteme

#### 1. Lacan For and Against Cybernetics

On June 22, 1955, the Société Française de Psychanalyse hosted Jacques Lacan's lecture "Psychoanalysis and cybernetics, or on the nature of language" that concluded a series of discussions on the theme "Psychoanalysis and the human sciences" featuring many prominent thinkers of the time including Alexandre Koyré, Claude Lévi-Strauss, Jean Hyppolite, Maurice Merleau-Ponty, and Émile Benveniste. Lacan's lecture was addressed to a wide audience who had some knowledge of psychoanalysis and of cybernetics.

For his regular listeners, who were also in attendance, the lecture summarized<sup>12</sup> Lacan's second annual seminar *The Ego in Freud's Theory and the Technique of Psychoanalysis* (1954-1955). Although *Seminar II* is often referred to as a "cybernetic seminar," Lacan's position towards cybernetics was divided, to say the least. On the one hand, he challenged the premises of cybernetic thought; on the other hand, he found its terminological apparatus useful for approaching the psychoanalytic notion of "repetition," for developing the notion of "the letter," for addressing the machinic nature of the symbolic order and the nature of the symbolic order's relation to the orders of the

---

<sup>12</sup> This lecture was included in *Seminar II* as 'Lesson XXIII,' which was followed by a closing Lesson XXIV, "A, m, a, S," where Lacan revisited the main points of his lecture on cybernetics and the discussion it generated at the Société Française de Psychanalyse. The two last lessons together summarized his *Seminar II* before the summer break.

imaginary and the real. By discussing psychoanalysis and cybernetics together, Lacan emphasized that they both “operated upon” the same subject, which could be called “the subject of science”<sup>13</sup> (“Science and Truth” 729).

Lacan’s “cybernetic seminar” began one year after the end of the Macy conferences that had held their final meeting in 1953. We can only speculate whether Lacan was following the conference discussions from afar, or learned of them directly from the French contexts where the name of Norbert Wiener was rather popular in the 1950s. Although it was labeled “the American science” (Dubarle, 1948), cybernetics became popular in the United States and in France at the same time. Moreover, it has been argued that Norbert Wiener’s book *Cybernetics* “was born in Paris” (Cobb 74).

In 1947, Wiener was invited to speak at a conference hosted by the Sorbonne University in Paris, where he met his future publisher Enriques Freymann, who, impressed by the new theory, persuaded Wiener to put together a popular version of his ideas as a book for a wider audience (Cobb 74). In 1948, Wiener’s *Cybernetics* was published in Paris and in New York by different publishers, with the French edition (yet, in English) coming out a bit earlier. The publication of the book generated a big discussion in Paris. One of the first responses to the book, a review “Towards the Machine as Governor?” (1948) by Dominican Friar and professor of philosophy Dominique Dubarle, was published in *Le Monde*.<sup>14</sup> While expressing his fascination by the new science, Dubarle also articulated

---

<sup>13</sup> For a detailed discussion of “the subject of science,” see Chapter 2 of my dissertation.

<sup>14</sup> The quote from Dubarle’s review opened the essay “The Cybernetic Hypothesis” (2001) by French collective Tiquun who continued the critical reading of the cybernetic model as it is implemented today. The top epigraph of the famous essay-manifesto reads:

concerns by envisioning “the emergence of a tremendous political Leviathan” as a possible consequence of the machinic governance, which reflected Wiener’s own concerns expressed in his later writing.

In 1950, Wiener travelled to France again to give a lecture at the College de France upon the invitation of mathematician Benoit Mandelbrot (Johnston, *The Allure of Machinic Life* 67). These visits, along with the success of the book, informed a series of works by French thinkers. Some of these works such as *Cybernetics and the Origin of Information* (1954) by French bio-philosopher Raymond Ruyer and *What Is Cybernetics?* (1954) by mathematician and topologist Georges-Théodule Guilbaud – both mentioned in *Seminar II* (119) were written by Lacan’s colleagues.

Lacan, Ruyer, and Guilbaud were familiar with each other’s work either by following the publications or by attending each other’s lectures; they all expressed their interest in cybernetics at the same time, which was related to their ongoing exchanges on the topics of game theory and logic. Guilbaud participated in Lacan’s “cybernetic seminar” and they regularly consulted him on questions of topology (Roudinesco, *Jacques Lacan & Co* 560-561). Lacan was very particular when it concerned the subject of cybernetics and the theories of thinking machines; he saw the process of “machinic thinking” as operating logically and not mechanically (*Seminar II* 119). In *Cybernetics and the Origin of Information*, Ruyer, too, articulated the necessity of a “positive reinterpretation of cybernetics stripped of its mechanist postulates” (81), although his overall articulation of

---

“We can imagine a time when the machine of governance would replace – for better or worse, who knows? – the insufficiency of the minds and devices of politics that are customary today.” – Father Dominique Dubarle, *Le Monde*, December 28<sup>th</sup>, 1948.

the assemblage of the human and technology tended to privilege the “primary” organic component and the “secondary” human “consciousness” over the “organic” and “mechanical” machines (Hansen 81). “If the physical world and the world of machines were left completely to themselves, everything would spontaneously fall into disorder”; Ruyer writes, “everything would testify that there had never been true order, consistent order, in other words, that there had never been information” (10; qtd. in Hansen 82). Lacan, instead, pointed out that “cybernetics ... stems from a reaction of astonishment at rediscovering that [the] human language works almost by itself, seemingly to outwit us” (*Seminar II* 119); in other words, beyond consciousness.<sup>15</sup>

“I usually like what M. Ruyer writes, but not his book on cybernetics”: Lacan dismissed Ruyer’s work (119), while Guilbaud’s account seemed to be of a greater importance for him. In “Psychanalyse et cybernétique. Les machines de Lacan,” Ronan Le Roux notes that in his 1953 lecture “Pilots, Planners and Gamblers: Toward a Theory of Human Control,” Guilbaud mentioned Edgar Allan Poe’s story “The Purloined Letter” in the context of games theory.<sup>16</sup> By referring to Lacan’s early essay “Logical Time and the Assertion of Anticipated Certainty” (1945), Guilbaud discussed Poe’s novella known for “rais[ing] the issue of the existence of a situation of ‘pure play’,” by contesting this view and calling for a reading of “The Purloined Letter” that would be free from both linguistic structuralism and psychologism: “It is about logic, and not psychology” (Le Roux 253). “It is the network structure that will be in focus of this analysis,” Guilbaud

---

<sup>15</sup> I think a detailed comparison of Lacan’s and Ruyer’s works of the 1950s, which is beyond the focus of my dissertation, would reveal more of the overlaps between their accounts of cybernetics than it may seem now. As of now, Ruyer’s works are not available in English (although, his *Neofinalism* is scheduled to come out in 2016 with the University of Minnesota Press).

<sup>16</sup> This aspect of his discussion did not make it to a final version of the text that appeared as the last chapter of Guilbaud’s book on cybernetics.

wrote in “Divagations cybernétiques,” outlining the new method; “it is a kind of very abstract geometry (combinatorial topology), a logic, if you prefer” (qtd. in Le Roux 253). These discussions constituted the background of Lacan’s reading of cybernetics in *Seminar II*.

As Johnston observes, “the term *cybernetics*, along with subsidiary notions like feedback, the circuit, and the message as information, enters Lacan’s seminar rather casually” (68), with the term itself appearing only in Lesson III, “The symbolic universe.” The reason is that, for Lacan, cybernetics is not limited to this set of concepts: it is more than the “new science” promoted by American scientists, and rather part of a much bigger epistemological event changing the relation of the human to the world. He sees both cybernetics and psychoanalysis determined by this shift (*Seminar II* 295).

Lacan often referred to the “canonical” presentation of cybernetics as the “new science” promoted by Wiener and other members of the cybernetic group (295-297). At the same time, Lacan recognized the “varieties of cybernetics which are more or less fashionable” (295) with their different agendas, concerns, associated institutions and the potential consequence affecting multiple areas of human life. Lacan was critical of cybernetics’ investment in cognitivism and behaviorism. He also expressed concerns about cybernetics’ ties to military research. “It is not for nothing, that [cybernetics] comes out of games of chance. And it is not for nothing,” Lacan warned his listeners, “that game theory is concerned with all the functions of our economic life, the theory of coalitions, of monopolies, the theory of war. Yes, war itself considered in its aspect as game, detached from anything which might be real” (300). Here Lacan was close to Wiener’s own uncertainty about the potential futures of the cybernetic automatic control: “Long

before Nagasaki and the public awareness of the atomic bomb, it had occurred to me that we were here in the presence of another social potentiality of unheard-of importance for good and for evil” (*Cybernetics* 27). “We can only hand it over to the world that exists about us, and this is the world of Belsen and Hiroshima” (28).

While Wiener was concerned by the fact that society was not ready to embrace the new science and suggested that changes had to be implemented before cybernetics is handed over to the world, Lacan saw cybernetics itself as a rather problematic approach especially in terms of constructing a “thinking machines” simulating a human being. This question held his attention until the 1970s, when he again engaged in debating the cybernetic conceptions of machinic thinking and learning by referring to Claude Shannon’s mouse in the maze and to Gregory Bateson’s book *Steps to an Ecology of Mind* in *Seminar XX* (125-146).

In *Seminar II*, Lacan did not see any difference between the human and machinic thinking processes, but he was skeptical about the notion of “thinking machine” celebrated by cyberneticians because, as he argued, “we made the machine, and it thinks what it has been told to think” (304). He also ironically noted that “thinking machine” is a “paradoxical expression,” because “men think only very rarely”; he argued, “if you give a thinking machine different elements, it, at least, answers something different” (119), while man is caught in circuits of repetition. “With a machine, whatever doesn’t come on time simply falls by the wayside and makes no claims on anything,” he explained by

evoking Freud's concept of repression: "whatever doesn't come on time remains in suspense" (307-308).<sup>17, 18</sup>

At the same time, Lacan never accepted cybernetics's ambition to become a *metalanguage* for sciences. As Slavoj Žižek notes in this regard, "metalanguage is not just an Imaginary entity," but "the only way to avoid the Real" by producing "an utterance of pure metalanguage which, by its patent absurdity, materializes its own impossibility" ("Why Lacan Is Not a 'Post-Structuralist'" 34). This tendency of avoiding the real, in cybernetically impacted social sciences just like as in the 'science of war,' "detached from anything which might be real" (*Seminar II* 300), returns us to Lacan's distinction between the exact and conjectural sciences (296).

"How are we to define the exact sciences? Should we say that, unlike the conjectural sciences, they are concerned with the real?" Lacan asked (297). He continued: "The meaning which man has always given to the real is the following – it is something one always finds in the same place, whether or not one has been there" (297). Modern science was based on the assumption that there was an order of nature that always remained in the same place. Lacan argued that conjectural sciences, including cybernetics, had developed as a symptomatic response to a realization that the order in nature had been lost, which was why "the science of what is found at the same place" had been substituted by "the science of the combination of places as such" (299). These new "conjectural sciences," Lacan indicated, were detached from the real and organized

---

<sup>17</sup> Twenty years later, in *Seminar XX* on knowledge and *jouissance*, he noted on the point of differentiation between the human and the machinic thinking that although machines can *think*, they cannot *know* (97), because human knowledge is related to *jouissance*.

<sup>18</sup> I return to the question of thinking machines as rooted in the work of Leibniz in chapter 2, section 1 of this dissertation.



“around the correlation of absence and presence,” so that “the search for the laws of presence and absence will tend towards the establishing of the binary order which leads to what we call cybernetics” (300). Because cybernetics compensated for the disorder in nature, Lacan suggested, it had “to function in the real, independently of any subjectivity”: “This science of empty places, of encounters in and of themselves has to be combined, has to be totalized and has to start functioning all by itself,” he explained (300). Since there was no order in nature, and there was nothing there that always remained in the same place, cybernetics created an abstract order of its own, supported by calculating, measuring, and writing machines.

The event of the “disappearance of the real” as the order of nature coincided with the transformation of sciences, Lacan argued, and with “the modification that has occurred in our subject position [*position de sujet*], in the sense that it is inaugural therein and that science continues to strengthen it ever further” (“Science and Truth” 726). In his understanding of science, Lacan followed philosopher Alexandre Koyré who claimed that the cause of the scientific revolution of the sixteenth and the seventeenth centuries was not a result of the discoveries of Galileo and Newton, but rather, a shift of perspective in relation of the man to the world, which led to a change in theoretical outlook toward the world.

As Miller puts it, “Koyré insisted on the difference: magic makes nature speak where science makes it shut up. Magic is rhetorical incantation or purgation. With science speech becomes writing. As Galileo said: nature is written in the language of mathematics” (“The Real in the 21<sup>st</sup> Century” n.p.). Lacan theorizes such modification of the subjective position by the notion of “the subject of science,” which Russell Grigg

describes as “the subject that makes science possible as the mathematical study of nature” (*Lacan, Language, and Philosophy* 138). This is “the subject upon which we operate in psychoanalysis,” Lacan states in “Science and Truth” (729). The notion of “the subject of science” is crucial and it calls for a separate discussion, which I will undertake in the next chapter. Here, it serves as a historical reference, by which Lacan marks the beginning of psychoanalysis and cybernetics and claims they are “two roughly contemporaneous techniques” (295), and which allows me to widen the framework for discussion of the conflicting and tight relation between psychoanalysis and cybernetics that goes further back in history than it is usually assumed.

Having established that Lacan was *not* a cybernetician, especially, not in the sense attributed to the notion by the members of the cybernetic group in the 1950s, I will now look at “the variety of cybernetics” with which Lacan engaged by confronting or appropriating their notions and ideas. In order to outline the scope of connections and exchanges within the cybernetic episteme beyond the 1940s and 1950s, I will address in this chapter some of the theories, concepts, works and names associated with cybernetic thought, by limiting their number to those whom Lacan addressed directly. Some of them, such as game theory, will receive a detailed reading in the following chapters.

I will begin from the Macy conferences and will move down the list towards the scientific discourse of the nineteenth century within the context of which Lacan read the work of early Freud. After the discourse of the Macy conferences and the work of Norbert Wiener (the end of 1940s-1950s), I will sketch the difference between Claude Shannon’s and Wiener’s notions of information (1930s-1940s) and will stop at the work on homeostasis by Harvard professor Walter Bradford Cannon and several of his

associates (1910-1940s); I will close this chapter with a brief discussion of the industrial research on the systems of control in the time between the two wars (1916 to the 1940s), back from which David Mindell extends the framework for cybernetic thought to the 1910s.

My goal here is not only to contextualize Lacan's work in the variety of debates on cybernetics and the questions it raised, but also to weaken the strong association of cybernetics solely with what Ronald R. Klein calls "the cybernetics moment" of the late 1940s and 1950s before "the movement to create a universal science fell apart in the 1960s" (179). My work diversifies cybernetic thought so that its description accommodates not only the discourses where the list of familiar cybernetic notions such as "information," "feedback," "regulation" is dominated by the notion of "control," but also the discourses that acknowledge cybernetics's contribution to the understanding of "intelligence" and "life" beyond "the anthropomorphic world" (*Seminar II* 297). A new "space of life" (*lieu de la vie*) (Miller, "Lacanian Biology" 21) was conceived by both early psychoanalysis and early cybernetics allowed them simultaneously and for similar reasons digress from the humanist perspective. However, unlike cybernetics, which "came very close to announcing the dehumanization of man" (Dupuy, *On the Origins of Cognitive Science* 158), Lacanian psychoanalysis never treats the mind as "subjectless": it deciphers human error.

### Norbert Wiener and the Macy Conferences

One of the important achievements of cybernetics was engaging the philosophers and scientists whose work was previously locked within the closed research labs, especially

during World War II. Partly for reasons of security and secrecy,<sup>19</sup> partly because there were, indeed, very clear disciplinary boundaries set by institutions, the research of the 1920s-1940s either could not be disclosed to scholars from other fields or did not have a basis for mutual sharing, which was why Wiener's announcement of the "new science" operating cross-disciplinarily attracted a lot of attention.

"He was concerned for his place in intellectual history," James Gleick writes about Wiener, "and he aimed high" (238). Having acknowledged many colleagues, Wiener saw cybernetics, "a new interpretation of man, of man's knowledge of the universe, and of society," as being "curated" by him (Wiener, *I Am a Mathematician* 375). Traditions, especially philosophical traditions, were important to Wiener, who studied philosophy at Cornell and did his doctorate in mathematical logic at Harvard and then spent two years as a postdoctoral student working with Bertrand Russell and G. H. Hardy in Cambridge and David Hilbert in Göttingen, Germany (Heims, *John von Neumann and Norbert Wiener* 16-17). The name "cybernetics," which he chose for the new science, can be traced to Greek philosophy, and the first documented use of the term κυβερνητική ("to steer, navigate or govern") dates back to Plato's *The Republic* (400 BC) where the philosopher metaphorically describes the state as a ship navigated by a wise governor.

However, as Daniel Bell notes, "Wiener thought he had coined the word from the Greek root *kybernētēs*, meaning a helmsman, or pilot, or a steersman of a vessel"; thus, even though "the word occurs often in Plato, as a subdivision of *technai*, as the art of

---

<sup>19</sup> For example, James Gleick writes in *The Information* about the time when Alan Turing's and Claude Shannon's simultaneously conducted their research at Bell Labs in 1943: "two like-minded thinkers ... met daily at teatime in the Bell Labs cafeteria and said nothing to each other about their work, because it was secret. ... Even Turing's presence at Bell Labs was sort of secret" (Gleick 204).

steersmanship, and denotes for Plato the art of guiding men in society, i.e., the art of government” (Bell 30), it may not be the reference behind Wiener’s term “cybernetics.” Centuries later, the word was used by French physicist and mathematician André-Marie Ampère, who was also referring to Plato, when he laid out the foundation for the classification of sciences in his *Essay of the Philosophy of Sciences* (1834): “The future science of government,” he wrote by translating Plato’s word in French, “should be called *la cybernétique*” (Bell 30). Whether Wiener knew about this particular line from Ampère is unclear.<sup>20</sup> He claimed that together with Arturo Rosenblueth they adopted the Greek word from Clerk Maxwell to compensate for “the absence of common terminology, or even a single name for the field” that had already been accommodating “the set of problems centering about communication, control, and statistical mechanics, whether in the machine or in living tissue”<sup>21</sup> (Wiener, *Cybernetics* 11).

Wiener named cybernetics after “servomechanisms” that respond to instabilities in their environment in the way that allows them to minimize or even avoid destabilization entirely. These mechanisms, Wiener wrote, were “coupled to the outside world both for the reception of impressions and for the performance of actions”; and, as he put it, these systems “contain sense organs, effectors, and the equivalent of a nervous system to

---

<sup>20</sup> There is no agreement about this fact among the scholars. For example, Sana Murrani traces the meanings behind Wiener’s term back to Plato via Ampère (268), while Daniel Bell suggests that Wiener was not familiar with these earlier uses (30).

<sup>21</sup> The full quote reads:

We coin at least one artificial neo-Greek expression to fill the gap. We have decided to call the entire field of control and communication theory, whether in the machine or in the animal, by the name *Cybernetics*, which we form from the Greek for *steersman*. In choosing this term, we wish to recognize that the first significant paper on feedback mechanisms is an article on governors, which was published by Clerk Maxwell in 1838, and that governor is derived from a Latin corruption of κυβερνήτης. We also wish to refer to the fact that the steering engines of a ship are indeed one of the earliest and best-developed forms of feedback mechanisms. (Wiener, *Cybernetics* 11)

integrate the transfer of information from one to another” (43). Examples of nineteenth-century servomechanisms are a thermostat or a steam engine. The central focus of cybernetics was the study of the complex systems of adaptive mechanisms, either “in the metal or in the flesh” (42), that are capable of self-regulation by means of negative feedback in order to retain equilibrium. Thus, cybernetics was concerned with the processes of feedback, chance, circuits of causality, probability, networks, entropy, and information – each of them an important element of self-governing technique.

As Jean-Pierre Dupuy notes, “Cybernetics was built principally around two ... cases: the problems of communication, on the one hand, and the problems posed by the study of self-integrated mechanisms on the other” (*On the Origins of Cognitive Science* 88), with the two cases closely related in that they both involved the question of transmission or transference of information between systems. Researchers interested in exploring the mechanisms of crossing boundaries between the technological and biological systems met and formed the “Cybernetic Group” at a series of meetings in New York City between 1946 and 1953 under the heading “Circular Causality and Feedback Mechanisms in Biological and Social Systems.”

These – the Macy – conferences brought together scientists from a variety of fields to explore analogies between organisms and machines, questions of intelligence, learning and change, theories of decision and game theory, among many others (Heims, 1991; Hayles, 1999; Dupuy, 2009; Pickering, 2010; Klein, 2015). The key figures included physician and psychologist Arturo Rosenbleuth, mathematician Warren Weaver, anthropologist Margaret Mead, neurophysiologist Warren McCulloch, psychoanalyst Lawrence Kubie, psychiatrist Ross Ashby, neurophysiologist and roboticist Grey Walter,

and social scientist Gregory Bateson. After Norbert Wiener's book came out, physicist and philosopher Heinz von Foerster, then a secretary of the Macy conferences, suggested adding Wiener's term "cybernetics" in front of the conference title (Clarke, *Emergence and Embodiment* 34); this way cybernetics acquired another, clearer definition in addition to Wiener's "control and communication in the animal and the machine."

This wave of cybernetics was not univocal; in fact, it could be described as a "variety of cybernetics" and not only due to its internal interdisciplinarity. For example, the cybernetics of the 1940s and 1950s, also called "first-order cybernetics," accommodated the opposing views of both Norbert Wiener (the ideas of control mastery and design) and John von Neumann (the ideas of complexity and self-organization) (Dupuy, *On the Origins of Cognitive Science* xi). There was also enough room for the opposite definitions of information given by Wiener and Claude Shannon, as "negative entropy" and "positive entropy" respectively.<sup>22</sup> In *Cybernetics*, Wiener wrote:

The notion of the amount of information attaches itself very naturally to a classical notion in statistical mechanics: that of *entropy*. Just as the amount of information in a system is a measure of its degree of organisation, so the entropy of a system is a measure of its degree of disorganization; and one is simply the negative of the other." (11)

As Matthew Cobb writes, for Wiener, information "was at the heart of all systems – mechanical, electronic, organic – and this was closely related to the physicists' concept of entropy;" and he points out: "five years earlier, Schrödinger had argued that life was 'negative entropy,' because of its ability to temporarily resist the second law of

---

<sup>22</sup> The statistical measure for the negative entropy remains the same as it is for the positive entropy. See, for example, James G. Miller *Living Systems*. Toronto: McGraw-Hill Ryerson, 1978, 13.

thermodynamics” (75). As such, information became a new quantifiable quality of life, or, as Cobb puts it, “a continuum between the most ordered states of matter – living beings – and inanimate forms of organized matter, a continuum that could be viewed in terms of a new quality” (75-76).

Regardless of the difference, Wiener’s definition of information relied on Shannon’s in his article “A Mathematical Theory of Communication” (1948), where the term “information” was described as detached from meaning and refers to the purely quantitative measure of communicative exchanges.<sup>23</sup> “Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities,” Shannon wrote; “these semantic aspects of communication are irrelevant to the engineering problem” (379). His abstract notion of information described a potential distortion: it figured what a certain message *could be*, not what it was. Shannon’s theory was not concerned with feedback until the early 1950s, when he introduced a maze-solving electromechanical mouse Theseus during one of the Macy conferences in 1951. However, even then, “feedback” was not for him primarily associated with “control” as “self-regulation” (as it is for Wiener); Shannon rather focused on the question of memory as “storage capacity” and learning. This set of questions was drawing Lacan’s attention through the years; he even titled the closing Lesson of his *Seminar XX* (1972-1973) “The Rat in the Maze,” directly alluding to Shannon’s robot.

---

<sup>23</sup> Besides, Wiener was familiar with the work of Shannon before the publication of his article.



The first wave of cybernetics was mostly focused on the mechanics of regulation, the interaction of the variables within the systems and, as N. Katherine Hayles notes, “followed traditional scientific protocols in considering observers to be outside the system they observe” (9). However, even within this type of cybernetic thought, there were “implications that subverted this premise,” for example, the notion that “feedback can also loop through the observers, drawing them in to becomes part of the system being observed” (Hayles 9).

These observations were picked up and developed by second-order cybernetics in the 1960s and 1970s where Warren McCulloch’s group at MIT’s Research Laboratory of Electronics played a key institutional role from 1952 to 1969. In addition to McCulloch, Margaret Mead, Gregory Bateson, and von Foerster, associated with the first wave of cybernetics, new scientists joined the discussion: Herbert Brün, Humberto Maturana, Fransisco Varela, Gordon Pask, Stafford Beer, and Erich Jantsch. With the funds of the Office of Naval Research and Air Force, von Foerster organized and directed the Biological Computer Lab at the Department of Electrical Engineering at the University of Illinois at Urbana-Champaign, which became cybernetics’ another major centre and functioned between 1958 and 1975. The lab’s research focused primarily on artificial neural nets (Kline 101). In addition to shifting the focus to the interaction between the observer and the observed, the second wave of cybernetics attempted “to incorporate reflexivity into the cybernetic paradigm at a fundamental level” and “to redefine homeostatic system so that the observer can be taken into account” (Hayles 10). In a way, the figure of the second-order observer who was part of the system was reminiscent of a

psychoanalytic model of analyst-analysand where the labour of analysis was performed by an analysand in the presence of an analyst.

Anthony Wilden, social theorist and enthusiastic promoter of Lacan's work in 1960s and 1970s, wrote several books pursuing this idea and developing parallels between Lacan and second-order cybernetics. In particular, he observed the affinity between the work of Lacan and Gregory Bateson and, according to Lacan in *Seminar XX*, kept encouraging him to read Bateson's *Steps to An Ecology of Mind* (138).<sup>24</sup> However, Lacan resisted this comparison and was critical of Bateson notion of "metalogue" (which Bateson practiced with his youngest daughter Nora). As Bateson defined it, "a metalogue is a conversation about some problematic subject"; where the participants not only discuss the problem of interest "but the structure of the conversation as a whole is also relevant to the same subject," therefore "only some of the conversations here presented achieve this double format" (21). This double format, according to Bateson, assisted understanding of the topics discussed.<sup>25</sup> "They are not bad," Lacan commented on Bateson's "metalogues," "insofar as they involve, if we take him at his word, some internal, dialectical progress,

---

<sup>24</sup> Wilden also translated Lacan's "The Function and Field of Speech and Language in Psychoanalysis" and published it as a book, *Speech and Language in Psychoanalysis*, where Lacan's text was accompanied by Wilden's extensive commentary.

<sup>25</sup> An example of Bateson's "metalogue," # 2.5, on "outlines":

Daughter: What did *you* mean by a conversation having an out-line? Has this conversation had an outline?

Father: Oh, surely, yes. But we cannot see it yet because the conversation isn't finished. You cannot ever see it while you're in the middle of it. Because if you could see it, you would be predictable—like the machine. And I would be predictable—and the two of us together would be predictable.

D: But I don't understand. You say it is important to be clear about things. And you get angry about people who blur the outlines. And yet we think it's better to be unpredictable and not to be like a machine. And you say that we cannot see the outlines of our conversation till it's over. Then it doesn't matter whether we're clear or not. Because we cannot *do* anything about it then. (*Steps to An Ecology of Mind* 38)

being produced only by examining the evolution of a term's meaning" (*Seminar XX* 138).

Psychoanalysis, however, works towards undoing the effects of meanings produced by the signifying chain, in other words, by the place and order of the words among other words in it. If we *are* to look for parallels, however, Lacan's formula "the unconscious structured like a language" would be better placed, in my view, in the context of first-order cybernetics, specifically Shannon's and Wiener theories of information, as well as game theory of the 1930s and 1940s. Lacan noted:

We try to get the subject to make available to us, without any intention, his thoughts, as we say, his comments, his discourse, in other words that he should intentionally get as close as possible to chance. What is the determinism here sought after in an intention of chance? It is on this point that cybernetics can throw some light for us. (296)

Here and in his separately published seminar on Poe's "The Purloined Letter," Lacan explored the relation of chance and determinism, which he claimed was "at the very root of our [psychoanalytic] technique" (296). This relation, the way in which chance is absorbed by determinism, which is also the subject of game and information theory, is crucial for Lacan's understanding of structure.<sup>26</sup>

### Walter Bradford Cannon

In "The Function and Field of Speech and Language in Psychoanalysis" (1953) that precedes Lacan's public seminars,<sup>27</sup> Lacan evokes Walter Bradford Cannon's definition of homeostasis "as the function of a system maintaining its own equilibrium," the notion that, he argues, demonstrates that "life and death come together in a relation of polar

---

<sup>26</sup> I address this question in my discussion on chance and determinism in Lacan's work in chapter three.

<sup>27</sup> Lacan gave this lecture at the University of Rome on September 26-27, 1953 and he began his first public Seminar *Freud's Papers on Technique* in November 1953.

opposites at the very heart of phenomena that people associate with life” (261), the assumption similar to Freud’s theory. Cannon’s work is not typically associated with cybernetics *per se*, but some of his notions, and particularly, “homeostasis,” were crucial not only for the open and popularized collaborations and discussion held during the Macy conferences, but also for much less advertised military research.

Cannon belonged to the group of scholars at Harvard University who were engaged in interdisciplinary exchanges way before such approaches became popularized by cyberneticians. In the years between 1903 and 1911, Cannon was part of the Wicht Club, which he co-founded with his colleague and close friend, American physicist George Washington Pierce, the author of *Principles of Wireless Telegraphy* (1910), whose work impacted the development of electronic telecommunications. In his book *The Way of an Investigator* (1945), Cannon recalls the Wicht Club as an interdisciplinary society that included several Harvard physicists, physiologists, psychologists, philosophers, a primate biologist, a psychiatrist, and a physical chemist who regularly met in Boston to exchange ideas which were subsequently published as the *Was Wichtiges* volumes (175-176). After the Wicht Club was dispersed, he continued interdisciplinary collaborations within and outside academic environment from the 1910s to the 1940s.

Cannon belonged to the scientific tradition of French physiologist Claude Bernard (1813-1878) and was deeply influenced by his theory of *milieu intérieur* as the extracellular fluid environment that functions as a stabilizer of the processes within the tissues and organs of living organisms (Holmes 3-4). In 1926, Cannon reformulated Bernard’s *milieu*

*intérieur* as “homeostasis” and in 1932, he published his best known work, *The Wisdom of the Body*,<sup>28</sup> which popularized the notion of homeostasis.

The way he presented his thesis in the book, beginning from its title, implied that the body, in the way it performs self-regulation, demonstrated a type of intelligence if its own. “Our bodies are made of extraordinarily unstable material,” Cannon writes (19). “The instability of the bodily structure is shown also by its quick change when conditions are altered” (19). And “somehow the unstable stuff of which we are composed had learned the trick of maintaining stability,” he explains; “as we shall see, the use of the word ‘learned’ is not unwarranted” (23).

The process by which bodily “stuff” learns to maintain the internal economy of the body is described by Cannon as *homeostasis*, the study of which, he writes, “may present some general principals for the establishment, regulation and control of steady states, that would be suggestive for other kinds of organization – even social and industrial – which suffer from distressing perturbations” (24-25). The whole book, which influenced Wiener’s notion of “negative feedback,” is solely focused on the body’s bio-mechanism: Cannon speaks of the constancy of water and salt in the blood, the self-regulation of blood fat and sugar, the maintenance of an adequate oxygen supply, the constancy of body temperature, the organism’s natural defense system, the function of the nervous system and so forth. In the short Epilogue, Cannon finally theorizes the “relation of biological and social homeostasis” (305), and it becomes clear that the book should be read not only as a text about the self-regulating functions of an organism, but also, and

---

<sup>28</sup> This work was the primary source on homeostasis for Lacan, when he addressed the notion in *Seminar II*.

primarily, as a book about social organization. In other words, it attempts to design a general theory of regulation that would be applicable to all systems.

In the analogy between social structures and the human organism, Cannon “extended Bernard’s ideas of regulation from the realm of bodily fluids to the wider social environments,” which, as Charles Gross notes, led cyberneticians Rosenblueth,<sup>29</sup> Wiener, and J. Bigelow to take the idea of self-regulation “even further to include the non-biological world”: “In the context of World War II control and communication systems, they pointed out that negative feedback covered self-regulation both in the nervous system and in nonliving machines” (384). The research on synchronization of senses and sensors towards producing an assemblage of living and non-living systems, and specifically a human-machine assemblage known as an “integrated human operator” who would act like a machine, was conducted in industrial and military settings; it had begun around 1916, toward the end of World War I.<sup>30</sup>

### Cybernetic Vision for Industries and War

Among the works that have questioned this canonical historicization of cybernetics is David A. Mindell’s meticulous study *Between Human and Machine: Feedback, Control, and Computing before Cybernetics* (2002), where he investigates the systems of control, as “particular technologies, for systems are things as well as ideas,” in the time roughly

---

<sup>29</sup> In the late 1930s, Cannon collaborated with Arturo Rosenblueth, one of the key participants of the Macy conferences, to whom Norbert Wiener dedicated his book *Cybernetics*. With Rosenblueth, Cannon co-authored *Autonomic Neuro-effector Systems* (1937), which became a foundational work for the field of psychosomatic medicine.

<sup>30</sup> See David A. Mindell’s *Between Human and Machine: Feedback, Control, and Computing before Cybernetics*. Baltimore: John Hopkins University Press, 2002.

between the two wars, from 1916 to 1948 (6). As Mindell reads cybernetics of 1916-1948 as the science of control systems, he draws on the work of Harvard historian James Beniger, who suggested in his 1986 book *The Control Revolution: Technological and Economic Origins of the Information Society* that “from its origins in the last decades of the nineteenth century, the Control Revolution has continued unabated, and recently it has been accelerated by the development of microprocessing technologies” (Beniger, 1986: vi).

In *Between Human and Machine*, Mindell distinguishes several “discrete technological traditions, or engineering cultures, of control systems in the United States” that “converged, but more broadly and gradually than Wiener’s account suggests” (Mindell 6). Specifically, he traces the research conducted by four institutions: the U.S. Navy Bureau of Ordnance (with such contractors as Hannibal Ford and the Ford Instrument Company), the Sperry Gyroscope Company (that “tightly coupled human operators to their machines”), Bell Telephone Laboratories and their work on feedback amplifiers and voice transmission, and Vannevar Bush’s laboratory at MIT (Mindell 7, 17-18). As Mindell shows, Wiener’s notion of “communication and control” founded on the notion of negative feedback was initially attached to the research on a stimulus-response model. This model was borrowed from behaviorist psychology for creation of the input-output orientation of communication, the goal of which was to merge the human pilot with the aircraft, so that the systems “in the metal or in the flesh” not only adapt to each other, but also sense and predict the behavior of the other (282).

## 2. Freud, Lacan and the Question of Writing

The cybernetic episteme is a condition of possibility for writing across heterogeneous systems open to convergence, where writing is a material expression of such convergences. Unlike Aristotelian *epistêmê* that implies scientific (pure) knowledge and is opposed to *technê*, or experience-based practice, here “episteme” implies the merging of these types of knowledge. Partly, my notion of episteme is based on Foucault’s *The Archaeology of Knowledge* and *The Order of Things*, in which he refers to the organized ‘unconscious’ structures underlying the production of scientific knowledge. In these works he refers to the ‘epistemological field’ where the conditions of possibility for knowledge are formed in a given time and place. I supplement this understanding of episteme by Kittler’s argument that any discussion of epistemology should consider the conditions of mediality. Finally, I define episteme with the consideration of Lacan’s theory of discourse as the symbolic network that regulates the social relation and “everything that you sustain qua social link” (*Seminar XX* 54). For this project, Lacan’s discourse theory is crucial for its attention to the subject’s relation to knowledge; it demonstrates that in every discursive formation, knowledge occupies a different place, which affects the “fundamental relations” produced by discourse formations: “intrasubjective or psychological relations, intersubjective or social relations, and relations with the nonhuman world” (Bracher 107). “What we need to know,” Lacan says, “is what, in a discourse, is produced by the effect of the written” (Lacan, *Seminar XX* 33).



Writing is performed by the agency of the letter, “the material medium that concrete discourse borrows from language” (Lacan, “Seminar on ‘The Purloined Letter’” 45).

Writing is a trajectory of the letter, its path. Illustrating his theory with a detective story of Edgar Allan Poe, Lacan theorizes the letter as always “unopened” – its content is unknown, and always “stolen” – nobody comes to own it; one only functions as a temporary holder of the letter. The letter switches places, in other words, the letter writes, but “what is written is not to be understood” (Lacan, *Seminar XX* 34), since understanding dwells in meaning. The written is left to be deciphered.

At the level of the written in discourse, “the fact that one is speaking remains forgotten behind what is said and what is heard”<sup>31</sup> (Lacan, *L’étourdit* 1). Writing bars<sup>32</sup> the subject’s *saying* from her or his *wanting-to-say*. Writing is othering the body, by facilitating the bodily movement outside of the subject’s control. Writing introduces a stratification of life beyond what the “common sense” or the “world view” can offer as a version of “reality.” The way these strata are *inmixed* is only accessible to the subject by means of *jouissance*. Thus the paradox of Lacan’s notion of writing: it is profoundly material, because this writing is essentially the “body-event.”

In *Seminar XX*, when Lacan speaks about the function of the written in discourse, he refers to such strata or systems that function as an assembled whole not because of some deeper *meaning*, but rather, due to their intelligence that is devoid of meaning and

---

<sup>31</sup> My translation of Lacan’s “Qu’on dise reste oublié derrière ce qui se dit dans ce qui s’entend.” Jack Stone’s translation reads: “That one says remains forgotten behind what is said in what is heard” and Cormac Gallagher’s translation is: “That one might be saying remains forgotten behind what is said in what is heard.” Both are unpublished.

<sup>32</sup> Lacan’s mathemes of discourse are based on Ferdinand de Saussure’s algorithm of a sign in which the bar that separates a signifier from a signified implies the arbitrary relation between them.

inherent in these inmixing systems. It is noteworthy that Lacan does not distinguish between artificial and other kinds of intelligence. For him, intelligence is never artificial. However, even intelligent systems may be capable of thinking, but not of knowing. “I am willing to accept the notion that a computer thinks, but that it knows, who would say such a thing?” Lacan stated. “For the foundation of knowledge is that the *jouissance* of its exercise is the same as that of its acquisition” (*Seminar XX* 97) – he formulated the distinction between the human and the machine.

“The world is in [a state of] decomposition,” he says; it “no longer stands up, because even in scientific discourse it is clear that there isn’t the slightest world” (*Seminar XX* 36). As Miller elaborates on Lacan’s observation, the discourse of science, by eliminating magic also eliminated the real or the order from nature (“The Real in the 21<sup>st</sup> Century” n. p.). Nothing is there now that “returns on the same place.” “As soon as you can add something called a ‘quark’ to atoms and have that become the true thread of scientific discourse, you must realize that we are dealing with something other than a world” (Lacan, *Seminar XX* 36). Writing as the chain of the letter’s moves: it proceeds by making its every next move ever new, but temporary, destination.

To illustrate the strata of the decomposed world, Lacan uses, not without a nod to Saussure, an example from “the great book of the world”:

Consider the flight of a bee. A bee goes from flower to flower gathering nectar. What you discover is that, at the tip of its feet, the bee transports pollen from one flower onto the pistil of another flower. That is what you read in the flight of the bee. In the flight of the bird that flies close to the ground ...you read that there is going to be a storm. But do they read? Does the bee read that it serves a function in the reproduction of phanerogamic plants? Does the bird read the portent of fortune, as people used to say – in other words, the tempest? (*Seminar XX* 37)

If, for Lacan, the similar intelligence is inherent in writing (of) the strata of discourse, then what we see in this coordinated system of systems is a model of *repetition automatism*, which Lacan presents in the “Seminar on ‘The Purloined Letter’” as “the *insistence* of the signifying chain” (6). The intelligent ‘game of life’ played by the letter, which he often compares to a germ, reproduces itself and by doing so, “materializes the instance of death” (16). What remains beyond death is the letter – neither the subject to partition nor extinction: “cut a letter into small pieces, and it remains the letter that it is” (16); “it will be *and* will not be where it is wherever it goes (17). The letter writes the unconscious, or the discourse of the Other, in which the subjects, who repeat, are inmixed (10), which at the same time is the effect of writing and constitutes the condition for it. To summarize: the cybernetic episteme organizes the subject of science’s relation to knowledge as the mechanism of blackboxing maintained by the institutional power formed within certain conditions of mediality. The notion of the cybernetic episteme serves as the framing for knowledge upon which psychoanalysis operates.

In January 1969, Lacan articulated the relation between Freudian and Lacanian psychoanalysis in a quite peculiar way. According to Jean-Michel Rabaté, who was in attendance, Lacan explained where he saw himself in this relation by alluding to his famous “sardine can” allegory<sup>33</sup> by which he introduced the notion of the split between

---

<sup>33</sup> This allegory, Lacan revealed in *Seminar XI*, was based on a “true story” from his youth. In his early twenties, he “wanted desperately to get away, see something different, throw [him]self into something practical, something physical, in the country say, or at the sea” (95), in other words, into something “exotic.” He travelled to the countryside to experience – just for thrills – the dangers and risks that unavoidably constituted the everyday hard labour of fishermen. The class difference did not escape the workers who were joined on their trip to the sea by the young educated Parisian, so that one of them could not help making a diminishing joke. As Lacan recalls it,

Petit-Jean pointed out to me something floating on the surface of the waves. It was a small can, a sardine can. It floated there in the sun, a witness to the cunning industry, which we, in fact, were

the eye and the gaze and, thus, the power of the latter: “...be reassured, I place myself always in the same place, in the place where I was, and where I still remain, alive. Freud does not need to see me (*me voir*) in order to gaze at me (*me regarder*)” (7). Lacan’s self-positioning in Freud’s gaze reads as his way to acknowledge both continuity and discontinuity between their works.

*Seminar XI* (1964), from which the sardine can allegory comes, marks the end of the “early Lacan” by re-introducing the four *fundamental* (read: Freudian) concepts of psychoanalysis – the unconscious, repetition, transference and drive. Lacan was Freudian. In the opening of the seminar, however, Lacan brings forward the conceptual difference between the Freudian dynamic unconscious and the Lacanian unconscious structured like a language, which is a pre-Freudian notion (Macey 65). Clearly, Freud was not Lacanian. And to confirm this, along with the four fundamental concepts, Lacan also introduced several of his own – not less fundamental for the further development of Lacanian thought: the concept of *objet a* and the gaze that frames the subject from the outside. There is no need to argue, I suppose, that ties between the two psychoanalysts, despite their (too many) differences, are very strong. Nothing, perhaps, illustrates their relation better than one of Lacan’s favorite topological figures, a Moebius strip: Freud’s and Lacan’s respective discourses constitute two sides of one and the same surface, the discontinuous continuity of the cybernetic episteme.

Following Lacan’s reading of Freud in the 1940s and 1950s makes it clear that his “return to Freud” was an attempt to address said complexity. Unlike many other key figures in

---

supposed to supply. It glittered in the sun. And Petit-Jean said to me – *You see that can? Do you see it? Well, it doesn’t see you!* (*Seminar XI* 95)

the field of psychoanalysts of that time, many of whom closely knew Freud, worked with him, were analyzed by him or were related to him, Lacan never met the founder of psychoanalysis and got interested in it only in the mid 1930s; he was considered an outsider to the group of the key disciples, a status of which he was often reminded at the psychoanalytic conventions and symposia, especially those taking place outside France where Lacan's name had a certain weight. At the same time, in French psychiatry and psychology of the 1930s and 1940s, Freudian psychoanalysis, as anything "German," was not especially welcomed (Macey 26-45).

The Lacanian "French New Wave" of psychoanalysis started as the study in archaeology of psychoanalytic knowledge. Unlike many analysts of that time who primarily associated psychoanalysis with ego-psychology as "the latest Freud," Lacan insisted on studying "the earliest Freud" placed in the contexts where psychoanalysis was developing at the end of the nineteenth century. In one of his first essays, "Beyond the 'Reality Principle'" (1936), he already emphasized the importance of exploring the intellectual history of psychoanalysis rooted in the scientific practices of the nineteenth century; "the Freudian revolution," he noted, "like any revolution, derives its meaning from its context, that is, from the form of psychology that dominated at the time it occurred" (59). His attempt at restoring such history presents itself as reclaiming an intellectual domain from which psychoanalysis was displaced. The fact that Lacan pursues this project in the 1940s and 1950s and the way he does his reading of early Freud through the lens of the cybernetic notions demonstrate a new possibility to account for this chapter in the history of psychoanalysis, censored by Freud himself. It also opens for exploration a wide timeframe that accommodates not only the scientific discussions of the 1950s, such as the

Macy conferences, the development of the information and game theory, theorizations of non-human intelligence and thinking machines, but also the scientific discourses of the nineteenth century where many of these questions were initially posed. Linked, within this timeframe, to the scientific inquiries and experimentations of the 1950s, the technological inventions of the second half of the nineteenth century and new practices associated with them may be described as a boom of writing machines that together facilitated establishing the hegemony of *graphocentrism*, a crucial aspect of the configuration of knowledge, the cybernetic episteme, to which Lacan's own thought belongs and which still dominates today.

At the end of the nineteenth century, graphocentrism of the experimental machinery was not homogenous. There were at least two currents of graphocentrism of visual media associated with both science and art that can be distinguished on the basis of constructing two different types of points of view: sequential or synchronous. As Alexander Galloway has argued, the sequential point of view is associated with cinematic linearity and movement. The synchronous point of view represented, for example, by the six- and twelve-lens cameras of French photographer Albert Londe (who worked with Charcot), is different in that it is metastable and virtual and as such it can be associated with "the cybernetic vision."<sup>34</sup> The cinematic point of view quickly dominated the cultural industry and imagination; the cybernetic vision, a (mass)medium form for which had yet to be invented, remained postponed in its dissemination until after World War II, when, as Galloway quotes the French collective Tiquun, the image of steering and automatic

---

<sup>34</sup> See Galloway's talk "In the Aftermath of the Cybernetic Hypothesis" at Winchester Centre for Global Futures in Art Design & Media, Winchester School of Art, University of Southampton, available at <https://vimeo.com/45978167>.

management became a “primary metaphor of the time.”<sup>35</sup> Thus, the conditions of possibility of the cybernetic vision, he notes, were set in the end of the nineteenth century by many inventors, researchers and thinkers from Londe to German anatomist Christian Wilhelm Braune’s and psychologist Otto Fischer’s studies of movement in relation to the gravitational center of the human body, for which they conducted the experiments in 3D mapping by creating a prototype technology for computer modeling back in the 1890s (Galloway, “In the Aftermath of the Cybernetic Hypothesis”).

Freud, a very attentive observer of these developments, also had to produce a conceptual visualization of his first psychoanalytic assumptions. In his *Project for a Scientific Psychology* (1895), he offered a speculative version of 3D mapping of the human psyche “from within”: an integrated model of the mind’s workings. Freud’s conceptualization is vivid and visual; “It is an *optical machine*,” Derrida says about *The Interpretation of Dreams* (97). It drew on the neurophysiological model of the mechanistic function of neurons and nerve impulses within only three years of the discovery of neurons in 1892. Freud’s mechanistic neurological model in the *Project* indicates the formation of the notion of writing of another principle of organization, which would later become a central topic in Lacan’s “cybernetic seminar.” Freud himself, however, was not be able to fully articulate this notion in neither in his early work nor in his later work. In fact, in the 1920s, he returns to some of his insights formulated in the *Project* but again encounters the barrier of impossibility of articulation.

---

<sup>35</sup> See Tiqqun, “The Cybernetic Hypothesis” available at <http://cybernet.jottit.com/>.

His essay “A Note upon the ‘Mystic Writing Pad’” (1925) is representative of this difficulty; the only solution that he finds there is to delegate the job to a metaphor, the *Wunderblock*, a toy, whose “mystic” quality demonstrates the economy of writing in creating a hypertext. This short essay, which is still widely read today,<sup>36</sup> was one of Freud’s final rigorous attempts to theorize the notion of writing in psychoanalysis. It showed Freud’s departure from what, I believe, was a more complex and nuanced speculative construction of the psychic apparatus and memory. The essay, along with Freud’s earlier neurological model of the psyche in the *Project*, generated an important theoretical discussion on writing and psychoanalysis that began, in psychoanalytic circles, with Lacan’s paper “The Function and Field of Speech and Language in Psychoanalysis” presented in 1953 and published in *La Psychanalyse* in 1956 and with his “cybernetic” *Seminar II: The Ego in Freud’s Theory and in the Technique of Psychoanalysis* (1954-1955). In non-psychoanalytic circles, the discussion on writing was initiated by the publication of Jacques Derrida’s “Freud and the Scene of Writing,” written in 1966 and published in his *Writing and Difference* collection in 1967, which became, along with several other texts from this book, one of the defining texts of the post-structuralist thought. The discussion on writing continued through the following decades. The conceptualizations of “writing” at play in this discussion are worth distinguishing.

---

<sup>36</sup> See, for example, most recent essays: Mary Ann Doane’s “Temporality, Storage, Legibility: Freud, Marey, and the Cinema” in *Critical Inquiry* 22. 2 (1996): 313-343; Thomas Elsaesser’s “Freud as Media Theorist: Mystic Writing pads and the Matter of Memory” in *Screen* 50.1 (2009): 100-113; and Patricia Ticineto Clough’s “The Technical Substrates of Unconscious Memory: Rereading Derrida’s Freud in the Age of Teletechnology” in *Sociological Theory* 18.3 (2000): 383-398.



Both Lacan and Derrida theorize “writing” by reading the following of Freud’s works:

*Project for a Scientific Psychology* (1895), *The Interpretation of Dreams* (1901), *Beyond the Pleasure Principle* (1920), and “A Note upon the ‘Mystic Writing Pad’” (1925). In his 1925 essay, Freud writes:

To make use of the Mystic Pad, one writes upon the celluloid portion of the covering-sheet which rests upon the wax slab. For this purpose no pencil or chalk is necessary, since the writing does not depend on material being deposited upon the receptive surface. It is a return to the ancient method of writing upon tablets of clay or wax: a pointed stylus scratches the surface, the depressions upon which constitute the “writing.” (229)

As Derrida notes, we should not ask whether a writing pad is “a good metaphor for representing the working of the psyche; but rather what apparatus we must create in order to represent psychical writing, and what the imitation, projected and liberated in a machine, of something like psychical writing might mean” (75-76). This would be a fair question, although it was asked a decade after Lacan’s essay “The Function and Field of Speech and Language in Psychoanalysis” and his “cybernetic” *Seminar II*, where the question of an apparatus conceptualized as an abstract symbolic machine had already been addressed and such a writing machine was suggested to be a computer.

In his 1966 essay, Derrida does not mention Lacan directly, but the implicit discussion with the psychoanalyst clearly informs his argument.<sup>37</sup> Derrida’s side-by-side reading of several of Freud’s works on memory and/as writing is compelling and insightful in many

---

<sup>37</sup> Undoubtedly, Derrida is well familiar with Lacan’s discussions of the 1950s, which he demonstrates explicitly in “La Parole Soufflée” written in 1965, one year before “Freud and the Scene of Writing”. In this essay one can encounter a plenty of recognizable references alluding to Lacan’s work: for example, “speech is stolen: since it is stolen from language,” “the origin is always already eluded on the basis of an organized field of speech in which the speaking subject vainly seeks a place that is always missing,” “the mind purloins,” “the ‘letter,’ inscribed or propounded speech, is always stolen” (224) and so on.

ways;<sup>38</sup> it only disappoints by insisting that the opposition writing / speech is operative in psychoanalysis. This (mis)reading, intentional or not, is often defended by the following assumption: “After all,” as Patricia Ticineto Clough articulateness it, “Lacan proposed that the unconscious is structured like a language and shifted the focus of psychoanalysis to the speech of the subject – seemingly away from the writing machine or the technical substrates of unconscious memory” (395).

The explanation reveals the clash of two conflicting conceptualizations of writing.

Derridian (and the post-structuralists’s) “writing,” is not

...a writing which simply transcribes, the stony echo of muted words, but of a preverbal lithography: metaphonetic, non-linguistic, a-logical. (Logic obeys consciousness, or preconsciousness, the site of verbal images, as well as the principle of identity, the founding expression of a philosophy of presence.) (“Freud and the Scene of Writing” 86)

Here writing is presented as “a-logical” and *play*-ful, since for Derrida logic is associated with consciousness, which is quite the opposite for Lacan, who explores the logic of the unconscious writing. As Barbara Johnson pointed out in “The Frame of Reference: Poe, Lacan, Derrida” and as Lydia H. Liu has elaborated on in *Freudian Robot* (2010), the systematic omission of references to information and game theory in Derrida’s discussion of Lacan demonstrates, as Liu has argued, that the theoretical distinction between “game” and “play” (in French: both are *jeu*), is lost in translation: “In game theory, mathematicians maintain a rigorous distinction between a *game*, which constricts of a set of rules that define it, and a *play*, which is a particular instance in which a game is played from beginning to end” (174). Thus, for Derrida, writing is described in terms of *play* (as

---

<sup>38</sup> See, for example, Patricia Ticineto Clough’s essay “The Technical Substrates of Unconscious Memory: Rereading Derrida’s Freud in the Age of Teletechnology” in *Sociological Theory* 18.3 (2000): 383-398.

“a free play of signifiers”); while for Lacan, writing is described in terms of *game*, which unfolds according to rules and logic.

This logic does not constitute meaning. It is a different logic of compression of the flow of speech. It structures the formation of an enunciation, bit by bit, within the symbolic environment of language. Sometimes, Derrida is leaning towards such understanding by employing the notion of coding: “Psychical writing, for example the kind we find in dreams, which ‘follows earlier frayings,’ a simple moment in a regression toward ‘primary’ writing, cannot be read in terms of any code” (89). He speaks about “a forest of script, The *Traumdeutung*, the interpretation of dreams,” and its approach as “an act of reading and decoding” (86). However, even then he sees the function of such *decoding* in Freud’s psychoanalysis as directed towards meaning. At the same time, when he reads Freud’s work as an attempt at the *translation* of dreams’ “phonetic writing as writing within writing” (86), for a brief moment Derrida and Lacan come very close: Lacan too “discovers the written in the very act of speaking” (Miller, “The Written in Speech” 6), which sets up the impossibility for hermeneutic or textual interpretation.

On the one hand, Lacan’s notion of “writing” has more in common with Derridian conceptualizations than one imagines. As Jacques-Alain Miller observes on account of Derrida’s notion “archi-writing,” or “a primordial writing that is not writing debased in relation to speech,” this is what Lacan called “before any grammatology, *the agency of the letter*” (“The Written in Speech” 7-8). “The absence of an exhaustive and absolutely infallible code [that] prefigures the meaning of writing in general” means, for Derrida, that “originary writing, if there is one, must produce the space and the materiality of the sheet itself” (264). Lacan is entirely in agreement with this contention. On the other hand,

the relation between writing and speech in Lacan can only be described by means of “the internal multiplicity of the oral and the written as such” (Miller, “The Written in Speech” 5) and certainly not by a binary opposition as Derrida suggests. Clearly, the two thinkers take different approaches in their reading of Freud. Lacan reads Freud “in reverse,” beginning with his essays of the 1920s and going back towards his earlier work, which, he argues is crucial for understanding Freud’s work of the 1920s. Derrida, instead, reads Freud by granting his works of the 1920s primary status and goes to Freud’s early work in order to elucidate the meanings of some of his conceptual moves and development of ideas. Both thinkers notice the conceptual hybridity typical for Freud: however, while Derrida often looks for the signs of metaphysical *presence* and the old hermeneutics in Freud’s work, Lacan ignores them and focuses on Freud’s struggles to transgress them.

Because speech cannot be “interpreted” in the hermeneutic sense, Lacan suggests that it must be treated as a cryptographic record that lends itself to deciphering. This insight comes from *The Interpretation of Dreams*, where, unlike Derrida, Lacan saw the formation of a technique radically different from the hermeneutic tradition. For example, although Freud is going against the illusory linearity of a narrative, his interpretation still targets the statement (‘what is said’) and not the enunciation (‘how it is said’), hence the impression of Freud’s leaning toward hermeneutics. However, the “decline of interpretation [started] with Freud himself,” Millers argues; “it is impossible not to see that” ( “Interpretation in Reverse” 9). For Lacan, the goal of psychoanalysis is to expose the signifier “as cipher [*chiffre*], as separated from the effects of signification,” which should be achieved by means of “interpretation in reverse,” or “a deciphering that does not produce sense” (Miller, “Interpretation in Reverse” 8). Interpretation that operates in

hermeneutics “does not have its antonym, while deciphering has its antonym in ciphering” (Miller, “The Sinthome, a Mixture” 72), which indicates its bi-directional potential: what it aims at is not sense-making, but rather, undoing the meanings generated by the unconscious. Of course, Lacan “employs the term ‘ciphering’ and ‘cipher,’ not just to vary his vocabulary but to try to think the signifier and jouissance in the same movement” (Miller, “The Sinthome, a Mixture” 72). As Derrida insightfully notes, “Freud conceives of the dream’s displacements as a new form of writing” (88).

Also, Derrida observes about Freud’s psychic apparatus of unconscious memory that it is “a depth without bottom, an infinite allusion, and a perfectly superficial exteriority: a stratification of surfaces, each of whose relationship to itself, each of whose interior, is but the implication of another similarly exposed surface” (224). He points out the complexity of the relation between the strata: “Writing is unthinkable without repression. The condition for writing is that there be neither a permanent contact nor an absolute break between strata: the vigilance and failure of censorship” (113). Instead, Lacan sees in Freud’s *Project* and, especially, in *The Interpretation of Dreams*, a psychoanalytic technique that functions on the condition that the heterogeneous strata can *flatten* or *converge* (for example, the dream and the patient’s discourse about the dream or the visceral reactions during the session and the patient’s speech) in the same *written* entity that should be deciphered as one (thus, his claim “there is no metalanguage”). Lacan conceives writing in relation to the process of such convergences.

In *Gramophone, Film, Typewriter*, Friedrich Kittler speaks about how the changes of the media regimes or conditions of mediality are at the same time technical and discursive. Thus, there is a correlation between media regimes and discourses, which unfolds along

the ways of processing and storing data. The condition of possibility of psychoanalysis, according to Kittler is

the media revolution of 1880 [that] laid the groundwork for theories and practices that no longer mistake information for spirit. Thought is replaced by a Boolean algebra, and consciousness by the unconscious, which (at least since Lacan's reading) makes of Poe's "Purloined Letter" a Markoff chain.<sup>39</sup> (16)

Psychoanalysis takes off after the break of the sensuous continuity between the hand's movement and writing process. Along with the writing machines of the end of the nineteenth century, psychoanalysis digitalizes writing by making it more visible and, thus, turning it into "merely one medium among others" (Johnston, "Introduction" 5). In this, psychoanalysis reflects contemporary conditions of mediality.

John Johnston has pointed out that "an anachronism appears to enter Kittler's historical scheme, for he situates both Freud and Lacan in the discourse network of 1900, which is marked by the emergence of technical media and the discourses of psychophysics and psychoanalysis" (*The Allure of Machinic Life* 82). This observation is important and needs further explanation. Kittler defines discourse networks as "the networks of technologies and institutions that allow a given culture to select, store, and process relevant data" (Kittler, *Discourse Networks 1800/1900* 369). These networks are sustained by the respective technologies and institutions tied to them so that together they "constitute a historically very powerful formation" (369).

Kittler then distinguishes between his and Michel Foucault's notions of discourse.

Foucault, he critically notes, "merely describes the production of discourses" and not "the

---

<sup>39</sup> Kittler refers to the notion introduced by Russian mathematician Andrey Markov that indicates a sequence of random variables that exhibits repeating patterns as a sequence unfolds in time.

sources of these discourses, of the channels or the receivers” (Armitage and Kittler 18).

For Kittler, discourse analysis implies the excavation of the underlying structures of human practices. On this basis, he concludes that Freud belongs to the epoch of thermodynamics, while Lacan is already in the epoch of information and computation. Therefore, Johnston is right in noticing an anachronism in placing both psychoanalysts in one discourse network.

However, it is easier to place Lacan in a certain discourse network than Freud, whose thought seems to be caught up in the changing condition of mediality. This explains the difficulty Freud experiences in articulating the notion of writing, which leads to his later digression to metaphorisation in “A Note upon the ‘Mystic Writing pad’.” This “anachronism” is resolved by Lacan’s project of “the return to Freud” or rather, “returning Freud” to the discourse network 1900, to the formation of which his work significantly contributed. Lacan’s “media theory of the unconscious” (Boltz, 26-34 qtd. in Winthrop-Young and Wutz xxviii) works to demonstrate that Freud’s psychoanalysis was part of a larger framework that accommodated more than one discourse network. I suggest calling such an assemblage of discourses “the cybernetic episteme.”

### *Conclusion*

Lacan appropriated cybernetic notions selectively, without the intention of contributing in the interdisciplinary discussion surrounding it or of maintaining an exchange with cyberneticians: thus, *Lacan’s cybernetics* in this work’s title. However, what strikes me in Lacan’s project is his dedication to an ambitious task and his struggle with articulating the idea that, I believe, is entirely cybernetic in nature: the materialist conception of the

structure as the *inmixing* of systems – the imaginary, the symbolic, and the real. Here also lays a crucial distinction between Lacan's and cybernetics's projects, which is rarely acknowledged. The discourse, in which "the human subject addresses himself to [the analyst]" is always "impure," but not because of "mistakes in syntax" (*Seminar II* 305-306): the messiness of this discourse is the effect of *inmixing* of systems, and so it should be deciphered as a whole, just as it is *written* across different strata.

On the one hand, cybernetics was helpful to Lacan in highlighting "the radical difference between the symbolic and the imaginary orders" (*Seminar II* 306). "A cybernetician recently admitted to me the extreme difficulty one has ... in translating cybernetically the functions of *Gestalt*, that is the coaptation of good forms," he says; "and what is good form in living matter is bad form in the symbolic" (306). "Coaptation," a term that Lacan consistently uses in the text, is close to "adaptation," but there is an important difference. "Adaptation" is a "consensus" between different objects, parts or materials, a "reduction in the response of a sensory receptor to a stimulus which is constant or prolonged"; it often has "a particular use, purpose, or function" in fitting within a particular environment" (*OED*). "Coaptation," as it is used in medicine, implies "the fitting together or adjustment of the ends of a fractured bone, setting; the replacement of a dislocated bone" (*OED*), where in addition to the "agreement" between the different instances of matter or different strata to "fit together," we also sense that they are driven to merge. As Lacan puts it, "There is an inertia in the imaginary which we find making itself felt in the discourse of the subject, sowing discord in the discourse," that sutures "the fundamental relation of man to the symbolic order [which] is precisely what founds the symbolic order itself – the relation of non-being to being" (306, 308).



## Chapter 2

### The Subject of Science

#### 1. Patron Saints of Cybernetics and Psychoanalysis

For Lacan of the 1950s, the history of cybernetics had still to be written. “Cybernetics is a domain with very indeterminate frontiers,” he asserted and suggested that “its unity” was constituted by “a variety of spheres of rationalization, from politics, via the theory of games, to theories of communication, even to certain definitions of the notion of information” (*Seminar II* 296). As I have mentioned in the previous chapter, Lacan’s account of cybernetics extended its canonical history. First, he traced cybernetics to the decade preceding the moment when Wiener coined the name of the “new field” in 1947.

Lacan observed:

Cybernetics, we are told, was born very straightforwardly from the work of engineers concerned with the economics of information passing through conductors, concerned with the way in which one can reduce down to its essential elements the mode in which a message is transmitted. In this guise, it would be about ten years old. It was given its name by Norbert Wiener, one of the most eminent of engineers. (*Seminar II* 296)

And then, by questioning this “straightforward” version of cybernetics’s background that, he believes, “limits its importance;” Lacan also suggested, “we should cast further afield to find its birth” (296). His archaeology of cybernetics insisted on “its origin in the theme ... of the signification of chance,” which is also “so crucial for [psychoanalysts]” (295).

For Lacan, there had been a tangent meeting between the two fields, which marked both

the “birth” of cybernetics, and of psychoanalysis by making them “two roughly contemporaneous techniques, two orders of thought and of science” (295).

“The past of cybernetics consists in nothing more than the rationalized formation of what we will call, to contrast them to the exact sciences, the conjectural sciences,” Lacan stated (296). “Conjectural sciences” was just another name he suggested for “human sciences,” which he found “too vague, too bound up with all kinds of confused echoes” of previous decades referring, for example, to a Humanism that facilitated human megalomania; while his term “the sciences of conjecture” was, he argued, “more rigorous and specific” (296) when contrasted to the exact sciences so that the pair “exact / conjectural” sciences would highlight the difference between precision and speculation. Thus, he traced the pre-histories of psychoanalysis and cybernetics to the seventeenth century where this division had been established. In doing so, Lacan was close to Wiener’s observation that cybernetic thought did not belong exclusively to the twentieth century: “Although the term cybernetics does not date further back than the summer of 1947,” Wiener admitted, “we shall find it convenient to use in referring to earlier epochs of the development of the field” (*Cybernetics* 12).

### Gottfried Wilhelm Leibniz

In *Cybernetics*, Wiener identified the beginning of the cybernetic thought in the philosophical works of Gottfried Wilhelm Leibniz and Blaise Pascal. Among the two, however, Wiener chose Leibniz as “a patron saint of cybernetics”:

The philosophy of Leibniz centers about two closely related concepts – that of a universal symbolism and that of a calculus of reasoning. From these are descended the mathematical notation and the symbolic logic of the present day....

Indeed, Leibniz, like his predecessor Pascal, was interested in the construction of computing machines in the metal. It is therefore not in the least surprising that the same intellectual impulse which has led to the development of mathematical logic has at the same time led to the ideal or actual mechanization of processes of thought. (12)

In the 1950s, Leibniz's "thinking machine" was meant to mechanize the symbolic logic of the brain, and embodied the end goal for cybernetics. Although the creation of such a machine did not seem likely to happen in the near future, cyberneticians were quite certain that it would be built eventually. In the end, only the machine itself could provide the answers<sup>40</sup> about the nature of thinking: "The making of a synthetic brain requires now little more than time and labour" (382), British psychiatrist and a cybernetics pioneer Ross Ashby wrote in *Design for a Brain* (1960). "Such a machine might be used in the distant future ... to explore regions of intellectual subtlety and complexity at present beyond the human powers," he asserted and concluded in the manner typical of cyberneticians – by emphasizing the importance of the machine's contribution as such to the scientific debate: "How will it end? I suggest that the simplest way to find out is to make the thing and see" (382-383). And Lacan agreed: "Once we have the possibility of embodying this 0, this 1, the notation of presence and absence, in the real, embodying it in a rhythm, ... we are left asking ourselves ... whether we have a machine that thinks" (*Seminar II* 303-304). He proceeded to identify both humans and machines as thinking entities: "if the machine doesn't think, it is obvious that we don't think either when we are performing an operation," he explained, "we follow the very same procedures as the machine" (304). The difference between human and machine concerns the real, which is,

---

<sup>40</sup> This concerns the popular assumption among cyberneticians – and especially those of the British school with the ties to the Ratio Club (1949-1958), for example, Ashby, Grey Walter, Alan Turing – that the adaptive or intelligent mechanisms were more *performative* than representational, just like the "machine" they were intended to embody, the brain (Pickering 6-7). One had to observe their performance before arriving at any conclusions.

at this point of “the classical stage” of Lacan’s work and his project of “the return to Freud,” the scientific real shared by both cybernetics and psychoanalysis. However, he had already established an important difference between the human and the machine, one which also marks the point leading to his later abandoning of the cybernetic references and to developing a different, non-scientific, concept of the real in the 1970s: “With a machine, whatever doesn’t come on time simply falls by the wayside and makes no claims on anything,” Lacan concludes in his lecture on cybernetics and psychoanalysis” (307). “This is not true for man,” he continued: “the scansion is alive, and whatever doesn’t come on time remains in suspense,” or repressed, and as such it is “always there, insisting, and demanding to be” (307-308). One aspect of the ‘live scansion’ is “the dimension that is a product of the logic of interpretation as a calculation, as a calculated risk, and which comes to underline and inscribe what has been grasped of the structure of the subject,” Pierre Skriabine explains (“The Logic of the Scansion” n. p.). This brings us to Blaise Pascal.

### Blaise Pascal

If Lacan was to choose the “patron saint” of “two roughly contemporaneous techniques,” cybernetics and psychoanalysis, his choice, I believe, would have fallen on Leibniz’ predecessor Blaise Pascal. Pascal interested Lacan because of his work on “abstract” machines: in addition to building a mechanical calculating machine, named Pascaline, in 1642, the French mathematician and physicist also wrote “Treatise on the Arithmetical

Triangle” (1653), introducing a machine of another kind.<sup>41</sup> Pascal’s triangle was a calculating table of binominal coefficients where each subsequent row was obtained by adding the two entries diagonally above it. At the same time, it demonstrated the otherwise invisible relation between prime numbers geometrically arranged in the symmetrical sequences of a pyramid, which exposed a variety of complex patterns, some of them contributing to even very recent projects exploring the question of intelligence, such as Stephen Wolfram’s work on cellular automata.<sup>42</sup>

History tells us that the development of the arithmetical triangle was triggered by Pascal’s intention to solve a gambling puzzle. According to historian John F. Ross,

The Chevalier de Mere, a noted bon vivant and an ambitious gambler, dabbled in mathematics to increase his returns, mostly putting his hunches to work in the gambling parlours of Paris. His love of games of chance prompted him to bring a two-centuries-old brainteaser to Pascal who, in turn, conferred with mathematician Pierre de Fermat, he of ‘last theorem’ fame. The ‘problem of the points’ involved two players in the midst of a series of dice games, winner takes all. One is winning, but the match is broken off before it is finished. How does one equitably split the prize money? (S7)

In *Seminar II*, Lacan gave an accurate presentation of the challenge undertaken by Pascal and the solution that the arithmetic triangle offers to this puzzle: “It enables one to determine immediately what a gambler has a right to expect at any given moment when the succession of turns which make up a game is interrupted. A succession of turns is the simplest form one can give to the idea of the encounter,” he explained; thus, “as long as one hasn’t come to the end of the sequence of turns fixed by convention, something can

---

<sup>41</sup> In the eleventh century, the triangle was already described by Chinese mathematician Yanghui (see: *Encyclopedia Britannica*, <https://www.britannica.com/topic/Pascals-triangle>) and also by the Persian astronomer-poet Omar Khayyám (see <http://mathworld.wolfram.com/PascalsTriangle.html>).

<sup>42</sup> Wolfram, Stephen. *A New Kind of Science*. Champaign, IL: Wolfram Media, 2002. 870.

be evaluated, that is, the possibilities of the encounter as such” (*Seminar II* 299). “The notion of the turn,” Lacan then clarified, was “the notion of scansion” (299).

In poetics, “scansion” implies “the division of verse into metrical feet” (*OED*), in other words, cutting a certain verse into portions on the basis of recognizable patterns beyond the meanings of its single words and phrases. It is a technique of regrouping the flow of the verse by taking into consideration the length of syllables with the different levels of stress placed on them. “It is interesting that [the notion of scansion] was introduced along with the notion of probability at the end of the seventeenth century,” Eric Laurent notes; “scansion goes with the idea of chance, chance not randomness, which introduces the idea of *la recontre scandée* ... the ‘scanded encounter’<sup>43</sup> or the fact that the places as such are already numbered” (“The Oedipus Complex” 69). Here Laurent refers to Lacan’s discussion of Pascal’s treatise on the arithmetic triangle, which Lacan reminded us was the beginning of the probability calculus (*Seminar II* 299).

Since Pascal’s triangle was a machine that was concerned with the function of a place or the relation between places, and not “what does or doesn’t come to fill [the place]” (299), Lacan was able to conclude that the process of scansion embodied by the arithmetical triangle revealed the decipherable or structured real, which could be expressed mathematically. In “Seminar on ‘The Purloined Letter’,” he illustrated this principle by analyzing a record of multiple tossings of a coin: “Simply connoting with (+) and (-) a series playing on the sole fundamental alternative of presence and absence,” Lacan explained, “allows us to demonstrate how the strictest symbolic determinations

---

<sup>43</sup> Laurent suggests this translation instead of “the scanned encounter” given in *Seminar II*.

accommodate a succession of [coin] tosses whose reality is strictly distributed ‘by chance’” (35). What became clear in this example was that this mathematical real of “the classical Lacan” embodied the impossible: the tossing experiment delineated the possible from the impossible as an evidence of these random successions being overdetermined by law. This law, as Alfredo Zenoni comments, “prescribes and prohibits”: “If each possible sequence (+ -, - +, - -, ++ ) is represented by a letter (*a, b, c, d*) and successive random throws are assembled two by two, then certain successions marked by these letters prove to be impossible” (79-80).

In Pascal’s arithmetical triangle, the places were filled by prime numbers. Instead of attributing certain essential qualities to certain prime numbers that would determine or coordinate their relations, Pascal brought forward the idea of the relation between the places that these numbers occupy. In doing this, the triangle eliminated randomness and demonstrated that the game of chance was based on a mathematical principle, which was embodied by the triangle’s design due to which one could determine the numerical odds of a future event with mathematical precision. In other words, we could say of Pascal’s machine what Lacan later used to say about topology: it was showing the structure itself.

In 1969, mathematician George Spencer-Brown referred to this underlying structure as the “laws of form” by referring to it as an “old idea” offered by earlier mathematicians (which, we presume, included Pascal as well). He suggested that “we can find a reality which is independent of how the universe actually appears, that lends such fascination to the study of mathematics” and “that mathematics, in common with other art forms, can lead us beyond ordinary existence, and can show us something of the structure in which

all creation hangs together” (*Laws of Form* xxix). Thus, the structure is a configuration of places.

For Lacan, the moment when “the science of what is found at the same place is substituted for by the science of the combination of places as such” (*Seminar II* 299) marked the advent of “the subject of science,” on which psychoanalysis operates (“Science and Truth” 729), and which Grigg described as “the subject that makes science possible as the mathematical study of nature” (*Lacan, Language, and Philosophy* 138). As I mentioned earlier, Lacan’s theory of the new subjective position that appeared in the seventeenth century was based on Koyré’s argument about the change of the human being’s relation to the world order. If in the “old”-world-order man “was concerned with the preservation of this order” and therefore,

...man had the idea that his rites, his ceremonies – the emperor opening the furrow of spring, the dances of spring, guaranteeing the fertility of nature – were indispensable to sustaining things in their place. He didn’t think that the real would vanish if he didn’t participate in this ordered manner, but he thought that the real would be disturbed. He did not pretend to lay down the law, he pretended to be indispensable to the permanence of the law. (*Seminar II* 297)

In the “new” world order, man found himself excluded and no longer bound by the responsibility of keeping the world running: now “his invocations didn’t really have anything to do with the order of things” (298). As a result, man no longer knew what was demanded of him. Seen through the lens of mathematics, nature presented itself to such man, the subject of science, as automated in the sense that its laws operated on its own, as even *determined* by some sort of an inner law. “The real knows what it has to do,” Zenoni explains the premise of the modern science: “it treats matter as if it had an unconscious, as if it knew unconsciously what it was doing” (82).



In the beginning of his lecture on psychoanalysis and cybernetics, Lacan asserted that “there is a close relation between the existence of chance and the basis of determinism” (*Seminar II* 295). As he explained, when we say that something happens *by chance*, “we may mean one of two things, which may be very different – either that there is no intention, or that there is a law,” while the idea of determinism suggests that “law is without intention” (295). However, with the advent of the combinatory science of manipulation of places, the category of “cause”, Lacan argued, was introduced in the relation between chance and determinism – “nothing happens without a cause” (a determinist position); however, he clarified, “it is a cause without an intention” (295). Thus, the “laws of form,” or the structure, operate “unintentionally” or automatically.<sup>44</sup>

### Christiaan Huygens

Along with Pascal’s triangle, Lacan also addressed the invention of an isochronal clock by Dutch mathematician and astronomer Christiaan Huygens in the 1650s, which remained the most precise clock until the 1930s (Milham 330, 334; Marrison 510-588). Huygens was a contemporary of Pascal, and was well acquainted with the work of the French mathematician. He read Pascal’s research on probability and subsequently wrote his own pioneering work on this topic, “On Reasoning in Games of Chance” (1657).

By referring to Huygens in *Seminar II*, Lacan introduced another side of the scientific transformation of the seventeenth century: Huygens’s clock, he stated, paved the way into “the *universe of precision*,” “without which no truly exact science would be possible” (298). Thus, Lacan made a connection between the move towards the research on

---

<sup>44</sup> This crucial assumption was also at the basis of Lacan’s formula “the unconscious structured like a language” as well as his notion of writing. See my discussion on writing in the previous chapter.

precision and the loss of the sense of being “indispensable to the permanence of the law” of nature. In his later *écrit* “Science and Truth,” Lacan described this separation as the division between “knowledge” and “truth,” where “knowledge” was this new scientific knowledge mediating between man and nature. The division occurs, Lacan maintained, because scientific constructions, “while probably not devoid of objectivity, are relevant to science only insofar as they contribute nothing about the magician, for example, and little about magic; and if they contribute something about the traces of these latter, the traces are of but the magician or magic” (730).

Thus, “truth” was what was veiled for the subject of science, who lost his sense of significance for the natural order at large. The division, however, was not complete, but was an effect of a scientific mediation, which implied the impossibility of complete separation and the impossibility of rejoining the order of nature. Lacan presented it as “a topological model, the Mobius strip”; for him, “this strip conveys the fact that the division in which these two terms come together is not to be derived from a difference in origin” (727) and where the subject emerged. As Lacan clarified, this was the reason why there was “no such thing as a science of man because science’s man does not exist, only its subject does,” and he elaborated upon his point provocatively: “my lifelong repugnance for the appellation ‘human sciences’ is well known; it strikes me as the very call for servitude” (730).

As I have already mentioned, in *Seminar II* Lacan put “the perspective of the exact sciences” in relation to the subject’s awareness of the automated order of nature: “the moment man thinks that the great clock of nature turns all by itself, and continues to mark the hour even when he isn’t there, the order of sciences is born” (298). Lacan

described the position of the subject in the “new” automated world order in terms of Hegelian master-slave model: “The order of science hangs on the following, that in officiating over nature, man has become its officious servant,” Lacan explained: “he will not rule over it, except by obeying it”, and “like the slave, he tries to make the master dependent on him by serving him well” (298). This relation of servitude, Lacan suggested, was expressed by the necessity of synchronization of the great clock of nature and the mechanical clock of man.

This enslavement can be also compared to Lacan’s notion of “logical time.” In his 1945 *écrit*, which thought about temporality as an intersubjective logic, Lacan introduced the logical time of retroaction and anticipation where he distinguished three “evidential moments”: the instance of the glance, the time for comprehending and the moment of concluding (“Logical Time” 167), which corresponded to the orders of the Real, the Imaginary and the Symbolic. Here, as in his “Seminar on ‘The Purloined Letter’,” Lacan explored the subject caught in the state of being unable to act (unless “in a moment of haste”), until “he moves beyond his fixated specular relation with the other” (Samuels 72). As Robert Samuels writes, this is the function of “the narcissistic ego (where narcissism and cognitive speculation are one)”; in other words, “the subject imagines and anticipates what the others are thinking and seeing” (70). In the time for comprehending, the subject finds itself among other subjects “*undefined except by their reciprocity*,” and their “action is suspended by mutual causality” (“Logical Time” 168), as even they, indeed, are caught in the process of synchronization. With these insights in mind, we can now return to Huygens’ invention.

If the subject could control the great clock of nature, from which he was separated, one could at least be synchronous with it. Lacan saw synchronization as based on the notion of “exactitude” which marked “the encounter of two times”: one of the solar system, “a natural clock which had to be deciphered” and man’s timepiece, “a watch” (298).

Between the two, it was nature that was always “on time,” thus, “one can define what is natural as what shows up on time for the rendezvous” (298). In order for the clocks to be synchronized and calibrated, the measuring unit of time had to be determined. And here, we come again to the topological relation between “truth” and “knowledge” that constitutes two sides of the Mobius strip, but do so without a cut, and only by an apparent division: “a unit of time is always borrowed from, it always refers to, the real, that is, to the fact that it always turns up again in the same place” (298-299). Together the processes of measuring and synchronization are the productions of the exact sciences; they express the position of the subject of science in relation to the real of the automated order of nature that presents a structured series of probabilistically filled spaces. For the subject of science, it was thus neither fully determinate nor indeterminate.

## 2. Automation in the Human, the Animal and the Machine

The notion of “automatism” is about two centuries old. It stems from “automaton.” Etymologically, automaton means “self-willed” or “self-moving.” A combination of “autos” meaning “self” and “matos” as “willing” or “moving.” Although the history of automata goes back to the ancient times, the word traveled to European languages through Latin only between the sixteenth and seventeenth centuries. According to the

*Oxford English Dictionary*, it denoted “various functional instruments including clocks, watches, etc., as well as moving mechanical devices made in imitation of human beings” (*OED*) or, for that matter, of any life form. The word carried the similar meanings in French and German. *Le Trésor de la langue française informatisé* identifies the first mentions of “automate” in French, in 1534, in the phrase “which seems to move oneself, obeying a hidden mechanism” and then, in 1611, in the phrase “all that is powered by an internal mechanism and imitating the movements of a living being”<sup>45</sup> (*Le TLFi*). In German, according to *Digital Dictionary of the German Language of the 20th Century*, “Automat” was mentioned for the first time in 1575, also denoting a “machine that moves by itself”<sup>46</sup> (*DWDS*). Shortly, in all these languages, “automaton” found a use in reference to man.

The list of this notion’s first occurrences<sup>47</sup> in philosophical and literary texts demonstrates that the meanings of “automaton” were caught in a corridor of mirrors reflecting resemblances of resemblances for quite some time: a mechanism resembling a human being and a human being resembling a mechanism; life of a non-life and non-life at the core of a life form.

The use of “automaton” in reference to man can be traced to the work of William Cornwallis: in his *Essayes of Certain Paradoxes* (1616), he compares human performance to the functioning of man-made mechanisms. “In the whole course and frame of Nature, we see that nothing is made for it selfe,” he writes and explains, “the

---

<sup>45</sup> See Le TLFi’s entry on “automate,” accessed on September 29, 2015, here: <<http://atilf.atilf.fr>>.

<sup>46</sup> See DWDS’s entry on “automate,” accessed on September 29, 2015, here <<http://www.dwds.de/?view=1&qu=Automat>>.

<sup>47</sup> See the full entry on “automaton, *n.*” in *OED* as well as Le TLFi’s entry.

sunne by his splendor to lighten all the world; by his warmth and heate, to cherish and comfort each livuing and vegetable thing” (G2). In such an interconnected universe of things, Cornwallis conceives the body as both attached to its surroundings and, at the same time, an autonomous system, an assemblage of interrelated parts linked by the invisible “bond of duty, of use or of service, by which it is indebted to other”: the foot to the eye, the hand to the foot, the mouth to the hand, the stomach to the mouth, the whole body to the stomach; the human beings to their dogs and to their oxen (G2-G3).

“Let [man] but looke into himself,” Cornwallis wrote, “and see how his constitutue parts are debtors each to other, the soule doth quicken and giue life to the body, the body like an *Automaton*, doth moue and carry it selfe and the soule” (G3). Cornwallis’ depiction of the mechanism of the body as an automaton does not presume, however, that its attachment to the environment makes it what we call today *an open system*. Rather, it remains a *system closed-on-itself*, that functions independently of will, man’s conscious control, or any outside direction. In the French context, a similar intuition was expressed by Pascal, who used “automate” for “man that acts as a machine” in his posthumously published *Thoughts* in 1669. In this book, Pascal continued his earlier exploration of the idea of the natural order as “a homogeneous and autonomous whole, governed by laws, agreeing with a certain model, which derives its independence from one or more other orders,” which he identifies in *Thoughts* as the order of the body, the order of the mind or reason, and the order of the heart or of charity (#308, #933).

Is there any “attachment” or “connection” between an automaton and the environment? This issue was articulated by the seventeenth-century philosophers in terms or “agreement” or “correlation” between the “orders.” We can still say that, for Cornwallis,

the cause of automation was located *both* inside and outside the automated living or non-living entity, but only in the sense that automation was seen as the effect of a higher *law* acting upon the automated entity from the outside, which was the same as the inner law operating within an automated entity.

Modern science's response to the questions raised about the relation between these orders or systems is to "mathematize" (Milner) the correspondence. The process that Lacan and, later, Jacques-Alain Miller identify as "suturing," emerges as a mathematical technique for demonstrating the presence of determinism or, as Lacan speaks about it, a law without intention (*Seminar II* 295), that was supposed to ground man's relation to the "new" world system of correlated, autonomous, and automated orders. The subject of science emerges not *in* the rupture between these automated inner and outer universes, but *as* this rupture, which, as Slavoj Žižek has noted, "involves no lived experience, consciousness, or any other predicates we usually associate with subjectivity" (597).

Let us consider Jean-Claude Milner's summary of one of Alexandre Koyré's theorems of modern science found at the basis of Lacan's theory of science:

Modern science holds that there is no boundary limiting its material domain. It supposes two things: (a) there exists nothing material that modern science cannot treat as one of its objects (in other words, the set of existent material objects, usually called a universe, is in principle coextensive with the set of objects of modern science); (b) both sets are mathematically infinite (hence the notion of the modern infinite universe as opposed to the closed world of Antiquity). ("Lacan and the Ideal of Science" 29)

In other words, he argues that "a particular expression, a particular thought are modern only insofar as they belong to a system of thought in which a mathematized empirical science is possible" (Milner, "Lacan and the Ideal of Science" 29). This allows modern

science to challenge the Euclidian conception of “space” and to articulate a theory of “place,” or *analysis situs*, to use the archaic name for topology, which began in the work of Leibniz.

Before Leibniz, the question of space was approached by René Descartes, who already thought of it *only* in connection to the extended body, *res extensa*, or “corporeal substance,” one of the three substances of Cartesian ontology. According to Descartes, matter extends in length, breadth, or depth and it is precisely this property of matter that constitutes space: space only exists as a consequence of such extension. In his correspondence with English philosopher Henry More<sup>48</sup> from the 1640s, Descartes agreed with him that “in the natural course of events there is no vacuum,” but he also noted that there was what could not be perceived, and reserved the full knowledge of the invisible part of the extended body for God. Despite his awareness of the divisibility of matter, Descartes posited the extended body as existing beyond the perception of man: “a body can retain its whole bodily nature without being soft or hard or cold or hot to the senses – indeed without having any perceptible quality,” he wrote; “all matter is completely imperceptible if it is divided into parts much smaller than the particles of our nerves and the individual parts are given a sufficiently rapid movement,” which, he noted further in the letter to More, “is in a manner circular” (Descartes, *III* 360, 363).

Descartes’ theory of automation, however, was different from his conception of the machinic body.

---

<sup>48</sup> According to *OED*, More’s use of the word “automaton” in *An Explanation Of The Grand Mystery Of Godliness: Or, A True And Faithfull Representation Of The Everlasting Gospel Of Jesus Christ* (1660) is considered second oldest in English. He wrote: “God will not let the great Automaton of the Universe be so imperfect” (i. iii. 37).



When Descartes approached this topic in the 1640s, he offered a mechanistic conception of the body<sup>49</sup> that, he believed, physiologically functioned in the same way for both *Homo sapiens* and animals, except that the latter were lacking in “thinking substance.” He conceived the movements of animals as “purely mechanical and corporeal,” depending “solely on the force of the spirits and the structure of ... organs” that “can be called the corporeal soul” (*III* 365).<sup>50</sup> For Descartes, animals were thus “natural automata”:

...it is certain that in the bodies of animals, as in ours, there are bones, nerves, muscles, animal spirits and other organs so arranged that they can by themselves, without any thought, give rise to all the movements we observe in animals. This is very clear in convulsions, when the mechanism of the body moves despite the mind, and often moves more violently and in a more varied manner than usually happens when it is moved by the will. (Descartes, *III* 366)

Even though human bodies could, when they were not guided by thought or their “incorporeal soul,” exhibit such behaviour, men were not *automata*, but *machines* or *mechanisms*. When he said, “God made our body like a machine, and he wanted it to function like a universal instrument, which would always operate in the same way in accordance with its own laws” (Descartes, *V* 163-164), he was not referring to human automatism, but the machinic organization of the body. As Dennis Des Chene has argued in *Spirits and Clocks*, the novelty of Descartes’ theory was in combining

---

<sup>49</sup> Descartes’ mind / body dualism was the subject of his works of the 1640s: *Meditation on First Philosophy* (1641) and *Principles of Philosophy* (1644); by the end of the decade, he finalized his theory in *The Description of the Human Body* (1647), *The Passions of the Soul* (1649) and others.

<sup>50</sup> This does not change the fact that Descartes viewed humans as distinctly different from other animals. According to him, their use of language, couple with their capacity to think set *Homo sapiens* or “rational animals,” apart from nonhumans. At the same time, while establishing this difference, he also made sure to add the following: “Please note that I am speaking of thought, and not of life or sensation. I do not deny life to animals, since I regard it as consisting simply in the heat of the heart; and I do not deny sensation, in so far as it depends on a bodily organ” (Descartes, 366). John Cottingham offers a response to the critics of Descartes’ “monstrous” thesis on animals: see, Cottingham, John. “‘A Brute to the Brutes’: Descartes’ Treatment of Animals.” *Philosophy* 53 (1978): 551-559.

...the animal-machine with a new philosophy of nature, in which the actions of agents inferior to humans not only might but must be explained without reference to any “form” but extension or to any qualities but the modes of extension. Descartes had the formidable task of showing that the vegetative and sensitive powers of plants and animals are nothing other than the actions they exhibit by virtue of the “disposition” of their parts. (13)

Thus, automata, for Descartes, were self-contained machines, *closed* systems; and as such, they could not be human. The *openness* and connectedness of the human-machine to the world was maintained by means of the non-physical *res cogitans*, the mental substance.

By denying automata the capacity for mental functioning, he made a distinction between *automation* of the self-moving life or non-life forms and *intelligence*, an attitude which would dominate until the mid-to-late nineteenth century. At the same time, as Lorraine Daston reminds us, seventeenth- and eighteenth-century usage of the term “intelligence”

...overlaps but does not coincide with its twentieth-century meaning. Both denote mental agility, particularly in problem solving and learning; but whether intelligence was inborn or acquired by education, unitary or multiple in its faculties, the property of individuals or of groups, these were oppositions which would not have been easily accommodated within the Enlightenment framework for understanding the mind. (191)

Therefore, calculating machines, for example, would not qualify as “intelligent.” On the contrary, due to their *automatic*, or algorithmic, behavior, they were seen as the opposite of anything intelligent. The fascination with automata over the course of the eighteenth century and the beginning of the nineteenth was the fascination with the “non-intelligent” behaviour of “dummies,” especially when these human-like and other automata demonstrated their sometimes uncanny proximity to human performance.

In the French context, the notion of “automatism” was introduced in the works of scientist and entomologist René de Réaumur (who died in 1757), with which he addressed some instances of animal behaviour; yet it was not until 1803 that the term was used both in relation to humans and machines.<sup>51</sup> Whether de Réaumur’s automatism was in any way conceived in terms of a Cartesian notion of animal automatism is unclear, but one of the first mentions of this notion in English was by an anonymous author in *Blackwood’s Magazine* in 1838, and was in fact in reference to Descartes – the passage reads: “the Cartesian doctrine of the automatism of the whole animal kingdom” (Anonymous 605).<sup>52</sup> By the nineteenth century, the terms “automaton” and “automatism” retain their seventeenth- and eighteenth-century understanding, posing automatism as the opposite of intelligence. We find it in the works of Romantics responding to the cult of rationalism and the speed of industrialization in the preceding century; the old fascination with automata had become a site of anxiety, or more precisely, in Lacanian terms, as fear without an object. Such fear could be triggered by several things: by a growing sense of ambiguity revealed by automated dolls when the line between life and non-life is hard to draw. This sensation was addressed by Ernst Jentsch’s and, later, Freud’s notion of “the uncanny.”<sup>53</sup> Also, it reveals the slow transformation of the understanding of *intelligence* as such.

---

<sup>51</sup> See Le TLFi’s entry on “automatisme,” accessed on September 29, 2015, here: <<http://atilf.atilf.fr>>.

<sup>52</sup> See the full entry on “automatism, *n.*” in *OED*.

<sup>53</sup> Let me remind you of the key episode from E. T. A. Hoffmann’s short story “The Sandman” (1816), which served to the theorists as an example. Nathanael, an imaginative young man, unexpectedly discovers an automaton that he took for a human being, a young woman named Olympia, with whom he falls in love, so that the shocking confusion subsequently draws him to madness. The story has generated a variety of interpretations, with two of the best known among them written by Jentsch in 1906 and by Freud in 1919. Both of their accounts offered a significant twist on reading the automation’s ambiguity of life and not-life through the categories of familiar and unfamiliar, of *heimliche* and *unheimliche*.

Jentsch's essay "On the Psychology of the Uncanny" described it as a "doubt as to whether an apparently living being is animate and, conversely, doubt as to whether a lifeless object may not in fact be animate" (11). "Another important factor in the origin of the uncanny," he observed, "is the natural tendency of man to infer, in a kind of naive analogy with his own animatedness, that things in the external world are also animate or, perhaps more correctly, are animate in the same way" (13). Later, Freud would specifically appreciate Jentsch's reading for the reference to "the uncanny effect of epileptic fits" and "of manifestations of insanity because these excite in the spectator the impression of automatic, mechanical process at work behind the ordinary process of mental activity" ("The 'Uncanny'" 226).

But let us return to the beginning of the eighteenth century and focus on the term "automatism." By that time, Descartes' notion had already traveled through the porous boundaries of disciplines-in-information to become a dominant view not only in philosophy: by transgressing the realm of the animal kingdom, it found the application in medical science, and particularly, in neurophysiology and experimental psychology, as well as dynamic psychiatry and neurology.

Reviewing the historical accounts of nineteenth-century medical theories and practices, it becomes clear that the topic of automatism occupied an important place in the research of many Freud's contemporaries, whose work constituted the primary contexts of his professional formation.<sup>54</sup> One of them was a neurophysiologist Thomas Laycock (1812-

---

<sup>54</sup> The contexts of Freud's formation and, particularly, the topic of automatism have been addressed by many scholars, including Frank J. Sulloway, Henry F. Ellenberger, among many others who have approached the history of psychoanalysis. I have found Adam Crabtree's detailed exploration of the notion

1876),<sup>55</sup> who studied hysterical disorders and mesmerism from the early 1840s and published his much-read book *Treatise on the Nervous Diseases of Women: Comprising an Inquiry into the Nature, Causes, and Treatment of Spinal and Hysterical Disorders* (1840). Here, Laycock contested Cartesian doctrine as “old metaphysics” and, to undermine Descartes’ dualism, offered a theory of the reflex action of the brain. He noted that if the mind and body were indeed two different substances, as Descartes thought, it would have been impossible for them to interact (Crabtree 52).

Laycock suggested that the pineal gland, which Descartes saw as a principle seat of the soul in the body and the place of the thought formation, was simply a *deus-ex-machina* solution for a conceptual deadlock. Instead, Laycock argued, “all energies involved in human mental activities originate in the organism” (Crabtree 53). His theory of reflex “implied a kind of cerebral self-sufficiency” (Crabtree 53), rather than a conscious control. As Laycock stated in his paper “Reflex, automatism, and unconscious cerebration” (1876),

...every living organism is an *automaton* in the primary meaning of the word, just because it is living, inasmuch as it is constructed not only so that it shall be able to adapt itself to an external world, but also that the multifarious internal mechanism, whether of the brains or elsewhere, shall be in constant adaptation to each other. (494)

Laycock’s theory of the reflexive motility articulates automation as the case of “unconscious cerebration,” the term he coined in the 1850s, by which he argued that most

---

“automatism” in his essay “‘Automatism’ and the Emergence of Dynamic Psychiatry” (*Journal of History of the Behavioral Sciences* 39.1 (2003): 51-70) particularly useful.

<sup>55</sup> Laycock’s book *Treatise on the Nervous Diseases of Women: Comprising an Inquiry into the Nature, Causes, and Treatment of Spinal and Hysterical Disorders* sparked many productive debates in the medical circles and became due to these discussions, as Frank J. Sulloway argues, one of the important influences on early Freud (156, n. 18).

of human intellectual activity is automatic and may occur outside conscious awareness; therefore, it is unconscious. In this respect, Laycock was close to other thinkers of the nineteenth century like English physiologist William B. Carpenter (1813-1885). Despite the discrepancies between their theories of cerebral self-sufficiency, the scientists were in agreement about the role of “inner life” as the cause of the involuntary bodily movement. Unlike other theorists of automation, for example, Cartesian biologist Thomas H. Huxley (1825-1895), Carpenter’s and Laycock’s research on the reflex action did not exclude the relation of the automated being to an external world. Influenced by Laycock’s work, Freud’s close collaborator physiologist Josef Breuer (1842-1925) unraveled, with his teacher Ewald Hering, the self-regulating mechanism of breathing as controlled by the vagus nerve (1868). As Frank J. Sulloway notes, Breuer’s “demonstration furnished conclusive evidence for one of the first biological feedback mechanisms to be documented in mammals” (51-52). Breuer’s further work on reflex mechanism led him, in 1874, to innovative research on the sensory receptors of the inner-ear and the discovery of its relation to posture regulation, equilibrium, and movement (Sulloway 52).

### *Conclusion*

The scientific thought of the late nineteenth century perforce moved away from a self-contained model of the body. Its challenge now was to introduce the model of the body as a system-coupled-with-the-environment that transcends Cartesian mind-body dualism. Among other goals, the conceptualization of such a model across a number of disciplines would require rethinking the relation between such notions as “automatism” and “intelligence,” “chance” and “determinism,” until there was a complete subversion of the meanings formally associated with these concepts. Cybernetics and psychoanalysis were

established by the work of those thinkers of the nineteenth century who took up that challenge.

## Chapter 3

### Freud's Circuitry

#### 1. Freud of and against Thermodynamics

The age of thermodynamics did not end at the beginning of the twentieth century. Many notions of thermodynamics remain persistent across different disciplines and impact thinkers in a variety of fields for several decades following. In the nineteenth century, thermodynamics was a way to address the complexity of the physical world, but it was different, as Albert Einstein noted, “from other general physical theories,” in that it was not a “constructive theory,” but a “theory of principle”: on the basis of “empirically observed general properties of phenomena,” it allowed one to deduce certain principles from the results of the experiments; and the principles “of such a kind that they apply to every case which presents itself” (*Out of My Later Years* 54). “This nonconstructive nature of thermodynamics,” Martin J. Klein writes, “its independence of particular models – it could serve Einstein as an absolutely sure guide in dealing with the otherwise inexplicable difficulties of the physics of 1900” (510). This “theory of principle” “suggested a possibility of other such theories” (Klein 510). One of them was Freudian psychoanalysis.

The fact that a key notion of information theory is modeled upon thermodynamic entropy only confirms the assumption about its transformative implications on twentieth-century



thought. I will address the ways these epistemologies converge and resist one another by looking at Freud's *Project for a Scientific Psychology* (1895). Even though Freud's *Project* is clearly a production of the "age of steam engine" in that it is based on a theory of thermodynamics, it also belongs to a new configuration of knowledge; the text envisions other machines as conceptual models for theorizing the apparatus of the human psyche. Freud's work is one of the discourses of the *fin de siècle* that were shaping, and were shaped by, the influence of many subtle and not-so-subtle processes, whose significance were not to be recognized for some time. One such event is the reconceptualization of determinism in philosophy and social sciences in a quite paradoxical way: determinism has embraced the notion of chance. Such change, the emergence of the "laws of chance," had important implications to both the beginning of psychoanalytic thought and proto-cybernetics.

### Determinism of Chance

In "Nineteenth Century Cracks in the Concept of Determinism," Ian Hacking makes a strong case arguing against Ernst Cassirer's view that determinism was only conceived in 1872. Instead, Hacking argues that "during the nineteenth century we witness an event that I call the erosion of determinism" (455). By calling it "erosion," he implies that, as a concept, determinism was transformed; not only was it able to accommodate the idea of chance, or "tame the chance," as Hacking has it, but it was also more than that: determinism became virtually dependent on chance.

At the beginning of the nineteenth century, there was no room to account conceptually for chance. Even French mathematician and physicist Pierre-Simon de Laplace, a great

thinker of probability, who demonstrated its importance for interpreting scientific data in his works *Analytic Theory of Probability* (1812) and *A Philosophical Essay on Probability* (1814), still insisted – by offering the following dictum – that “all events, even those which, by their insignificance, seem not to follow from the great laws of the universe, follow from them just as necessarily as the revolutions of the sun”; and that “present events are connected with preceding ones by a tie based on the evident principle that a thing cannot occur without a cause which produces it” (1325). By century’s end, “the Universe of Chance,” or “tychism,” to use American logician Charles Sanders Peirce’s term, became one of the main themes for philosophers and social thinkers. One such thinker, French sociologist Emil Durkheim, argued that “the laws of society are probabilistic in nature, and are as inexorable as the laws of gravity” (Hacking 455).

Hacking suggests that among the reasons for such grand changes was the development of statistical determinism, as well as the lively philosophical discussions surrounding determinism and free will that took place over the century (455). The year 1872, the date that both Cassirer and Hacking use for their opposite readings of determinism’s climax in the nineteenth century, is also year when German physicist, chemist, and neurophysiologist Emil du Bois-Reymond (1818-1896) gave a lecture “On the limits of the knowledge of nature,” where he, while praising the work of de Laplace, also addressed the limits of the Laplacian science and science overall. As Hacking notes, du Bois-Reymond “had always contended that physiology and neurology are to be investigated by physical means, chemistry and electricity, but in the lecture he allowed that two matters transcend the realm of human knowledge: the nature of human consciousness and the freedom of the will” (457).

Du Bois-Reymond was a colleague of German physician Hermann von Helmholtz (1821-1894), who dedicated a year to the study of electrical oscillations and electromagnetism. He was also a colleague of Freud's supervisor at the University of Vienna, German physiologist and physician Wilhelm von Brücke, whose work on the nature of cells, optics, microscopic anatomy, and the effects of electricity of muscles was conducted according to the principles of thermodynamics. In 1874, von Brücke coined the concept of *psychodynamics*, also known as dynamic psychology, a study of the psychological forces that motivate human behavior, feelings, and emotions in their relation to early experience.

The three scientists – du Bois-Reymond, von Helmholtz and von Brücke – Hacking notes, “held that the workings of the brain will be fully understood by the theory of electricity” (456). Their work drew on the mathematical theories of James Clerk Maxwell, one of the important contributors in determinism's long transformation. He is often cited for his original solution to the deterministic deadlock of the Second Law of thermodynamics: the Demon, an imaginary controller over the Universal order (on the scale of unruly molecules), who should be added to my list of the common patrons of cybernetics and psychoanalysis.

In 1865, German scientist Rudolf Clausius introduced the concept of “entropy” to describe the increase of disorder in a thermodynamic system; “it is the rate at which the energy of the system is being converted into irrecoverable forms” (Clarke, *Energy Forms* 25). Clausius was looking for a word for “a certain quantity that he had discovered – a quantity related to energy, but not energy” (Gleick 269). He wrote:

[as I] borrow terms for important magnitudes from the ancient languages, so that they may be adopted unchanged in all modern languages, I propose to call the magnitude *S* the *entropy* of the body, from the Greek word τροπή, *transformation*. I have intentionally formed the word entropy so as to be as similar as possible to the word energy; for the two magnitudes to be denoted by these words are so nearly allied in their physical meanings, that a certain similarity in designation appears to be desirable. (qtd. in Smith 168)

The notion of entropy pertains to the laws of thermodynamics focused on the processes of conversion of heat, or energy, into work.

The First Law, or the Law of Conservation of Matter, states that energy cannot be created or destroyed so that the quantity of matter/energy remains the same. The Second Law, or the Law of Increased Entropy, goes beyond the limitations of the First Law and complicates it by stating that in every natural thermodynamic process the quantity of energy remains the same, but the quality of matter/energy deteriorates steadily over time so that usable energy becomes unusable energy. In the course of this transformation, energy changes but does not disappear, just as it is stated by the First Law. Because the usable and unusable energies are opposite, when one increases, the other decreases; but when usable energy is permanently lost, the system grows chaotic. This discovery introduced the need to measure such unusable energy within a closed system. Thus, the notion of entropy allowed reformulating in a more concise manner the laws of thermodynamics: “First law: The energy of the universe is constant. Second law: The entropy of the universe always increases” (Gleick 271).

According to British mathematical physicist William Thomson (1824-1907), the Second Law of thermodynamics implied that “the mechanical energy of a closed system must invariably become perfectly dissipated and hence useless for human purposes”; in other words, “our universe as a closed system [is] approaching inevitable death” (Clarke,

*Energy Forms* 86). Thompson's reading of the Second Law was a deterministic reading, an explanation of irreversibility of what he called the "Heat Death of the Universe."

Maxwell contested Thomson's determinism by means of a speculative and rather ironic figure of a "controller" and "regulator" that became known as Maxwell's Demon. The "intelligent" Demon was depicted as watching a divided box, one side of which contained cold molecules and another, hot molecules; these molecules in different compartments do not mix in order to avoid an increase of the speed of their movement leading to overheating. As long as Maxwell's Demon keeps performing its task, the formation of potential chaos would be under control, the entropy of the closed system would not increase, and its catastrophic end would be postponed.

In today's vocabulary, we can call Maxwell's Demon a program, or an algorithm (Beniger 45). The question that the Demon-algorithm made possible to pose was about the *minimal* effort he needed to apply in order to not overwork and still keep the boxes with gas, or the universe, from the "inevitable" collapse. To find out this "minimal effort," entropy had to be measured; and as soon as in 1877, Austrian physicist and philosopher Ludwig Boltzmann designed the formula for calculating the statistical equation for thermodynamic entropy.

Hacking also brings to our attention that in the French contexts, determinism was always associated with French physicist Claude Bernard and his 1865 work *Introduction to the Study of Experimental Medicine* (459). As I mentioned in the previous chapter, this was the work in which Bernard described the process of homeostasis, although without coining the term itself, which was done in 1926 by Walter Bradford Cannon on the basis

of Bernard's work. Hacking writes:

“Determinisme” for Bernard denotes that which actually does the determining, although he also holds, as a doctrine that came to be known as *Determinisme*, that there is such a determining for every physiological event. This is in part an anti-vitalist opinion. Bernard is not the first French writer to put the word into popular use. Indeed Bernard thought the philosophers used it merely to mean fatalism, thus ignoring the active element in his use of the word. (459)

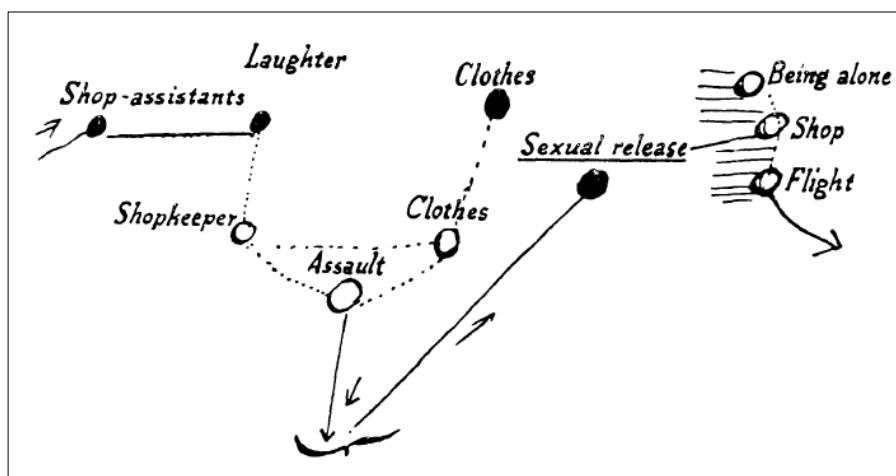
Within a decade, it would become clear in the work of many thinkers and scientists of the end of the nineteenth century that that active element had to be chance.

### Project for a Cybernetic Psychology

“Every observer of hysteria,” Freud wrote, “is struck in the first place by the fact that hysterical patients are subject to a *compulsion* which is exercised by *excessively intense* ideas” (*Project* 347). An idea like this would emerge “with particular frequency without the passage [of events] justifying it” and it “will be accompanied by psychical consequences that are unintelligible” (347). Unlike “normal” individuals, whose fears or affects are caused by preceding traumatic events, in the case of hysteric and obsessional-neurotic patients, such connections were established only via analysis. Together with the analyst, they were able to identify all the parts of the rebus and put them in relation of one to another, a relation of which the patient is otherwise unaware.

Freud spoke about the case of a young woman, Emma, who was not able to go into shops *alone*, behaviour which was triggered by a moment when at the age of twelve years she saw two shop-assistants laughing together at her clothes, and she also recalled that “one of them had pleased her sexually” (353). The connection between such fragments (“clothes” – “alone” – “laughter” – “sexual pleasure”) Freud identified as

“unintelligible.” In the course of the analysis, they learned that she would feel fine going shopping even if she had a child with her, so feeling unprotected was not the issue. She then produced another memory: when she was eight she was assaulted by the shopkeeper, who, with a grin on his face, “grabbed at her genitals through her clothes” (354). For some reason, after that incident, as if she wanted to provoke the assault, she went back to the store for the second time, with which she kept reproaching herself. Freud’s offered a drawing representing the relations between the parts of the rebus:



**Figure 1. Freud’s schema of the case of Emma from his *Project for a Scientific Psychology*, 354.**

Here, the clothes assumed for Freud a symbol of assault; thus, the symptom of not being able to go into shops alone was contracted rationally: “If we ask ourselves what may be the cause of this interpolated pathological process, only one presents itself – the sexual release, of which there is also evidence in consciousness” (356). Freud continued, “but it is highly noteworthy that [the sexual release] was not linked to the assault when this was experienced,” and “in the meantime the change [brought about] in puberty had made

possible a different understanding of what was remembered” (356), which prompted the young woman’s disgust towards her own body, resulting in a symptom by means of *deferred action*.

Emma’s analysis presented the case of *hysterical defence* unconsciously performed by the mechanisms of repression, denial, displacement, regression or sublimation, which, Freud believed, could be explained “biologically and mechanically” (305), and by “mechanically” Freud implied that he would address their *automatic* nature. James Strachey clarifies the problem further:

By ‘mechanical (for which he sometimes uses ‘automatic’ as a synonym) he means that the phenomenon in question is determined directly by contemporary physical event; by ‘biological’ he means that it is determined genetically – by its survival value for the species. (*Project*, Footnote n3 305).

His initial intention “to do no more than explain defence” suddenly turned into “explaining something from the centre of nature,” Freud complained in a letter to Wilhelm Fliess (qtd. in Strachey, “Editor’s Introduction” 284).

In other words, in *Project*, Freud attempted to offer the scheme of “the biological basis of the sensory-(reception) / motor-(discharge) dichotomy in nervous functioning” (Sulloway 117). “Convinced that psychology must have a physical basis,” by this work Freud intended to pass his clinical observations through a conceptual filter of both neurological science and the psychophysics of Gustav Theodor Fechner, who “not only introduced into psychology the principle of the conservation of energy, ... but also derived a sophisticated equivalent of Freud’s pleasure-unpleasure principle from this notion” (Sulloway 66). However, one would agree with Sulloway’s observation that Freud’s



neuroanatomical model was not so much based on “the current neurological science” as on “his previous clinical and abstract metapsychological insights” (Sulloway 121).

In Freud’s mind, however, he was firmly relying on a scientific discourse with which he probably was more comfortable at that time than with psychoanalysis, which, at that time, did not have a fully developed conceptual apparatus. In reading *Project*, one cannot miss Freud’s taking pleasure in assembling his ambitious “integral model of the mind,” a model of quite incredible complexity culled from what he knew from his psychoanalytic practice and from neurophysiology about neurons and nerve impulses. He carries out his research according to the new demands of the age of statistical determinism requiring convergence of the empirical research into quantifiable data. And of course, in his theory of quantities of energy circulating among the networks of neurons, and in his theorization of the observed psychological data that translates in terms of energy, he heavily relies on thermodynamics. At the same time, the processes he meticulously described did not present a coherent account and required, as in thermodynamics, a figure of a demonic regulator.

The main premise of *Project* was that in pathological states such as hysteria or obsessional neurosis the quantities of physical energy circulating in the organism could choose different means of uncontrollable discharge, either mental or somatic, according to the degree of resistance in the nervous networks; and his theory unfolded on two levels: physiological and psychological, between which he established a series of equivalences (Quinodoz 27). Freud conceived three systems of neurons: the  $\phi$  system of permeable neurons, the  $\psi$  system of impermeable neurons, and the  $\omega$  system, which he

called the perceptual system. He opened his work by describing that the mechanism of the primary process associated with the  $\phi$  system of permeable neurons was turned towards the outside world, and so, it was exposed to and excited by large quantities of neurons. Here he laid out “a basic principle of neuronal activity in relation to  $Q$ ” [external quantity of neurons], which Freud identified as “what distinguishes activity from rest” (Freud, *Project* 296, 295). “This is the principle of neuronal inertia: that neurons tend to divest themselves of  $Q$ ” (296).

On this basis, Freud argued, “it becomes possible to understand the structure and development of neurons as well as their functions,” so “the principle of inertia accounts, in the first place, for the division of neurons into two classes, motor and sensory, as a contrivance for counteracting the reception of quantity ( $Q\eta$ ) by getting rid of it.” And he concluded: “Reflex movement now becomes intelligible as an established method of thus getting rid of quantity”: “A primary nervous system makes use of this ( $Q\eta$ ) which it has thus acquired by giving it off through a connecting path to the muscular mechanisms, and in that way keeps itself free from stimulus” (296). To Freud, this discharge represented “the primary function of the nervous system” (296).

Then he suggested that the mind cannot function only according to the principle of discharge, and at some point, “the principle of inertia is, however, broken through,” because it is required to tolerate a certain quantity of excitation (296). By this, Freud introduced the secondary process, associated with the system of impermeable neurons,  $\psi$ , which had no connection to the outside world, and received excitation in two ways: from the  $\phi$  system and from the cellular elements in the interior of the body. Freud suggested

that there was a regulatory system in the mind, based on the “principle of constancy,” which was able to resist discharge of excess psychic energy. It also transformed the primary processes into secondary ones.

The secondary function [of the nervous system], ... which calls for the accumulation of  $Q\eta$ <sup>56</sup> is made possible by the assumption of resistances which oppose discharge; and the structure of neurons makes it probable that the resistances are all to be located in the contacts [between one neurone and another], which in this way assume the value of *barriers*. (298)

The principle of contact-barriers helped Freud to explain memory, which was “a main characteristic of nervous tissue” (299). He conceived memory as a process within the  $\psi$  system which was based on “a capacity [of its neurons] for being permanently altered by the single occurrences”; here, Freud explained the difference between the systems of permeable and impermeable neurons, one can observe “a striking contrast to the behaviour of the material that permits the passage of a wave-movement and thereafter returns to its former condition” (299). We already see the complexity at the basis of communication between these two systems in terms of their different degrees of openness to the external world, to the different dynamics within each of them, which affects and complicates the exchange between them at the level of contact-barriers, where memory is being written. “The secondary process is a repetition of the original passage [of quantity]” (334): memory, as the insistence of the trace, was repetition.

All this, Freud suggested, occurs at the level where the processes are purely mechanical, biological, or automatic. “Reproduction or remembering,” he argues, “is without *quality*” (308). It was consciousness, he wrote, that “gives us what are called *qualities* –

---

<sup>56</sup> In *Project*, Strachey notes, both  $Q$  and  $Q\eta$  stand for “quantity”; he then suggests that  $Q$  stands for “external quantity” while  $Q\eta$  stands for “psychical quantity” (“Editor’s Introduction” 289).

sensations which are different in a great multiplicity of ways and whose *difference* is distinguished according to its relations with the external world” (308). Here Freud, indeed a “biologist of the mind” (Sulloway), arrived at what can be seen as a pre-conception of the unconscious, twenty years before he finally formulated it in 1915-1916. This “unconscious” was at the basis of this convergence of *quantity* into *quality*. Conceived prior to Freud’s first topography of mind, according to which the psyche was divided into three systems or “psychical localities” – the conscious (Cs), the preconscious (Pcs) and the unconscious (Ucs) – it was not localizable, and as such, could not be described in spatial terms. Despite Freud’s desire to resolve a conceptual problem of particular human beings suffering from hysterical symptoms, this “unconscious” was inhuman in that it pertained, as Freud himself admitted, to “the exigencies of life” itself (297). Finally, despite the lack of an appropriate apparatus or method, a lack which Freud regretted (305), this “unconscious” was quantifiable, or more precisely, it was part of the “mathematicalized” world order, now determined by chance.

### Reshuffling the Archive

Freud’s *Project for a Scientific Psychology* had a peculiar history. The first version of the German text was published in 1950 with an English translation to follow in 1954, more than fifty years after it was written. As Sulloway points out, “no other document in the history of psychoanalysis has provoked such a large body of discussion with such a minimum of agreement” (118). For one thing, not many readers seemed familiar with Freud’s pre-psychoanalytic work and therefore to encounter Freud’s version of the biology of mind was shocking and, in some sense, felt almost like a betrayal on the part of the Father of psychoanalysis. Because the work was published posthumously, a decade

after Freud's death, the author was not available to offer comments. In situations like this, as Michel Foucault noted with regard to the "author function," "difficulties appear immediately" ("What Is an Author?" 103); as he explains, "an author's name is not simply an element in a discourse, ... [it] permits one to group together a certain number of texts, define them, differentiate them from and contrast them to others," even as "it establishes a relationship among the texts" (105-106). Would Freud have allowed the publication of this work, one that he considered a failure? What is the status and legitimacy of this work in Freud's archive? How does this work reshuffle the relation between his others works and psychoanalytic concepts in the archive and what does it mean for psychoanalysis in general? If the *Project* was indeed a failure, as Freud presented it in the letters to his friend Wilhelm Fliess, why did he keep the manuscript? The questions are potentially overwhelming.

Coincidentally, if we may say so, Freud's manuscript resurfaced in the midst of the rise of cybernetics, only a couple of years after the publication of Wiener's book. For those readers who followed the cybernetic discourse, such as James Strachey, the work's translator, the *Project* appeared as an "extraordinarily ingenious working model of the mind as a piece of neurological machinery" ("Editor's Introduction" 290). Introducing the *Project* in the *Standard Edition* of Freud's work published in 1966, Strachey writes that in addition to a purely psychoanalytic account of this work,

...the *Project* is likely to suggest another possible source of interest in the work – one which is remote from psycho-analysis ... Freud's attempted approach seventy years ago to a description of mental phenomena in psychological terms might well seem to bear a resemblance to certain modern approaches to the same problem. It has been suggested latterly that the human nervous system may be regarded in its workings as similar to or even identical with an electronic computer – both of them machines for the reception, storage, processing and output of information. It

has been plausibly pointed out that in the complexities of the ‘neuronal’ events described here by Freud, and the principles governing them, we may see more than a hint or two at the hypothesis of information theory and cybernetics in their application to the nervous system. (292)

Strachey suggests that the *Project* provides “an alluring possibility” of seeing Freud as “a precursor of latter-day behaviorism” (293). He warns, though, that “there is a risk that enthusiasm may lead to a distortion of Freud’s use of terms and may read into his sometimes obscure remarks modern interpretations that they will not bear” (293). At the same time, he recognizes the value of “the originality and fertility of Freud’s ideas” (293) specifically in their relation to the current discussion of the 1950s, and concludes:

...we may note first Freud’s insistence on the prime necessity for providing the machine with a ‘memory’; again, there is his system of ‘contact-barriers’, which enables the machine to make a suitable ‘choice’, based on the memory of previous events, between alternative lines of response to an external stimulus; and, once more, there is, in Freud’s account of the mechanism of perception, the introduction of the fundamental notion of feed-back as a means of correcting errors in the machine’s own dealings with environment. (292-293)

Clearly, among Freud’s readers, there were many of those who were not “surprised” to learn about the early background of his conceptual apparatus. *Beyond the Pleasure Principle* (1920), for example, and specifically its notion of the death drive, were often contested through the lenses of thermodynamics and biology, decades before the publication of the *Project*. One specific instance of the critical scorn surrounding *Beyond the Pleasure Principle*, to which Lacan alludes in *Seminar II*, was the article “The Principle of Entropy and the Death Instinct” (1931) for the *International Journal of Psychoanalysis*, co-written by Austrian psychologist and psychoanalyst Siegfried Bernfeld and German physicist and specialist in psychological thermodynamics, Sergei Feitelberg. In this case, the critics were concerned that Freud’s theory was not

“scientific” enough and that Freud’s notions were based on allegory. Bernfeld and Feitelberg contend that:

...with the assumption of the death instinct that theory enters the realm of speculation, for here it oversteps the boundaries of psychological or psycho-analytical methods, since the notions of the death instinct and Eros purport to embrace biological facts – indeed, the universal behaviour of nature (the stability principle). Many uncertainties, confusions and errors arise from the circumstance that we do not always sufficiently distinguish between the different meanings attached to the one word: “instinct.”<sup>57</sup> (61)

The criticism came even from such Freud followers and devotees as Ernest Jones.

When Ernest Jones disputed Freud’s hypothesis about the death drive, he did so precisely by invoking the second law of thermodynamics. Insofar as living beings are not closed systems, he argues they can take energy from outside and acquire what Schrödinger called ‘negative entropy.’ On that ground, Jones believed that Freud’s attempts to bring entropy and the death drive together has been a failure. (Liu 202)

Biologists were equally skeptical because, as Sulloway notes, “Freud’s death instinct seems manifestly un-Darwinian”: “Any organism possessing an innate urge to die would presumably be at a great ‘selective’ disadvantage in the struggle for existence compared with those organisms possessing only the instincts for life” (407). Sulloway provides a wide range of responses from such scientists as Rudolf Brum, Robert R. Holt, and Stanislav Andreski, who expressed a scientific disapproval of Freud’s notions which seemed to them “totally unsupported by biology”; however, Sulloway rightly notes that “this assertion must be qualified by asking what sort of biology such commentators have in mind” (406, 407).

---

<sup>57</sup> Here, “instinct” is the initial unsuccessful translation of Freud’s *Trieb*, which was later rendered as “drive.”

## 2. From Thermodynamics to Structure

Unlike other Freudians, Lacan is less concerned with a possibility of misreading of Freud's work with the arrival of the *Project* into the public sphere: to him, Freud's work was already misread enough, and he viewed the re-evaluation of Freud's archive as a timely and crucial opportunity. By reading the *Project* in *Seminar II*, he responds to ego-psychologist Ernst Kris' assumption that the *Project* is evidence of Freud's transition from a mechanistic to a psychological conception of the subject, and of his so-called "conversion to organo-psychological thought" (113). Lacan objects: in Freud, "it is always the same thought unfolding," he argues; "one might say that [Freud's] metaphysics never changes, but that he completes his scheme, by introducing something entirely different into it, namely the notion of information" (113). Upon the publication of the belated work, Lacan looks at it to investigate Freud's effort of transitioning from a "thermodynamic biology" to what might be called an "informational biology."

In "The Function and Field of Speech and Language of Psychoanalysis" (1953), Lacan points out that even "the new method" of psychoanalysis was described by Freud "not in 1904 [that is, after the publication of *The Interpretation of Dreams* in 1900] – as was taught until recently by an authority ... – but in 1895" (213), around the time when Freud worked on the *Project* and, with Josef Breuer, on their *Studies on Hysteria*. In the "Overture" to *Seminar I* (November 1953), Lacan suggests that not only are the roots of Freud's scientific background important to consider to fully comprehend his work, but so also is the general impact of the scientific *zeitgeist* of his age: he insists that we need to see Freud as someone "who lived in a scientific century" (1). While contextualizing



Freud's thought in relation to the work of the influential scientists, especially those responsible for the "erosion of determinism" (Hacking 455), Lacan notes that Freud also worked against nineteenth-century science's demand to minimize the possibility of subjectivism in research, by shifting his attention precisely onto his subjectivity, acknowledging that the point of view of a scientist is first and foremost a point of view of a man structured by his relation to the world, which begins with his family and his partners:

Brücke, Ludwig, Helmholtz, Du Bois-Reymond had instituted a kind of pledged faith – everything reduces down to physical forces, those of attraction and repulsion. Once one takes these as promises, there's no reason to go beyond them. If Freud did go beyond them, it is because he also took on others. He dared to attach importance to what was happening to him, to the antimonies of his childhood, to his neurotic problems, to his dreams. That is why Freud is for us all a man beset, like anyone else is, by all the contingencies – death, woman, father. (*Seminar I 2, 3*)

The relation between the contingencies of life and the notion of the determinism as "taming of chance" (Hacking), articulated by the mentioned scientists, drew Freud to formulating his own version of "determinism proper to [the stochastic]<sup>58</sup> structure" of the human psyche (*Seminar I 3*), which reveals itself by means of compulsive repetition, however "varied, modulated" and unrecognizable, but always occurring through the "alienation of its meaning" (*Seminar XI 61*) and, thus, bypassing conscious awareness.

In the *Project*, Freud attempted to theorize a model of the unconscious memory in terms of neuro-physiology: he offered a mechanical prototype of repression. The system of neurons  $\phi$ , the "reflex-arc," which, Freud believed, accounts for the relationship of the living being to its environment, "receives something, an excitation, and it responds with

---

<sup>58</sup> See Lacan's introduction and development of the notion in "The Function and Field of Speech and Language of Psychoanalysis" (236-237).

something” (Lacan, *Seminar II* 106). “The response has a purpose,” Lacan reminds us, as “the notion of response always implies that we are dealing with an adapted being” (106). Freud conceived the human psyche on the basis of equilibrium, or the principle of inertia, and on the notion of *in-put*, historically, formulated prior to the introduction of energy. However, Lacan notes, when Freud articulates the relation between the  $\phi$  system of permeable neurons and the  $\psi$  system of impermeable neurons, he presents this relation in terms of *energy constancy*, which suggests that

Freud can’t be satisfied with the in-put, with what is brought in from the external world, and he has to improvise. So he introduces a supplementary apparatus,  $\omega$  ... because he needs not only stimuli from the external world, but the external world itself. He needs an internal apparatus which reflects not only the stimuli of the external world, but also ... its structure. (107)

Thus, by introducing “a supplementary apparatus,” the  $\omega$  system, which, Lacan suggests, is an early prototype of the perception-consciousness, Freud distinguishes between perception and memory, which allows him to formulate the theory of resistances. This system will gradually transform in later Freud to the imaginary function of the ego,<sup>59</sup> which is responsible for the processes of resistance.

Let us look again at Freud contemplating the conceptual assemblage on the day when he admires his design as it elucidates, for him, everything “from the details of the neurosis to the determinants of consciousness”:

Everything seemed to fit in together, the gears were in mesh, the thing gave one the impression that it was really a machine and would soon run of itself. The three systems of neurons, the free and bound conditions of quantity, the primary and secondary processes, the main trend and the compromise trend of the nervous

---

<sup>59</sup> By tracing this origin of the ego back to early Freud’s biological model of mind in the 1950s, Lacan responds to the ego-psychologists who insisted on the practices towards the reinforcement of the function of the ego and its ability to resist unconscious drives.

system, the two biological rules of attention and defence, the indications of quality, reality and thought, the state of the psycho-sexual groups, the sexual determination of repression, and finally, the determinants of consciousness as a perceptual function – all this fitted together and still fits together! (qtd. in Strachey, “Editor’s Introduction” 285)

However, when Freud articulates the phenomenon of consciousness, he admits he cannot explain “how it is that excitatory process in the  $\omega$  neurons bring consciousness along with them;” all he is able to do is to establish “a coincidence between the characteristics of consciousness that are known to us and the process in the  $\omega$  neurons which vary in parallel with them” (*Project* 311). He intends to go beyond the analogy towards the theory of the communication between these systems, but reached a dead end.

Another problem of his early mechanical model of psyche is related to the question of temporality. Freud cannot go around it: the process of communication between the neurons clearly unfolds in time, even if it is the time of neurons. The difference between the *Project* and *The Interpretation of Dreams* reveals that Freud is on the way to resolving this problem: the two works present two distinctive conceptions of the apparatus that concerns time. While in the *Project*, the “organs of perception, cortex and sub-cortex, function like a kind of autonomous ganglion regulating the pulsation between the drives internal to organism,” in *The Interpretation of Dreams*, it is substituted by “something far more immaterial” that is not “given a spatial location” (118).

However, as Lacan notes, in this work

...there is not the slightest sense of the relation of the ego to the discourse of the unconscious – this concrete discourse in which the ego bathes and plays its function of obstacle, of interposition, of filter – being one of negative of positive. ...The unconscious has its own dynamic, its own flow, its own paths. It can be explored according to its own rhythm, its own modulation, its own message, quite independently of whatever interrupts it. (120)

Although such a disconnection between systems poses other problems, from now on, Lacan notes, Freud “puts the temporal dimension as such on the background,” while his “schema, whose general arrangement ... remains the same ... proves ... that Freud is already introducing new dimensions into his categories, and in particular a certain logical dimension” (118). Until *Beyond the Pleasure Principle*, Freud “steps outside of the limits of the domain of the human in the organic sense of the word” (79). From the *Project* to *Beyond the Pleasure Principle*, Freud works with different versions of automatic governing principles concerned the organization of the homeostatic psychic machine subjected to the pleasure principle. Lacan notices the important ambiguity in Freud’s reading of “equilibrium”:

...when faced with a stimulus encroaching on the living apparatus, the nervous system is as it were the indispensable delegate of the homeostat, of the indispensable regulator, thanks to which the living being survives, to which corresponds a tendency to lower the excitation to a minimum. (80)

The ambiguity concerns the word “minimum,” which, for Freud, can refer to one of two things: “the equilibrium of the system” as a certain “balance” or, “with respect to the living being, death” (80). Despite Freud’s merging of “death” and “drive” in one notion, in this context, he does not refer to “death” *per se*, nor does he speak about “balance.”

Here Freud’s “death drive” designates something in-between these two meanings:

“something of what he observes in man [that] constrains him to step out of the limits of life” (80): *entropy*, something that is related to the measured limit of the system’s disorder: “the quantity of information” (82), which marks Freud’s transition from a “thermodynamic” to what could be called an “informational biology.” Outside of “the limits of anthropology,” “his discovery is that man isn’t entirely in man,” Lacan concludes, and that therefore, “Freud isn’t a humanist” (72).

Despite the fact that “Freud put a lot of hope in biology,” Jacques-Alain Miller takes this argument further, “Freudian biology was not biology”:

Death, which is a matter of the death drive, is not biological death; it is not the simple return of the living body to an inanimate state. Death is the other side of life. A biology which includes the death drive is a biology of the other side of life, an other side which is open to the speaking being through language. This other side of life is materialized through the sepulture,<sup>60</sup> since the human species is the only one in which the dead body keeps its value. (“Lacanian Biology” 16-17)

Following Lacan in *Seminar II*, Miller explains the notion of “the other side of life” with the example of Marquis de Sade and his pursuit of the ultimate limit of life as “the death of molecules”: “He dreamed of a criminal who could, beyond the individual, kill molecules” (17). At the same time, Miller continues, “Freudian biology is all the same a biology,” at least because “it supported its speculation with biology,” especially as Lacan “presents [Freud’s] theory of the drives as the dynamic that completes Weismann’s morphology” (17, 19-20).

The discussion of German evolutionary biologist August Weismann’s germ plasm theory in *Beyond the Pleasure Principle* is one of its key moments. In the 1880s and 1890s, Weismann came to discover that unlike other cells of the body, germ cells (i.e. the egg cells and sperm cells) contain determinants that give rise to the germ cell’s one-directional lineage: although the germ cells produce the somatic cells, they do not pass the hereditary “information” to the somatic cells; however, they do not receive any “information” of what the somatic cells learn during their lifetime either. Thus, the continuity of existence “on the other side of life” implies that the drive is present at the level of the simplest life forms, at the level of life as such, and has nothing to do with

---

<sup>60</sup> The act of burial.

anything “human.” Besides, Miller says, “Freud’s whole effort wants to show that these drives [the life drive and the death drive] are already present independent of the constitution, not only of a body, but even of a multicelled organism” (20). Freud finds this relation between the two opposite tendencies towards life and death for the sake of the continuity of the “abstract life” similar to the two drives that he develops in the human realm. Freud admits that:

What strikes us in this is the unexpected analogy with our own view, which was arrived at along such a different path. Weismann, regarding living substance morphologically, sees in it one portion, which is destined to die – the soma, the body apart from the substance concerned with sex and inheritance – and an immortal portion – the germ-plasm, which is concerned with the survival of the species, with reproduction. We, on the other hand, dealing not with the living substance but with the forces operating in it, have been led to distinguish two kinds of instincts: those which seek to lead what is living to death, and others, the sexual instincts, which are perpetually attempting and achieving a renewal of life. This sounds like a dynamic corollary to Weismann’s morphological theory. (*Beyond the Pleasure Principle* 39)

When Freud speculates “that the protozoans could very well sustain the death drives from the beginning without being perceived as doing so” (Miller, “Lacanian Biology” 20), he arrives at the conception of life as such, which is not abstract, but concrete and informational.

In the following year after the *Project* was abandoned, Freud produces another model of the unconscious memory. It attracts Lacan’s attention in *Seminar III, The Psychoses* (1955-1956), where he introduces the notion of structure. This model of the psychic mechanism “has come into being by a process of stratification,” Lacan quotes Freud’s *Letter 52* to Fliess, in which Freud argues that “the material present in the form of memory traces being subjected from time to time to a *rearrangement* in accordance with fresh circumstances – to a *retranscription*,” Freud concludes: “Thus what is essentially

new to my theory is the thesis that memory is present not once but several times over, that it is laid down in various kinds of indications” (cited in *Seminar III* 181). Here again, temporality of the layers of traces is irrelevant due to their mobility and ongoing reconfiguration. Because of its openness to the ongoing rearrangement and retranscription, this structure is “a group of elements forming a covariant set” (and not a closed “totality”) (183); therefore, it is at the same time always old (due to its reproducing the past patterns) and always new (due to the continuous modulation of these patterns). Here, the letter reproduces itself across the strata, as the speaking being is caught in repetition, according to the game of chance.

In *Seminar XI*, however, Lacan makes a distinction between repetition and (another kind of) reproduction that is associated with Greek culture: “To reproduce is what one thought one could do in the optimistic days of catharsis” (50) – to purify oneself by releasing the suffocating pain, to change, to renew and to restore. While reproduction is a prerogative of the letter, the subject is destined to repetition. Repetition is based on the fact that there is always a remainder that would initiate a new cycle of the drive; repetition is thus not self-evident. It is veiled (54). It is sustained by the *automaton* of the signifying network, “formed by random and contiguous associations,” where “the signifiers were able to constitute themselves in simultaneity only by virtue of a very defined structure of constituent diachrony,” “oriented by the structure” (46). It is at this level that the subject is determined and the unconscious is structured like a language. “The real is beyond the *automaton*, the return, the coming-back, the insistence of the signs, by which we see ourselves governed by the pleasure principle” (53-54). But at the limit of remembering, repetition becomes the *tuché*, when it occurs “as if by chance” (54). The relation between

the automaton and the *tuché* can be expressed by the following: on the one hand, the automaton as the governing structure always makes sure the subject returns to the traumatic event. On the other hand, repetition always demands the new: “it is turned towards the ludic, which finds its dimension in this new” (61). The latter is the function of the *tuché* as a missed encounter with the real due to its continuous renovation and updating of the network of signifiers. As such, the *tuché* introduces indeterminacy within the determinism of the symbolic, therefore, the subject cannot be determined, despite that its very *being* is defined on the basis on its inscription into the signifying network as *parlêtre* or “speaking being”; at the same time, the subject is always determined to misrecognize the *tuché*, which is precisely the point origin of the drive’s circuitry.

When in his early work Freud speculates about the mechanism of *automatisme de répétition*, which later transforms into the *death drive*, he approaches the questions of comprehension (*Seminar II* 114) and learning. When Freud discusses the hysterical defence in the *Project*, he attempts to situate the questions of learning in relation to memory traces at the level of neurons. “Freud’s idea of repetition automatism,” Lydia H. Liu writes, “begins to make cybernetic sense” through Lacan’s reading of the psychic machine that “closely replicates the cyberneticians’ neural nets” (191). “The connection of eruption of signification or ‘ambiguities’ to the temporal breaks and faulty moments of the circuit,” Liu notes, evokes the famous experiments by John Z. Young on the nervous system and memory of octopuses (191). Today, this effort resonates with the discussions on the “neural plasticity” that sets the tendency “to reduce experience to its trace” and, as Eric Laurent notes, to reduce “the subject to traces of learning processes” (*Lost in Cognition* xi). However, he argues, as far as the Freudian unconscious is concerned,



[it] does not fall into the category of “learning.” It is what is *missing from* or *surplus to* any possible learning process. After all that has been learned during the day, the dream awakens on the basis of that which has not been learnt, uttered, or thought. The unconscious is a mode of thought free from both learning and consciousness, and this is what is at once odd and scandalous about it. (xi)

*Equivocation* as the evidence of meeting the *tuché*, or a missed encounter with the real, “implies a break from learning processes” (Laurent xii). “There is always equivocation with respect to what actually occurred” (xii). Lacan used an equivoke, as an element of the “bizarre speech,” both *for* and *as* the psychoanalytic interpretation to reach “the aleatory nature of the connection of the signifier and the signified, which indicates that there is no necessary follow-through” between them; “the equivocation opens an entire space of play and misunderstanding” (Miller, “Did You Say Bizarre?” n.p.).

Bruce Fink (1996) and Lydia Liu (2010) have both pointed out that Lacan’s term “equivocation” is not without an allusion to Shannon’s essay “A Mathematical Theory of Communication,” where equivocation stands for the “frequency of errors” (Shannon 22). Shannon calculates the rate of the actual transmission by subtracting the average rate of conditional entropy of the message (as a measure of missing information) from the rate of production of the signal. He comes up with the following definition of the equivocation: “The conditional entropy  $H_y(x)$  will, for convenience, be called the equivocation. It measures the average ambiguity of the received signal” (20). In “A Mathematical Theory of Communication,” Shannon calculates the *relative entropy* or “the maximum compression possible when we encode into the same alphabet,” and he opposes the redundancy of ordinary English to both Basic English, the auxiliary “controlled language” created by English linguist Charles Kay Ogden, and James Joyce’s *Finnegans Wake*. The redundancy of ordinary English is 50%, which “means that when we write English half of what we write

is determined by the structure of the language and half is chosen freely” (14). As far as the other two cases, Shannon writes:

Two extremes of redundancy in English prose are represented by Basic English and by James Joyce’s book *Finnegans Wake*. The Basic English vocabulary is limited to 850 words and the redundancy is very high. This is reflected in the expansion that occurs when a passage is translated into Basic English. Joyce on the other hand enlarges the vocabulary and is alleged to achieve a compression of semantic content. (15)

In the cases of ordinary English and Basic English, Shannon’s calculations apply to a closed system where the chance that causes distortion is a result of the internal principle of this system. *Finnegans Wake* is an open system, which exists as a collision of chances from the outside (beyond the grammar and syntax). As such it demonstrates an abnormal “frequency of errors” (from the point of view of the law) that causes “the average ambiguity of the received signal” to go too high. Because of this shift, *Finnegans Wake*, where Joyce pushes his writing style to the limit, maintains as little meaning as possible: he “goes methodically beyond limited meaning to a point when the play with signifying materials is no longer submitted to the message, which produces... a powderiness of meaning” (Soler 97). This is why, as Colette Soler notes in “The Paradoxes of the Symptom in Psychoanalysis,” Lacan “diagnosed in *Finnegans Wake* a special multiplication of equivocation that reduces the signified to an enigma, short-circuiting usual meaning” (97), in order to establish one’s own relation to language through a form of writing as a praxis, which goal is to undermine the imaginary solution and to organize *jouissance*. This is where the Freudian unconscious, as Laurent notes, “finds its locus” “outside the body”: “in a written form and not in [the] traces” of experience (xiii).

## Conclusion

In *Cybernetics*, Wiener addressed the conceptual difference between the self-contained model of the body in the work of Descartes and Leibniz and the one that arrived to replace it. He noted that in the nineteenth century, “the automata which are humanly constructed and those other natural automata, the animals and plants of the materialist, are studied from a very different aspect” (41). Further developments in science, which included the discoveries and conceptualizations of thermodynamics such as “the conservation and the degradation of energy [which were] the ruling principles of the days” (41), demonstrated that “the living organism is above all a heat engine, burning glucose or glycogen or starch, fats, and proteins into carbon dioxide, water, and urea”; and Wiener concluded: “all the fundamental notions are those associated with energy” (41, 42).

Wiener also differentiated between three epochs of thought, marking their epistemologies with representative machines: “the present age,” he wrote in 1948, “is as truly the age of servomechanisms as the nineteenth century was the age of the steam engine or the eighteenth century the age of the clock” (43). Freud’s theory of discharge certainly tied him to the model of the steam engine. His *Project*, however, clearly demonstrates that there was *also* another model behind his work of the 1890s: the model of the servomechanism. A servomechanism was not foreign to thermodynamics: it was conceived and theorized by the major scientists of thermodynamics. But by the end of the nineteenth century, it also served as a conceptual model for a different epistemology which was foundational for the upcoming theories of games, information and cybernetics, overall; it was shaped by the new understanding of the relation of chance to determinism,

which Lacan formulated by his discussion on the *tuché* and *automaton*, as well as by the differences between the notions of “system” and “structure.” In 1907, Einstein wrote: “We are by no means dealing with a ‘system’ here, a ‘system’ in which the individual laws would implicitly be contained and from which they could be obtained just by deduction,” he articulated the debt to thermodynamics as to a “theory of principle,” “but rather only with a principle that allows one to reduce certain laws to others, analogously to the second law of thermodynamics” (“Bemerkungen zu der Notiz von Hrn. Paul Ehrenfest” 207).

## Chapter 4

### Lacan and Automatism

#### 1. Automatic Phenomena

Like Freud, Lacan had made quite a journey before he arrived at psychoanalysis. While Freud specialized in neuropathology at the beginning of his career, Lacan started as “a physician and a psychiatrist” (“On My Antecedents” 51). This chapter explores the formation of Lacan’s interest in psychoanalysis. In this investigation, I focus on the theme of automation that passes through several clinical and non-clinical contexts, which were closely related. We will look at the different approaches to automatism by the psychiatrists and psychologists of the nineteenth century in order to draw the trajectories of several different conceptualizations of this notion in clinical practices, which, in the twentieth century, impacted not only further clinical research but also art. Lacan’s exposure to both resulted in him producing a version of his own, which draws him to Freudian psychoanalysis.

According to Elizabeth Roudinesco, Lacan’s first patient presentation took place on November 4, 1926 and it was the case of the “fixed gaze caused by hypertonicity”; and then, “from 1927 to 1931 he studied the clinical treatment of mental and cephalic disorders” (*Jacques Lacan* 16, 17). In 1928, Lacan collaborated with Maurice Trénel on a case of abasia in a war-traumatized female patient, the report of which was published in

*Revue neurologique*<sup>61</sup> that year (Jacques Lacan 18). This hysteric patient suffered severe injuries under the ruins of her house. However, as Roudinesco notes, no reference to hysteria was made by the psychiatrists' evaluation; "the terminology they used was exclusively that of Babinski" (19), whose approach, along with Janet's and Freud's, was one of the three dominating theories of hysteria at that time (20). French neurologist Joseph Babinski (1857-1932) and French psychologist and psychotherapist Pierre Janet (1859-1947) were both students of Jean-Martin Charcot<sup>62</sup> (1825-1893), who, after Charcot's death, went in different if not opposite directions in their work: Babinski "retained only the neurological part of Charcot's teaching" (Ellenberger 343), while Janet became one of the founders of the field of psychology. In what follows, we will review the work of these figures working on the frontiers of neurology and psychiatry and investigate their relation to Lacan's emergent position.

### Joseph Babinski

Part of Babinski's research and practice relied on Charcot's theories, although most of his work quickly and drastically digressed from the work of his teacher by taking the course towards a neurological-organicist view. For example, his "modern conception of hysteria," opposed to Charcot's "old conception," presented it as a "pithiatic disorder" created by suggestion and curable by persuasion. During World War I, Babinski worked in medical military care along with French neurologist Jules Froment (1878-1946) on treating what they identified as "shell shock" or "combat hysteria." This practice led them

---

<sup>61</sup> Jacques Lacan. "Abasie chez une traumatisée de guerre," *Revue neurologique* 2 (1928): 233-237.

<sup>62</sup> The discussion of Charcot's work is coming in the following Part II, "Writing the Body"

to a very different understanding of hysteria, which they theorized in a co-authored work *Hysteria as Pithiatism* (1917), where Babinski and Froment suggested the following:

There might even be some advantage in abandoning the use of the term hysteria, which in its etymological sense<sup>63</sup> is in no way suitable for any of the phenomena under consideration. If, however, it is to be retained, it should be reserved for the first group, comprising those impressive disorders which this word calls to our memory almost automatically (fits, epidemic chorea of the middle ages, and paralysis miraculously cured). I have proposed the substitution of the term ‘pithiatism,’ from *πειθω*, ‘I persuade,’ and *ιατος* ‘curable,’ which expresses one of the fundamental characteristics of these symptoms, viz. the possibility of being cured by the influence of persuasion. (17)

The transformation of Babinski’s views was radical, especially if we consider the following aspects of his research: while he was working with Charcot at the Salpêtrière Hospital, Babinski became known for “his experiments in transferring hysterical symptoms with a magnet from one patient to another,” on which he published an article in *Revue neurologique* 9 (1901), “Recherches servant à établir que certaines manifestations hystériques peuvent être transférées d’un sujet à l’autre sous l’influence de l’aimant” (Ellenberger 101); then he claimed hysteria was a form of malingering and a fatigue of the organic cause.

### Pierre Janet

In 1889, Janet published his first book *Psychological Automatism*, where he introduced his dissociation theory as well as his model of the functional and structural elements of the mind. Although the elementary forms of human activity are “completely determined as an automaton,” he suggested in this work, they are simultaneous to the conscious

---

<sup>63</sup> They refer to the etymology of the term “hysteria” from Greek word meaning “womb,” which originally defined hysteria as a neurotic condition typical for women and thought to be caused by a dysfunction of the uterus.

activity of individuals (Janet 2). This activity that “manifests on the outside through movement,” he argued, could not be “separated from a certain kind of intelligence and from the consciousness that accompanies it inside” (3). Therefore, Janet’s goal in this work was “*to demonstrate not only that there is a human activity that merits the name of automatic, but also that it is legitimate to call it a psychological automatism*” (3). The regularity of the elementary forms of human activity made it, for Janet, “pre-determined.” In other words, through his notion of psychological automatism, Janet attempted to demonstrate that “consciousness” was not identical with “personal consciousness,” and therefore it was disconnected from personal perception. In other words, it lacked the sense of self (*idée du moi*). As Ellenberger points out, this theory allows us to think that Janet might be the first to introduce the idea of subconscious (406), which he did in order to account for the “elementary activity” of an individual, which he considered “pre-determined” and thus “automatic.”

Janet distinguished between full and partial automatisms. He thought that partial automatism was at the basis of “automated writing,” “widely practiced by the spiritualists since 1850”<sup>64</sup>: by “placing a pencil in the hand of an individual, and keeping his attention elsewhere, one can see him starting to write things of which he is not aware, and elicit in that way large fragments of subconscious material” (Ellenberger 360). Moreover, “Janet made a case for the presence of some form of ‘intelligence’ in seemingly unconscious states” (Bacopoulos-Viau 261).

---

<sup>64</sup> As a matter of fact, Janet was a nephew of the influential French Spiritualist philosopher and writer Paul Janet (Bacopoulos-Viau 261).



As Alexandra Bacopoulos-Viau reminds us, Janet “placed the concept of ‘automatism’ to the fore by *psychologizing* it,” and in doing so, he went “against the materialistic views adopted by physiologists such as William Carpenter, Thomas Laycock, Jules Baillarger, Rudolf Heidenhain and Prosper Despine” (261). At the same time, he “*pathologized* automatism” (261), which was the reason that drew the Surrealists away from Janet and psychiatry overall, despite the fact that their experimental practices were so incredibly close to his. Hysterical patients, Janet argued, exhibited the tendency to self-induce “psychological automatism,” equivalent to the states of “narrowing of the field of consciousness;” and therefore, they were “psychologically weak” and in the need of cure (Ellenberger 361).

By identifying hysteria as a pathological conduction, both Babinski and Janet shared the view of the Paris School of Charcot. The opposite view was expressed by the Nancy School led by French physician and neurologist Hippolyte Berhneim (1840-1919). Arguing against Charcot, Berhneim insisted that hypnosis was a physiological condition: it could be induced by means of suggestion both in hysterics and in “healthy individuals” and therefore, it could not be pathological. Among those who were leaning towards Berhneim’s understanding of hysteria were also Josef Breuer and Sigmund Freud.

### Gaëtan Gatian de Clérambault

Lacan’s short essay “On My Antecedents” draws the trajectory of his transition from psychiatry to psychoanalysis; it also provides the names of his major influences who gradually shaped his thought in the process of this transformation. Among many prominent figures of the time, Lacan distinguished Gaëtan Gatian de Clérambault, the

“only master in psychiatry,” whose notion of “mental automatism” was particularly important for the work of young Lacan (51). While the nineteenth-century clinic was preoccupied with hysteria in order to qualify it as a “mental illness” and distinguish it from “madness,” in the 1920s and 1930s, the clinical psychiatry and psychology turned towards the various forms of psychoses in order to identify the logic of the psychotic thought for the sake of differentiation and classification of the multiple manifestations of mental disorder. Before Clérambault, psychiatrists had used to distinguish between schizophrenia and paranoia as entirely different types of mental disorder. But Clérambault offered a definition of psychoses on the basis of a common element as “the syndrome of mental automatism” “on the grounds that delusion underlies all the different forms in which psychosis appears” (Grigg, Footnotes n.5 5).

Among the manifestations of the mental automatism in the form of ideoverbal phenomena, Clérambault named “the anticipation of thought,” “the enunciation of acts,” “the echo of thought,” “ideorrhea,” and “false recognitions.” As Jean Saucier summarizes Clérambault’s observations, in some cases these phenomena are “far from being hostile, their contents are essentially neutral, at least at the beginning; they surprise and even amuse the patient” precisely by their automatic nature; while in other cases, they may affect the patients negatively, scare them by the uncontrollable force they demonstrate (453). Saucier presents Clérambault’s description of these phenomena:

The anticipation of thought. Patients usually refer to it by saying: “They find names before me.” “My thoughts are already made before I have time to concentrate.”

The enunciation of acts. Every act, even if most trivial, is voiced aloud. “She goes to bed.” “She takes her bath.” “She scratches her back,” etc. In the later stages, the acts are not only enunciated but also analyzed and even criticised.

The echo of thought. The patient's thoughts are repeated aloud as soon as they are formed.

Ideorrhea. The patients have, at intervals, a continuous flow of thoughts which they cannot stop.

These phenomena, along with sensory and motor automatism that develop at the later stages, were described by Clérambault as the cases of "minor automatism" which occurs as an initial phase of the psychoses. (453)

For Clérambault, mental automatism was a phenomenon with an organic origin. He connected delusions to an alteration of the cortical neurones responsible for enabling thought, perception, or voluntary movement that results in three kinds of the "automatic phenomena": ideoverbal, sensory and motor. What made these phenomena "automatic," Clérambault observed, was that these phenomena seemed entirely disconnected from patients' volition. At the same time, patients were not entirely unaware of the automatic phenomena as, for instance, Charcot's hysterics in hypnotic states; unlike them, Clérambault's patients demonstrated a certain degree of "knowledge" and sometimes even attempted to explain their actions.<sup>65</sup>

By claiming the organic origin of these phenomena, Clérambault suggested that they were not "part of the subject's own thought processes," but "impose[d] themselves upon the subject's mind from without" (Grigg, Footnotes n.5 5). This shows that although his theory of the mechanics of paranoia was still within organicist constraints, his understanding of the automatic phenomena that moved the patient's body "from without" was radically different from the rest of the psychiatric theories, which Lacan recalls as being exclusively "psychological, psychologizing, or even as psychogenetic" so that "all

---

<sup>65</sup> Unless the patients were in the midst of a psychotic break when they would typically "identify" with the internal *otherness* (hearing voices addressed to them, experiencing hallucinations about the reality of which they did not have any doubts), they were extremely disturbed by this profoundly self-alienating experience. See more in Saucier.

the formal references to an organic base, to temperament for example, don't change a thing – it's really a psychological genesis" (*Seminar III* 5).

For Miller, one of Clérambault's "automatic phenomena," "the echo of thought," indicates "a disturbance between statement and enunciation that emancipates a parasitic source": language ("Teachings of the Case Presentation" 47). Miller writes:

The subject finds himself continually shadowed by a double that emancipates him, accompanies him, or follows him and cannot say anything. Fading, mute, empty, this double still has the power to suspend the subject in the position of receiver. De Clérambault calls this independent enunciation a "purely psychic phenomenon," and he names the play on words (signifiers) that it liberates "verbal phenomena." [This is Clérambault's] grasp of intersubjective communication. It follows that the sender of a message becomes its receiver and that the psychotic disturbance consists only in his experiencing himself as such. (47)

This autonomous phenomena of "the echo of thought" can also be read as the process of emancipating and thus exposing the structure, which later led Lacan, as Miller suggests, to the discovery of the symbolic order: "Lacan sought to define the symbolic through a mechanism (certainly not that of de Clérambault, but that of Turing and Wiener), so as to distinguish it from Jung's"; and he "made his symbolic primal and neutral, instituting it thus as signifying and structural" (48).

Lacan notes that "psychogenetic" understanding of the psychoses was typical for French psychiatry of that time and it was based on the false dichotomy "psychological/corporal" as the two were seen as different entities: "Something is defined and accessed at a certain level, and its development follows uninterrupted with an autonomous coherence that is self-sufficient in its own field" (*Seminar III* 5). Clérambault's theory was based on the "extreme organicist conception" of the relation between the patient's psychology and corporal symptomatic phenomena (5). In it, Lacan saw the possibility of moving away

from the “psychogenetic outlook” of French psychiatry. He sought to reconcile the organic base with the psychological phenomena in order to escape the false dichotomy of psychological and corporeal and the autonomy of the two orders from one another.

“[Clérambault] notion of ‘mental automatism,’ with its metaphorical, mechanistic ideology, which is assuredly open to criticism,” Lacan writes, “seems to me, in its attempt to come to grips with the [patient’s] subjective text closer to what can be constructed on the basis of a structural analysis than any other clinical approach in French psychiatry” (“On My Antecedents” 51). The notion of the patients’ “subjective text” is a step towards Lacan’s insight that the unconscious is structured like a language. But it could only be conceived in such a way after he theorizes the encounter between the *body* and *signifiers* that weave the “natural” environment of the human body by *inmixing* Otherness in it. Freud’s insight that we speak with the body without knowing it, which produces the circuits of psychosomatic phenomena, marks the crucial difference between the body and an organism: an organism is without the Other.

Lacan’s notion of inmixing raises the question of the materiality of language beyond the traditional understanding of the materiality of words, for example, as sound waves. This is not the materiality that constitutes the “loads of this material of language” (Miller, “How Psychoanalysis Cures” 23) and its “heaviness” for Lacan. Rather, he thinks the materiality of language as what “enables the entire chain of the text to be reconstituted” (*Seminar III* 11). It is that “famous fundamental language that Schreber talks about” (11).

Here Lacan refers to Freud’s reading of *Memoirs of My Mental Illness* (1903) by German judge Daniel Paul Schreber, where a “fundamental language” structured the utterances

that otherwise looked entirely inconsistent. For Freud and especially for Lacan, Schreber's utterances constituted a complex text organized by the laws of logic. As Miller reminds us, "there is a science of the signifier as material that is not abstract" ("How Psychoanalysis Cures" 23). This language is "processed" not by means of understanding, but by deciphering, "in the way hieroglyphs are deciphered," Lacan says in *Seminar III* (10). And he asks, "What is the actual material of this discourse? At what level does the sense translated by Freud unfold? From what are the naming elements of this discourse borrowed? Generally speaking the raw material is his own body" (11). The structure of the patients' "subjective text" is the "automated" material of psychoanalysis.

## 2. Automatic Writing

During the first half of the twentieth century, France presented an impressive case of the fluid exchange of ideas between the art scene and science. For example, it was common for medical scientists to engage in events or joint publications along with artists and writers, or even practice art themselves in addition to their primary occupation. To name a few telling instances, de Clérambault also taught the history and art of draped costume at the *École des Beaux-Arts* in Paris and was known as a prominent photographer.

Between 1914 and 1918, he produced about 30, 000 photographs, "some ... taken as part of a research project on the symptoms of hysteria" (Lerner and Witztum 371).<sup>66</sup> Joseph

---

<sup>66</sup> The end of Clérambault's life was tragic. According to Vladimir Lerner and Eliezer Witztum, "on 16 November 1934, after two unsuccessful operations for cataracts, seated with his camera focused on the mirror in front of him, he shot himself with his officer's revolver" (371). One can only speculate what drew a renowned psychiatrist to a decision to take his life. At the same time, Clérambault staged death did look

Babinski wrote – with Pierre Palau and under the fake name of Olaff – the theatrical play *The Deranged Women* (1920), the première of which he attended anonymously, “wearing a fake beard” (Haan et al. 3836).<sup>67</sup> The play was mentioned in André Breton’s semi-autobiographical novel *Nadja* (1928), about his relationship with a patient of Pierre Janet. Although not quite successfully, the Surrealists, and Breton in particular, made efforts to establish a relationship with Sigmund Freud, whom they chose to see as one of their major intellectual inspirations.

In 1932, Breton sent him his newly published work *Communicating Vessels* with the purpose of soliciting Freud’s response, which was followed by a brief exchange of several letters. Unfortunately, Freud seems to have completely missed the point of the book; he responded immediately with two consequential letters in which he defended himself on the matter of the omission of one reference, which Breton mentioned in passing in his text (Davis 127-134; Freud-Breton 149-155). On the account of Surrealism as such, Freud admitted the following: “I am not able to clarify for myself what Surrealism is and what it wants,” and he added, “Perhaps I am not destined to understand it, I am so distant from art” (152).

---

like his last performance, by which he parted not only with his life as such, but also with his art of photography, which he would not have been able to carry on blind.

<sup>67</sup> Once Babinski became the subject of the work of art himself: French artist Pierre-André Brouillet depicted Babinski holding Charcot’s patient Marie (Blanche) Wittman during the demonstration of the case of a hystero-epilepsy in his painting *A Clinical Lesson at the Salpêtrière* (1887), an artistic reconstruction of Charcot’s lesson (Harris 471). The painting later served as a source for Louis-Eugene Pirodon’s famous lithograph with the same title (1888). The lithograph made its way to the psychoanalytic office of Sigmund Freud, who brought a copy from Paris to Vienna when after his short study with Charcot in 1885-1886, and hung it above the iconic psychoanalytic couch. For a note, in *Hysteria: The History of a Disease*, Ilza Veith notes that the term “Hystero-Epilepsy” was used by Charcot during the first stage of his theorizations on hysteria when he failed to realize the tendency of his hysterical patients to mimic the symptoms of epilepsy that they could see in other, truly epileptic patients of the Salpêtrière Hospital. See: Veith, Ilza. *Hysteria: The History of a Disease*. Chicago: University of Chicago Press, 1965. 230-231.

But Breton already knew that. Eleven years earlier, in October of 1921, he made it all the way to Vienna to meet the founder of psychoanalysis. The visit, however, turned out rather disappointingly: Breton encountered a very different Freud from what he imagined through the psychoanalyst's radical theory; there was an old, busy, conservative man, in the office surrounded by antiques and with an old-school nineteenth-century painting on the wall, who immediately distanced himself from the art movement, which, for him, was no more than mere passions of "young artists" (Roudinesco, *Jacques Lacan & Co.* 31). On several occasions, Freud was invited to contribute to the Surrealists' magazines, but he never saw the point of accepting such invitations (33).

The intensity of these interdisciplinary exchanges and adaptation of ideas, often used with poetic license, led to a variety of theoretical and artistic developments, as well as strong resistances, conceptual deadlocks and obvious disagreements. It is in this vivid and dynamic context that young Lacan found himself in the 1920s and 1930s, as he was making his way to Freudian psychoanalysis from psychiatry – together with the Surrealists. He was aware of the nuances of the Surrealists' most sound debate on automatism, which in their "anti-psychiatric" version was a pure expression of graphocentrism. What seemed to be a real discovery here for young Lacan was the pre-structuralist distinction between language and speech that he learned, on the one hand, by dealing with patients and studying with Clérambault, and on the other hand, through the works of the Surrealists.

From 1913 to 1920, one of the founders of Surrealism, André Breton studied medicine and he considered becoming a doctor. From January to September 1917, he worked as a non-resident student at the neurological centre of La Pitié hospital in Paris under the



supervision of Joseph Babinski (Haan et al. 3832). Back then, his supervisor saw for his student a ‘great medical future’ (Polizzotti n.p.), and Breton, too, was quite fond of Babinski; he wrote:

I have seen the inventor of the cutaneous plantar reflex at work; he manipulated his subjects without respite, it was much more than an “examination” he was employing; *it was obvious that he was following no set plan*. Here and there he formulated a remark, distantly, without nonetheless setting down his needle, while his hammer was never still. He left to others the futile task of curing patients. He was wholly consumed by and devoted to that sacred fever. (*Manifesto of Surrealism* 47)

Through his studies, Breton was familiar with the conceptual debates on hysteria, psychosis and paranoia as well as the discussions on hypnotism and automatism (Haan et al. 3830). During the war, he worked at the military hospital, where he witnessed many wounded or traumatized soldiers in the state of walking and dreaming. He discovered the therapeutic practice of “automatic writing.” As Ellenberger notes, Breton’s “attention was drawn to [their] mysterious sentences in which he saw the very essence of poetry” (835). Such observations led Breton to believe that “there is in man, not only in the hypnagogic state but permanently, an ‘inner discourse’ (*discours intérieur*), which can be perceived at any moment if sufficient attention is paid” (Ellenberger 835).

He became convinced of the “authenticity” of its productions and realized how “automatic writing” could be practiced outside of the clinical environment. In the first *Manifesto of Surrealism* (1924), written after Breton finally decided to abandon medical studies, he explains:

Completely occupied as I still was with Freud at that time, and familiar as I was with his methods of examination which I had had some slight occasion to use on some patients during the war, I resolved to obtain from myself what we were trying to obtain from [the wounded and traumatized soldiers], namely, a

monologue spoken as rapidly as possible without any intervention on the part of the critical faculties, a monologue consequently unencumbered by the slightest inhibition and which was, as closely as possible, akin to spoken thought. It had seemed to me, and still does – the way in which the phrase about the man cut in two had come to me is an indication of it – that the speed of thought is no greater than the speed of speech, and that thought does not necessarily defy language, nor even the fast-moving pen. (22-23)

Although the description is nearly a verbatim account of Janet's methodology in *Psychological Automatism*, it is Freud whom Breton finds necessary to mention. Despite his consistent acknowledgment of Freud's influence in the first *Manifesto*, different sources confirm that during the war Breton studied Freud only indirectly, by reading Regis and Hesnard's 1914 book on psychoanalysis (Bonnet, 1992). Elisabeth Roudinesco also notes that Breton began reading Freud several years later than he wants us to believe: in 1922, when the translation of Freud's *Introduction to Psychoanalysis* and his *Psychology of Everyday Life* were published in France (*Jacques Lacan & Co.* 22).

There are some clear discrepancies between Freudian and Surrealist understandings of the mind, both conscious and unconscious, which relate to the practices of "automatic writing." For example, as Frederick B. Davis notes, "Breton utilized psychoanalytic ideas in the development of his concept of 'lyricism' in poetry," to designate the type of "expression free from conscious control-spontaneous composition" (128). According to Breton's interpretation of Freud, as Conley points out, "automatism, a process that takes one down into the psyche ... constitutes a way back, as though in time, to a unique, original faculty to which easy access has been lost, except for those Western primitives considered to be outside culture" (136). Breton saw psychoanalysis as the technique of such attentive listening for the sake of discovering the subject's "authentic self": he defines the "psychic automatism in its pure state" as based on the "actual functioning of

thought ... in the absence of any control exercised by reason” (Breton 9). However, the question of authenticity, or true “self,” so dear to Breton, is nowhere to be found in Freud, for whom a human being is profoundly inauthentic.

Breton insists that the technique of automatic writing is an ultimate act of freedom: “Man proposes and disposes,” Breton writes, “He and he alone can determine whether he is completely master of himself, that is, whether he maintains the body of his desires, daily more formidable, in a state of anarchy. Poetry teaches him to” (18). David Macey points out the crucial difference between their readings: “for Breton the dream is the royal road to poetry rather than to the unconscious;” but he also notes an important intuition in Breton’s reading of Freud: Breton’s “remarks about ‘the absence of any control exercised by reason’ correspond quite closely to what Freud terms ‘the required attitude of mind’ and ‘the abandonment of the critical function’” (53).

While the *Manifesto* crystallized the ideas in regards to automatism by conceptualizing it with the help of references to Freud; “the first purely Surrealist work” (Breton, *Manifesto of Surrealism* 35) was produced several years earlier. *The Magnetic Fields* (1920) was the result of the experiment in automatic writing that Breton co-authored with Philippe Soupault, which introduced the style of what would become from then on associated with Surrealist poetics. A typical passage looked like this:

It was the end of sorrow lies. The rail stations were dead, flowing like bees stung from honeysuckle. The people hung back and watched the ocean, animals flew in and out of focus. The time had come. Yet king dogs never grow old – they stay young and fit, and someday they might come to the beach and have a few drinks, a few laughs, and get on with it. But not now. The time had come; we all knew it. But who would go first? (8)

If Elisabeth Roudinesco is correct in stating that Breton had begun reading Freud only in 1922, *The Magnetic Fields* is, first of all, a reflection upon war trauma expressed by means of broken discourse, in disjointed and fragmented sentences, in a way similar to the expressive tendencies across visual, sonic, and literary arts of the time, but it is hardly based on Freud's theory.<sup>68</sup> Psychoanalysis seemed to the Surrealists as the way out of psychiatry without losing the touch with the realities of the clinic (Macey 60-61). Such a connection seemed important to the artists who took their practices, despite the playfulness and irony, seriously – as the way of social resistance, of “complete nonconformism” (Breton, *Manifesto of Surrealism* 47). “It is significant,” David Lomas notes, “that Breton even in the Manifesto, does not define Surrealism in terms of its literary or artistic productions” (211). For Breton, Surrealism had a potential to create the new revolutionary forms of relation between individuals and society.<sup>69</sup>

Another inconsistency of Breton's reading Freud is clear in *Communicating Vessels*. He praises Freud's work for laying down “a conducting wire between the far too separated

---

<sup>68</sup> There were many of those who directly or indirectly informed Breton's and the Surrealists' interest in automatism: they included the prominent figures of the medical scene from Jean-Martin Charcot, Pierre Janet, and Joseph Babinski, to French psychologist Alfred Binet and Swiss psychiatrist Adolf Meyer. Although the *Manifesto* was filled with meanings that came from the fields of dynamic psychology, psychiatry, and even neurology to a greater extent than from Freudian psychoanalysis, Breton only mentioned Freud.

Some scholars read Breton's insistence on the Freudian background of Surrealism as a result of the succession of discourses and practices in the medical field of that time; for example, Katharine Conley finds the following explanation: “Surrealism emerged just when one method of peering into the mind, Janet's dynamic psychiatry, was eclipsed in France by a new form of psychiatry, psychoanalysis” (59). However, the reception of psychoanalysis in France was not univocal or easy and the new technique did never substitute dominating psychiatric practices. Although both Macey and Roudinesco (3-34) note the French resistance to psychoanalysis a “German phenomenon” after the World War I, they agree that it only concerned medical circles. The Surrealists, on the contrary, were enthusiastic about psychoanalysis, while the attitude of the Surrealists towards psychiatry was incredibly tense.

<sup>69</sup> At the same time, as David Macey notes, “French surrealism has little or no real interest in the therapeutic potential of psychoanalysis” (61).

worlds of waking and sleeping, of exterior and interior reality, of reason and madness, of a peaceful knowing and love, of life for life and the revolution, etc.” (116). At the same time, he reproaches Freud for not acknowledging the connection between the reality and the dream, the two “communicating vessels,” well enough. When Breton argues against those who “isolate” “the world of reality” and “the world of dreams” and “make a purely subjective question of the subordination of one to the other” (4), he writes,

[For Freud], when it concerns the symbolic interpretations of the dream, ... the whole substance of the dream is nevertheless taken from real life. [Thus, he] cannot resist the temptation of declaring that ‘the intimate nature of the subconscious ... is as unknown to us as the reality of the exterior world,’ giving thereby some support to those whom his method had almost routed. (11)

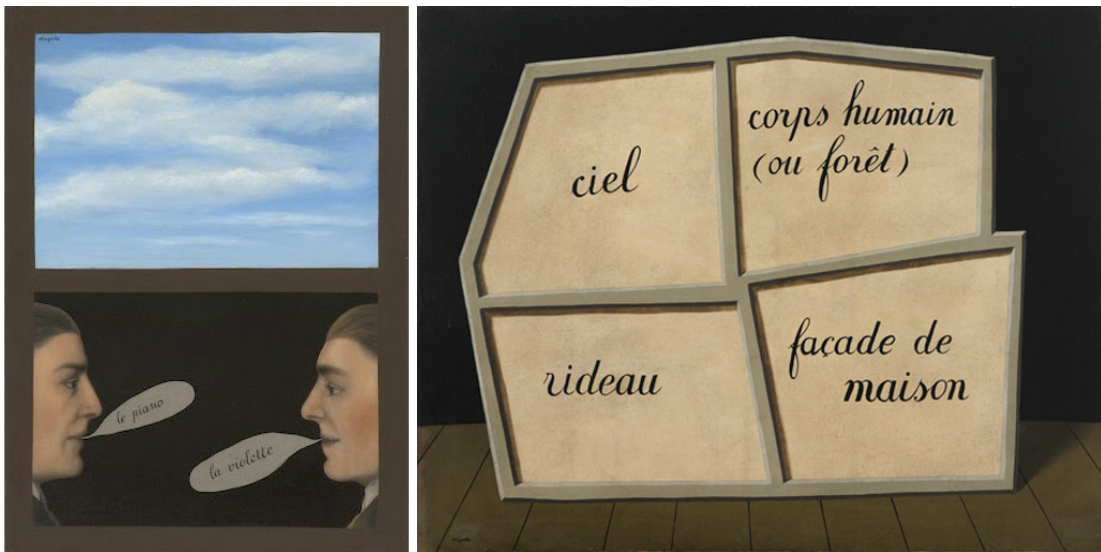
In this 1932 text, Breton is close to Lacan’s position on this matter, especially in terms of Lacan’s critique of the over-simplified spatialization of Freud’s model of the psychic apparatus. Unlike Breton, Lacan does not reproach Freud; he actually believes that the model of the inmixed or, at the very least, *communicating* “vessels” is essential to Freud’s thought from the beginning and that his early neurological work, including the *Project for a Scientific Psychology*, is a proof of that.

According to Macey, Breton’s reading of French poet Arthur Rimbaud in the first *Manifesto* suggests that Breton saw Rimbaud’s contribution to poetry in its disclosing the affect of words “react[ing] upon and against one another,” which led him to a realization that “meaning is produced and not pregiven” (53). This also “implies a definite break with a purely instrumental or representational view of language, and Breton goes so far as to argue that it represents a problematization of language and even of man’s *raison d’être*” (Macey 53-54). Lacan is very attentive to this discussion as well to anything that concerns the question of language and the “accidental” production of meaning. He writes:

For faithfulness to the symptom's formal envelope, which is the true clinical trace for which I acquired a taste, led me to the limit at which it swings back in creative arts. In the case included in my dissertation (the case of Aimée), there were literally effects – of high enough quality to have been collected, under the (reverent) heading of involuntary poetry, by Éluard. (“On My Antecedents” 52)

Lacan theorized the encounter with the “involuntary poetry” as well as the Surrealist performances of “automatic writing” exercising language’s ability to function ‘by itself’ that revealed the poetics of chance by his notion of “structure”:

The function of ideas presented itself to me here in a series of reduplications that led me to the notion of a structure, which was more instructive than the account the clinicians in Toulouse would have provided, for they would have lowered its price by situating it in the register of passion. (52)



**Figure 2 and 3. René Magritte, *The Use of Speech, No. 64* (1928) and *The Empty Mask* (1928).**

As Macey incisively observes, “Surrealist poetry does not rely upon any identifiable linguistic theory as such, but it is highly self-conscious and its theorists do in some way prefigure the structuralism of later decades”; and continues, making a crucial point:

Language, that is, is not seen as a nomenclature or as a transparent medium without any materiality of its own. Meaning is seen as being produced through the juxtaposition of images and the clash of associations rather than as deriving from some ideal correspondence between sign and referent. (48)

In addition to Breton and other poets and writers, one cannot dismiss the significance of René Magritte's paintings of the series entitled *The Use of Speech* of the 1920s and 1930s.



**Figure 4. René Magritte, *The Place of Curtains* (1928-29).**

In one of them, *No. 64*, two men utter words – not as an exchange, but simultaneously. The words get stuck in their own bubbles of meaning – lifeless, frozen; they are caught by the heavy black background – either filled with a sticky entity or, on the contrary, the void, also heavy and suffocating. His other works of that period, for example, *The Empty Mask* (1928) and *The Place of Curtains* (1928-29), depict the compartmentalized words, disjoined and framed separately from their potential referents. They also ironically

comment on the pleasures taken at admiring the event of the decomposition of meaning: these fragments of representation are framed literally, as the works of art, ready to decorate the interiors of our dwellings. If anything, such semiotic explorations served as a reminder of the non-identity within the linguistic sign, “an exploration of [its] arbitrary nature,” and of the fact that “meaning is produced, and not pre-given” (Macey 48, 53, 54).

### *Conclusion*

Lacan’s relation to Surrealism is profoundly different from Freud’s. Unlike Freud, he published in the Surrealists’ magazine *Le Minotaure* on the topics of the shared interest: “The Problem of Style and the Psychiatric Conception of Paranoiac Forms of Experience” (in Volume 1) and “Motives of Paranoiac Crime: The Crime of Papin Sisters” (in Volume 3/4) (“On My Antecedents” 51, 57; Rabaté xxi).<sup>70</sup> As Macey notes, Lacan obviously had “more than a superficial knowledge of the subject and rather more than a passing interest therein”; in fact, “Surrealism is the only identifiable ‘school’ to which Lacan refers so consistently” (45). Lacan acknowledges the impact of the Surrealist “involuntary poetry” on his understanding of the difference between *speech*,

---

<sup>70</sup> According to Lacan himself, the connections he built through Surrealism eventually led him to Freudian psychoanalysis:

This brought me closer to the stage machinery of acting out [*passage à l’acte*] and, if only by confining myself to the all-purpose word “self-punishment” that Berlin-style criminology offered me through the mouthpiece of Alexander and Staub, I was led to Freud. (52)

Lacan was not alone. French psychiatrist and psychoanalyst Henry Ey, who was often in attendance at Lacan’s seminars, also admitted, “he first discovered psychoanalysis via surrealism rather than through medical textbooks” (Macey 47).



upon which psychoanalysis operates, and *language*, which effect on the subject is the symptom.

In the first *Manifesto of Surrealism*, Breton suggests that the practice of automatic writing makes one become “a recording apparatus” of one’s own thoughts:

SURREALISM, *n.* Psychic automatism in its pure state, by which one proposes to express – verbally, by means of the written word, or in any other manner – the actual functioning of thought. Dictated by thought, in the absence of any control exercised by reason, exempt from any aesthetic or moral concern. (26)

Not only does the definition of surrealism that he provides here present “an attempt to produce a stenographic record of dreams” (Macey 52), here the *Manifesto* also reveals the presence of graphocentrism embedded in the artistic productions of Surrealism. This graphocentrism, as I will argue in the following chapter, is inherited from nineteenth-century practices not even remotely associated with art. For the centuries to come, graphocentrism would be seen in the continuous practices of production of the multitudes of graphic traces by the human body. The expansion graphocentrism was achieved by the coordinated and institutionalized work of the variety of writing machines.

## PART II

### Writing the Body

*His essence escapes into apparatuses.*<sup>71</sup>

– Friedrich Kittler

---

<sup>71</sup> Kittler, *Gramophone, Film, Typewriter* 16.

## Chapter 5

### Fragmentation and Mobilization

#### 1. Converging Matters

This chapter is centered on the graphocentrism of the nineteenth century that evolved by the fast expansion of writing machines and their assemblages. There were many of these machine-assemblages – from the sphygmograph and the myograph to a variety of different single- and multiple-lens photo-cameras, from the techniques of faradization to architecture. At least for two centuries, these machines – alone or in assemblages with other machines – have been involved in the construction of *transparency*. But transparency for whom? That is the question we often ask today, concerned with what we now know about the totality of surveillance (and even more so, with what we do not know about it), with the loss of privacy, with the processes that diminish us by shrinking our “personality” to a mere “data point,” geographically located. We say now, we are “data subjects,” “constituted and accessed with regards to their particular position”:

The “data subject” is a conditional form of existence whose rights are dependent upon its behavior within digital networks. The observation and analysis of specific behaviors make it possible to draw generic profiles and to identify threats and targets. (Bauman et al.129)

How did it happen? Who did it to us? There is always “them,” who target and govern us, who peer into the relations of our social graphs, our precious network connections, which

we cannot give up enjoying, “amusing ourselves,” as Neil Postman wrote, “to death.”<sup>72</sup>

These are the questions my project seeks to answer by extending the history of cybernetics, one of the major mechanisms of production of “data subjects,” to the time of the structural change which Lacan identifies as the emergence of the subject of science. Having investigated the occurrence of this structural change in previous chapters, by following the trajectories suggested by Lacan, the final two chapters address several cases of the technological mediation of the nineteenth century and today.

The cases from the nineteenth century are crucial for the scientific research before psychoanalysis in the fields of physiology, psychiatry, and neurology. What draws my attention to them is that they present the cases of *transferential relations* in which emotions and desires originally associated with one person are unconsciously shifted to another person, mediated by machines. Among many cases that could fit such description, I choose those that contributed, directly or indirectly, to the formation of early psychoanalytic thought. By looking at today’s case of the interactive practices of app-computing, I suggest that despite several “technological revolutions” that seem to change our lives so crucially, we still belong to the same cybernetic episteme.

So, for whom have the machines of the nineteenth century and today – alone or in assemblages with other machines – been constructing the state of *transparency* that condition the data subject of the nineteenth century and today? Michel Foucault, among others, offered a historical reconstruction of the formation of the networks of compliance and efficiency that now sustain relations between the state and the economy of

---

<sup>72</sup> See Neil Postman’s book *Amusing Ourselves to Death*. New York, Penguin Books, 1996.

neoliberalism. His version of biopolitical governance as a means of subjugating populations to the social and political power, appealed, and still does, to many who have been looking for suitable instruments of critique. In the context of our discussion, for example, he spoke about the creation of “the asylum apparatus” and its transformation into “the hospital apparatus,” which led to the emergence of “the neurological body” (*Psychiatric Power* 180-182) as an example that we read, with Lacan, as a case of in-mixing of systems. Foucault, however, did not see it this way. His focus tends to be on power relations, rather than on the games that the Freudian and Lacanian subject plays “against itself,” driven by the forces beyond the pleasure principle.

In *Read My Desire*, Joan Copjec articulates the differences between psychoanalysis and the position of historicists. In her discussion of Foucault, she acknowledges his innovative reading of power:

In opposition to those sociological theories that sought to explain a given social phenomenon by referring to the system of power that intervened in it, directing and distorting the phenomenon from the outside, Foucault analyzed the internal regime of power that circulated through the phenomenon itself. (5)

However, she also offers her critical reading of Foucault, by pointing out that in his analysis of “the genealogy of social spaces and the resistances to it,” he overlooks

... [the] form of negation which, while written in language, is nonetheless without content. This type of negation cannot, by definition, be absorbed by the system it contests. ... [But] if it is desire rather than words that we are to take literally, this must mean that desire may register itself negatively in speech, that the relation between speech and desire, or social surface and desire, may be a negative one. (10, 14)

What interests me here is the function of a graphic trace in the processes by which the institutionalized apparatuses of knowledge and visibility produce the non-knowable and

the invisible. But in doing so, not only do they fail to embody power, they actually embody impotence. Read structurally, the subject of unconscious desire is not “subjected” to the metalanguage of these institutions, but instead, she or he is a complicit and passionate contributor to their production. I read such collaboration of the subject with the writing machines, exercised through the processes of its fragmentation and mobilization, as a two-pronged practice of digitization and the subsequent reestablishing of analog continuity.

In *Freudian Robot* (2010), Lydia H. Liu asks, “Where is the writing of digital media?” (15-37). She argues that not just Lacan, but also “Freud came somewhat close to the notion of statistical probability tending towards a possible resolution of the relationship of chance and determinism” (151). Lacan’s work, engaging Freud with the postwar intellectual scene, information theory and cybernetics, allows her to introduce the figure of the “Freudian robot” as “any networked being that embodies the feedback loop of the human-machine simulacra and cannot be free her/him/itself from the cybernetic unconscious” (2).

My project on Lacan’s cybernetics extends Liu’s question about writing beyond the digital at least because an apparently clear division between *digital* and *analog* is at the basis of the “cybernetic illusion,” which “reveals how cybernetic discourse is founded on a suppression of the “real” (i.e. the physical, continuous, material, analog) by the “symbolic” (i.e. the artificial, discrete, logical, digital)”<sup>73</sup> (Pias 543). I draw on the work of those who define digitization as a process of division, one which is not limited to

---

<sup>73</sup> Here, the words “real” and “symbolic” are not Lacanian orders, as it is clear from the explanation given by Claus Pias in parentheses.

electronic binarism; further, I question this binarism by looking at the *interactive* and *interpassive* practices of engagement with technology in the contexts of medical research of the nineteenth century.

In order to avoid the colloquial understanding of the term “digital,” we should consider its original meaning which stems from the function of division: “digital” is “divided.” As Florian Cramer explains,

‘Digital’ simply means that something is divided into discrete, countable units – countable using whatever system one chooses, whether zeroes and ones, decimal numbers, tally marks on a scrap of paper, or the fingers (digits) of one’s hand – which is where the word ‘digital’ comes from in the first place; in French, for example, the word is ‘numérique’. (n. p.)

Alexander R. Galloway elaborates further:

This is the operation of the digital: the making-discreet of the hitherto fluid, the hitherto whole, the hitherto integral. Such making discreet can be effected via separation, individuation, exteriorization, extension, or alienation. Any process that produces or maintains identity differences between two or more elements can be labeled digital. ... the basis categories of digitization [are]: essence alienated into instance, speech grammaticized into writing, idea extended into matter, memory exteriorized into media... (*Laruelle: Against the Digital* 52)

According to Cramer and Galloway, the notion of the digital should be thought beyond computation. The digital is first and foremost “a structural method” and as such, it “is not dependent on the technological constructs of the digital era that it is commonly associated with” (Charlton n. p). Below I will address some of the practices that I identify as the practices of digitization conducted within the nineteenth-century arrangements of clinical institutions that led to the development of new systems of measure and categorization produced by means of the patients’ interactions with machines.

What is “a graphic trace”? As many have argued (Daston and Lunbeck 2011; Daston and Galison 1992; Latour 1986), in the nineteenth century, a graphic trace was a new form of material evidence. French scientist, physiologist and chronophotographer Étienne-Jules Marey called it the “language of the phenomena themselves” (iii-vi). On the one hand, a graphic trace was an “image of objectivity” that responded to the new demands of conducting and presenting scientific research as “noninterventionist,” “mechanized science” that transcends the subjective view of researchers (Daston and Galison 82, 83).

Understood outside the evidential paradigm of nineteenth-century scientism, a graphic trace has different epistemological and theoretical implications: as such, it was much less “detached” from the body that produced it by interacting with machines. It was a material *connector* between the writing apparatus and the body that sealed the body-trace-machine assemblage by mobilizing the process of their inmixing.

A graphic trace is an object that undergoes scrutiny – analysis, categorization, measurement and, therefore, division. But it also causes the division. An ambiguity is inscribed in it: it exteriorizes the body and by doing this, it immediately introduces a loss. As such, a graphic trace is the anal object that is “the most transferable object,” a kind of an object that can be “stockpiled, stored, and taken together in groups” (Miller, “Objects *a*” n. p.). Lacan was known to identify money as an anal object; another example is data, of which a graphic trace is one of the instances. Miller writes:

In *L’angoisse*, ... the list of the five objects is made up of the three Freudian objects — oral object, anal object, phallic object — and the two Lacanian objects — the scopic object and the vocal object — and these five are the group that Lacan calls the “natural” objects *a*. Lacan shook up our comprehension of nature so much that one has to specify what is understood by that, without losing the



advantage of this word “natural.” It is necessary to understand that they come from a fragmented body, of which they are the scraps. (“Objects *a*” n. p.)

Understood this way, the function of division does not simply concern separation; quite the contrary, it implies a new modality of integration, by means of the object *a*, as well as of inscription and convergence with writing assemblages. The process of division brings inscription and integration onto another (micro) level. Despite the conception of a graphic trace in nineteenth-century science, nothing is really “evident” about a graphic trace, nor “scientifically objective.” Instead, it introduces the phenomenon of a new opacity, by which “scientific and technical work is made invisible by its own success”<sup>74</sup> (Latour, *Pandora’s Hope* 304).

This discussion takes us back to the moment when “the technological differentiation of optics, acoustics, and writing exploded Gutenberg’s writing monopoly around 1880,” a monopoly which, as Kittler argues, made possible “the fabrication of so-called Man” (*Gramophone, Film, Typewriter* 16). He described a “so-called Man” as the one whose “essence escapes into apparatuses”: “Machines take over functions of the central nervous system, and no longer, as in times past, merely those of muscles”; and Kittler elaborates:

...with this differentiation – and not with steam engines and railroads – a clear division occurs between matter and information, the real and the symbolic. ... For mechanized writing to be optimized, one can no longer dream of writing as the expression of individuals or the trace of bodies. The very forms, differences, and frequencies of its letters have to be reduced to formulas. So-called Man is split up into physiology and information technology. (16)

Here, I think, Kittler’s theorization, drawing on the Lacanian distinction between the real and the symbolic, takes this distinction a little too literally. Kittler’s reading of the

---

<sup>74</sup> By this description, Bruno Latour introduces the processes of *blackboxing*: “When a machine runs efficiently, when a matter of fact is settled, one need focus only on its inputs and outputs and not on its internal complexity” (*Pandora’s Hope* 304).

symbolic of the nineteenth century explores the mechanized machinic symbolic that is driven towards a further optimization and mechanization of writing, a process which he reads as distinct from “the trace of the bodies.” In this separation Kittler sees a cybernetic distinction between the imaginary and the symbolic which Lacan notes in *Seminar II* (306) and with which Kittler agrees (“The World of the Symbolic” 142). He follows Lacan’s discussion on Shannon’s information theory to emphasize that both Shannon and Lacan spoke about “scanning” (or, “scansion,” in Lacan), “by which discrete values per temporal unit are extracted from the analog continuity of telephone and gramophone vibrations – without worrying about sense” (140). For Kittler, this constitutes the break between Freudian and Lacanian thought “because its unit of measure does not consist of the clocks which established the energy constants in Mayer and in Freud, but of information machines such as dice, gates and digital calculators” (141). Kittler insists that “the foundation of psychoanalysis was based on the end of the print monopoly and on the historical separation of the different media” so that “telephone, film, phonograph and print ... shaped the psychic apparatus”:

Under high-tech conditions, therefore, psychoanalysis no longer constructs psychic apparatuses ... merely out of storage and transmission media, but rather incorporates the entire technical trial of storage, transmission and computation. Nothing else is signified by Lacan’s ‘methodological distinction’ of the imaginary, the real and the symbolic. (135)

There is a lot to take from this reading, and it has been affecting and continues to shape important scholarship on the archeology of media in psychoanalytic thought today.

However, Kittler’s compartmentalization of Lacan’s version of the psychic apparatus – the real, the imaginary and the symbolic – according to the media regimes and the models of storage, transmission and processing, illuminating as it is, exaggerates the notion of

division between these regimes, which does not allow him to account for (or at least, to articulate well enough) Lacan's notion of inmixing. Indeed, Kittler is correct in suggesting that Lacan's "conception of structure ... emerges from stochastic disorder" ("The World of the Symbolic" 142). But in a way, it emerges *against* such division, precisely, as a force or event of inmixing. Lacan introduces the notion of inmixing in *Seminar II* and suggests that it contains the double meaning:

The subject enters and mixes in with things – that may be the first meaning. The other one is this – an unconscious phenomenon which takes place on the symbolic level, as such decentered in relation to the *ego*, always takes place between two subjects. As soon as true speech emerges, mediating, it turns them into two very different subjects from what they were prior to speech. This means that they only start being constituted as subjects of speech once speech exists, and there is no before. (160)

"The in-mixing of subjects," in Lacan, is performed by means of the imaginary function. And if the latter is distinct from the symbolic, which, Lacan tells us, cybernetics clearly demonstrates, the division between the symbolic and the real, when it comes to the speaking being, is not so clear (and the complexity of their relation in Lacanian theory will only grow from *Seminar II* and on).

It may seem that by referring to inmixing, Lacan is not interested in "things" *per se* – that he is only concerned with "subjects." However, the notion of "the alienated subject" is possible only because the subject is in-mixed with "things," language being one of them. Such inmixing, for Lacan, does not only concern the symbolic; it also concerns both the imaginary, which "cannot be eliminated ... [from] the symbolic function on human discourse" (306), and the real, which disturbs and mobilizes the symbolic from within.

The notions of inmixing undermines the division between the internal and the external. Introducing the *Entwurf*<sup>75</sup> in *Seminar II*, Lacan emphasizes that the real is beyond the relation of externality: “externality and internality – this distinction makes no sense at all at the level of the real,” he maintains; “The real is without fissure. What I teach about Freud’s convergence with what we may call philosophy of science is that we have no means of apprehending this real – on any level and not only on that of knowledge – except via the go-between of the symbolic” (97). Here the real reveals itself in the symbolic and by this it complicates “a clear division” between the two realms that Kittler sees as identical to the division “between matter and information” (*Gramophone, Film, Typewriter* 16).

Take, for example, Freud’s enigmatic notion of “quantity” ( $Q$  and  $Q\eta$ ) that he introduced in the *Project*. As Strachey comments on the nature of  $Q$ , it is obvious, he argues, that Freud wanted to present it as “something material – ‘subject to the general laws of motion’ (p. 295)” (392). At the same time, “ $Q$  appears in two distinguishable forms,” as “ $Q$  in flow, passing through a neurone or from one neurone to another” and also, as a “more static” form [that is] “shown by ‘a cathected neurone filled with  $Q$ ’” (392). However, in later works like *The Interpretation of Dreams*, the material  $Q$  disappears; it reappears under the name of “psychical energy” which is “no longer ‘something material’; it has become something psychical” (Strachey 395). “Nevertheless,” Strachey observes (and Lacan agrees with him), “the change does not portend a complete abandonment of a physical basis,” revealing the “traces of the old neurological background” (395). In *Seminar VII, The Ethics of Psychoanalysis* (1959-1960), Lacan

---

<sup>75</sup> *Entwurf* is a shortened version of the original title of Freud’s *Project for a Scientific Psychology*.

notes that although Freud's *Project* is an attempt to isolate the subject from reality (as a homeostatic entity, it performs "the corrective activity" as a "closed system"), he ends up formulating "the theory of a neuronics apparatus in relation to which the organism remains exterior, just as much as the outside world" (46, 47).

It can be assumed from Freud's hypothesis of the transformation of quantity into quality (and his "theory of sensory organs shows it" too) that "this quality is inscribed [in the outside world] in a discontinuous way": "A sensory apparatus, Freud tells us, doesn't only play the role of extinguisher or of shock-absorber, like the  $\phi$  apparatus in general, but also plays the role of sieve" (*Seminar VII* 47). When Lacan's reading of Freud leads him to a discussion on imixing, the division between matter and information becomes blurry. This notion introduces a possibility of the *informatization* of matter, when matter (as both language and flesh) is conceived as informational. Here, matter is both "informing" (by means beyond the symbolic) and it is "in formation" as relentlessly "measured" and "sutured" to a mathematical quantity that expresses the probability of occurrence of a particular sequence of symbols, impulses or graphic traces.

This brings me to the graphocentrism of the nineteenth century and the machines involved in the processes of the constitution, development and reorganization of the clinic, which, following Kittler in "The World of the Symbolic" (139-140), we can identify as the processes of the fragmentation and mobilization of the (patient's) body. These processes, however, are driven by what Claus Pias calls a "cybernetic illusion" (547-549), which concerns an assumption that "all understanding of our world" is based on information and feedback (548). Speaking about the cybernetics of the 1950s, Pias notes "a theoretical shift"

...from experiments to instruments, from hypothetical constructions and pataphysical machines (just remember the discussions on laughing computers at Macy's) to instrumental hardware and institutionalized computer science, from speculations to explanations, from questions about the in-betweens to certainties of answers. (Pias 549)

In this, history indeed repeats itself by evoking what Pias, referring to Foucault, describes as “a phantasmagoric form of self-naturalization that shaded or hid these technologies” driven by “the anthropological illusion” of the eighteenth and nineteenth centuries (549). The repetition presented here by the “neurological body,” which Foucault narrates as a product of the institutionalization of the new regimes of governmentality, and the data subject, whose “conditional form of existence” (Bauman et al.) fully depends on the behaviour of its “network,” opens up the possibility to read these occurrences not as “historical” but as “structural” phenomena. I intend to do so in this and the final chapter by discussing the subject's engagement with writing machines.

## 2. Machines of Graphocentrism

A “so-called Man,” to use Kittler's formulation, is not an isolated entity but one who always enters assemblages where they operate and where they are being operated. The writing machines I discuss below supports the subject's position as being at the same time the empirical object of knowledge and the centre of knowledge; the subject needs to be understood and makes understanding possible. Unlike a Foucauldian historicist theory of knowledge, a Lacanian psychoanalytic concept of knowledge perforce involves pleasure and *jouissance*. And it refers to several different things. First of all, Lacan uses the distinction between *connaissance* and *savoir*, already implied in French. As far as

*connaissance*, he often gives it with a prefix *mé-* and theorizes it as the imaginary “misrecognition.” Instead, *savoir* is intersubjective, and therefore corresponds to the symbolic knowledge of the subject’s unconscious desire. Because this “knowledge is reduced to an articulation of signifiers,” Lacan suggests, it is “a means of *jouissance*,” which produces “a unary trait ... or, let’s say, an entropy” (*Seminar XVII* 50, 39-53, 48). “When the signifier is introduced as an apparatus of *jouissance*,” Lacan explains, “we should thus not be surprised to see something related to entropy appear, since entropy is defined precisely once one has started to lay this apparatus of signifiers over the physical world” (49). Lacan also notes that “machines” or “apparatuses” are different from “tools” because they function on the principle of accumulating energy, and in this way, they “are built according to this same logic, ... namely the function of the signifier”:

Today, a machine has nothing to do with a tool. There is no genealogy between a bucket and turbine. The proof is that you can quite legitimately call a little drawing you’ve done on a piece of paper a machine. It takes hardly anything. It is simply enough that you have conductible ink for it to be a very effective machine. And why shouldn’t it be conductible, since the mark in itself already conducts pleasure [*volupté*]?

In fact, if it does not seem to have been explored prior to analysis, it’s because no one knew how to extricate themselves from it except through recourse to the bizarre, to the anomaly, which serves as the basis for these terms, these names that pin down *masochism* this, *sadism* that. When we give these *-isms* we are at the level of zoology. (49)

Writing machines are thus machinic assemblages specializing in “extrication” by means of the production, preservation, and transmission of not just “the mark” *per se*, but “the glory of the mark,” as the unary trait allowing for the subject’s identification with the Other’s *jouissance* (49). “There is ... something altogether radical [in this] association ... with this glory of the mark,” which “is at the base, at the very root of fantasy”; and Lacan continues, “I am speaking of the mark on the skin, which in this fantasy, inspires nothing

other than a subject identifying itself as the object of *jouissance*” (49). If anything, the cybernetic illusion behind the rise of the writing assemblages – now and then – has revealed itself as the task of transmitting the graphic trace from one membrane to another, and back again.

## Architecture

In *Reassembling the Social* (2005), Bruno Latour has suggested that “the ‘panopticon’, an ideal prison allowing for a total surveillance of inmates imagined at the beginning of the nineteenth century by Jeremy Bentham, has remained a utopia”; instead, the architectural model that actually embodied the power of surveillance has been an oligopticon:

...the word oligopticon [is] the generic term, reserving the expression of ‘centers of calculation’ for the sites where literal and not simply metaphorical calculations are made possible by the mathematical or at least arithmetic format of the documents being brought back and forth. ...

Oligoptica are just those sites since they do exactly the opposite of panoptica: they see much too little to feed the megalomania of the inspector or the paranoia of the inspected, but what they see, they see it well – hence the use of this Greek word to designate an ingredient at once indispensable and that comes in tiny amounts (as in the ‘oligo-elements’ of your health store). From oligoptica, sturdy but extremely narrow views of the (connected) whole are made possible – as long as connections hold. (181)

Oligoptica, and not panoptica, should be associated with what Foucault (2003) describes as the “dehumanizing” event of medical separation of the patient’s body from the patient’s “person” and with the process of establishing a new relation between the patient and the assemblages of machines by means of the graphic trace. These machines optimized “the extremely narrow view” produced within oligoptica by compensating for “narrowness” through the durability and intensity of their connections with the subject, connections that eventually became prosthetic linkages. Here, architecture functions as a



machine of the localization and construction of sites for the purposes of division within the human material, where apparatuses mediate and regulate its internal dynamics. Here, Foucault's reading of the transformation of an asylum into a medical hospital could be useful.

In *Psychiatric Power*, Foucault notes that such transformation of one institution into another, which often could happen within one and same building, involved a careful structuration of the internal organization and the "patient material"; he notes,

...if we look at how patients were actually distributed within asylums at this time, we see that it had strictly nothing to do with the nosographic division of mental illnesses found in theoretical texts. In the actual organization of asylums you see no trace or effect of the distinction between mania and lypemania, between mania and monomania, and the series of manias and dementias. However, the divisions you do see being established concretely in the hospitals are completely different: these are the differences between the curable and the incurable, between calm and agitated patients, obedient and insubordinate patients, patients able to work and those unable to work, those punished and those unpunished, and patients to be placed under constant surveillance and those under surveillance from time to time or not at all. This is the distribution that effectively measured out the intra asylum space, and not the nosographic frameworks being constructed in theoretical treatises. (180)

In his reading of an asylum as a "disciplinary apparatus," Foucault distinguishes the elements of this institutional assemblage and its function in disciplinary practice. For example, he considers the use of medication as "the extension of asylum discipline to the surface of the body, or into the body the extension of the asylum regime, the regime of discipline, inside the patient's body" (181). And because "the entire asylum space is covered with his eyes, ears, and actions," Foucault argues, "the psychiatrist's body is the asylum itself; ultimately, the asylum machinery and the psychiatrist's organism must form one and the same thing" (182). The continuity that Foucault identifies in the functioning of this apparatus is important. For him, it constitutes the disciplinary

function. However, I think, the metonymical model that Foucault relies upon in his theorization is not enough. There is also a division, more so, a continuous division within this assemblage that redounds upon the relation of the subject to the objects of the drive. For the purposes of this discussion, we will focus on one such institution, the place where hysteria “was born,” the Salpêtrière, associated with such names as Duchenne de Boulogne, Jean-Martin Charcot, Albert Londe, and others whose work is discussed in this chapter.

In the nineteenth century, the research and treatment of hysteria that the French “Napoleon of neurology,” Jean-Martin Charcot, established at the Salpêtrière Hospital – despite the asylum’s gruesome history<sup>76</sup> – could be considered as a route towards its “rehabilitation.” In 1862, the time of his appointment at the Salpêtrière, hysteria was not among a wide range of Charcot’s neurological interests such as the disorders of “the cerebral cortex, the brain stem, the spinal cord, and the peripheral of nerves” (Goetz et al. 99). Hysteria fully occupied Charcot’s attention only after 1878, when it “emerged

---

<sup>76</sup> The status and history of the Salpêtrière as well as its physical location deserve our attention. In 1684, following the decision of Louis XIV, a former gunpowder factory was rebuilt by French architect Libéral Bruant into an asylum that was supposed to serve as a workhouse and an orphanage. It became, however, “a dumping ground for the poor of Paris,” “a prison for prostitutes, and a holding place for the mentally disabled, criminally insane, epileptics ... [and] was also notable for its population of rat.” (See Wikipedia entry on the Salpêtrière). According to Jean Losserand, “in 1690 there were already three thousand women there: three thousand female paupers, vagabonds, beggars, ‘decrepit women,’ ‘old maids,’ epileptics, ‘women in second childhood,’ ‘misshapen and malformed innocents,’ incorrigible women – madwomen” (qtd. in Didi-Huberman 13).

During that time, “the Salpêtrière was the largest asylum in Europe housing between 5,000 and 8,000 persons, when Paris had a population of only 500,000” (Goetz, *Charcot* xxii-xxiii). More specifically, in 1873 there were 4,383 people, including 580 employees, 87 “reposantes,” 2,780 “administered women,” 853 “demented women,” and 103 children. (qtd. in Didi-Huberman 13). “An improbable place of femininity,” “it was a city of women, the city of incurable women” (Didi-Huberman, 13); the place that for a long time had been also associated with terror, tortures and massacres, the most notable of which, the killing of mentally ill and unstable women in 1792, during the bloodshed of the French Revolution. But even before that, as Didi-Huberman notes by referring to Jacqueline Sonolet’s study of the hospital, “it was the mecca of female death, extending over 275, 448 square meters with a splendid cruciform church in the center” (Didi-Huberman 13).

smoothly out of organic neurology” (Goetz et al. 99), but even then it was clear that hysteria did not really fit Charcot’s organicism: what was “communicated” by the hysterical body was different. The difficulty of dealing with the subject of hysteria was that at that time it was considered “madness,” so in order to be able to address it, he had to prove that hysteria was an “illness.”

One of the steps Charcot took to resolve this issue was to open the doors of the secluded asylum-turned-hospital for the general public, and by merging an *examination room* with a *lecture hall*. To publicize the subject of hysteria, Charcot’s launched his famous Tuesday lectures, ‘*Leçons du mardi*,’ which were attended not only by medical students but also ‘physicians, artists, politicians, and other interested members of the community’ (Harris 470) who were drawn to the hospital despite its inconvenient remote location to hear and see the presentations, whose “scholarly interest was difficult to disentangle from more sensational voyeuristic attraction” (Goetz xi). As Goetz notes, the interested attendees were not limited to the local crowd: “Especially in the 1880s and in his last years, Charcot’s classroom was a *mélange* of doctors from eastern and western Europe and the Americas, as well as Parisian artists, journalists, politicians, and social commentators” (Goetz, “Visual Art in the Neurologic Career” 423). According to Charcot’s student Joseph Babinski, the experience was worth it: “Professor Charcot let the listeners witness his work as he elucidate[ed] ... various questions” and he spoke on “the subject matter [that was] not science already established, but science in its very genesis” (Babinski, “Preface” xvi, xv). By reading Charcot’s and others’ similar practices, Foucault identified this phenomenon as the “new availability of the patient’s body,” which he argued, made it possible “to inscribe the mechanisms of madness in a

system of differential knowledge in a medicine [which was] basically founded on pathological anatomy or pathological physiology” (*Psychiatric Power* 287). This process was crucial as an “attempt to inscribe madness within a general medical symptomatology, which the absence of the body and of differential diagnosis had always marginalized” (287).

Foucault also noted the “givenness” of the hysterics to the process of Charcot’s clinical study (although not without occasional rebellion) as well as the cases of “reproduction” and “dissemination” of a symptom within the nineteenth-century clinic, a development which he attributed to the new relation established between the patient and the doctor. He sees it as “a kind of hysterical vortex within psychiatric power and its disciplinary system” which included a multiplicity of different “maneuvers in this struggle between neurology and the hysteric” (309). For example, he writes,

...to function as a neurologist the doctor depends on the hysteric actually providing him with regular symptoms. To that extent, what the psychiatrist is offered not only ensures his own status as a neurologist, but also ensures the patient’s hold over the doctor, since the patient gains a hold over him by providing him with symptoms, since she thereby sanctions his status as doctor, and no longer as psychiatrist. (310)

In her critique of Charcot’s “industry of hysteria” and his alleged production of “hysteria on demand” at the Salpêtrière, Elaine Showalter points out a curious detail, the significance of which she, however, overlooks. She writes:

...Augustine’s cheerful willingness to assume whatever poses her audience desired took its toll on her psyche. During the period when she was being repeatedly photographed, she developed a curious symptom: she began to see everything in black and white. (Showalter 154; qtd. in Wilson 6)

In response to Showalter's claim of a "narrative of victimization" in Charcot's hysterical patients as "photographed, anaesthetized, locked up," Elizabeth A. Wilson points out that the specifics of this and other new symptoms evinced by the patients at the Salpêtrière are what really deserve our attention. The important questions to ask, she argues, are the following: "What kind of biological material (retina, optic nerve, visual cortex) stop processing color under the sway of a photographic seduction?" and "Why is the astonishment of Augustine's symptom attributed only to Charcot and not to the remarkable, hysterical vicissitudes of Augustine's eyes and brain?" (Wilson 6). In other words, these are questions about the principles of convergence, the possibilities and the limits of the body as being open to inmixing, to entering the assemblage of machines. "I do not think that the mind/body opposition, organic illnesses/psychical illnesses, is the real distinction that divided medicine between 1820 and 1880," Foucault intuitively admits (305). Rather, the question at issue is the degree of openness towards the processes of joint production of graphic traces by bodies and machines.

### Localized Faradization

Foucault describes "this new clinical capture of the neurological patient" as the process of a "correlative constitution of a neurological body before [the medical] gaze" that seeks for "the clinical revalidation of the almost impressionistic values of the [bodily] surface" and before the "apparatus of capture" (299). To Foucault, such a neurological examination consists of "looking for 'responses'" (299). The example he provides to illustrate this practice is the experimental research conducted by French electrophysiologist Guillaume-Benjamin Duchenne de Boulogne; with the help of a localized application of electricity, he induced a voltaic or a magnetic current to pass

through a coil of wire:

At the strictly elementary level, there was the founding discovery of neuropathology in Duchenne de Boulogne's research into what he called "localized Faradization," when, by moistening two electrodes, he succeeded in getting a single muscular response, or, rather, the response of a single muscle to electrification of the surface of the skin; by moistening the surface of the skin he succeeded in limiting the effect of the charge and obtained a single response of a single muscle: this was the founding discovery of everything here. (300)

In his book *The Mechanism of Human Facial Expression* (1862), Duchenne presented the goal of his research as the exploration of "the structure, the use, and the characteristics of the different parts of the human face" (5): "...through electrophysiological analysis and with the aid of photography, I will demonstrate the art of correctly portraying the expressive lines of the human face, which I will call the *orthography* of facial expression in movement" (1-2). Duchenne was convinced that "the spirit is ... the source of expression" and that "it activates the muscles that portray our emotions on the face with characteristic patterns" (1); however, he seemed quite comfortable substituting "the spirit" with electricity to achieve reliable scientific results.

In order to fully grasp "the orthography of facial expression in movement" and "the laws that govern the expressions of the human face" (2, 1), one had to study every muscle, or occasionally, small groups of muscles to determine the action of contractible elements. Since orthography is "a system of spelling or notation" and "the branch of knowledge which deals with letters and their combination to represent sounds and words" (*OED*), it could, in Duchenne's view, only be extricated from the fluidity of facial expression by means of a dual fragmentation. First, he isolated a muscle from its relation with other muscles and the whole facial organization by making it "act" on its own under the impact of an electric current. By this procedure, a muscle was supposed to re-enact its "natural"

performance, to retain its value in the orthographic system, measured against the different values of other elements of this system. Second, the performance of each isolated muscle was carefully photographed and assembled in a form of a grid structure in Duchenne's book. In the course of his research, Duchenne reached the conclusion that the "language of emotions" cannot be confidently read in the face: "the movements of facial expression are not controlled by the will as are those of limbs and trunk. Only the soul has the faculty of producing them truly" (Duchenne 33-34). Robert Sobieszek points out that Scottish anatomist Charles Bell had made a similar assumption about "some facial and bodily movements were utterly independent of the mind" prior to Duchenne; and after Duchenne's book came out, Darwin, who used *The Mechanism of Human Facial Expression* for his own study, also acknowledged that "the movement of expressions, and all the more important ones ... cannot be said to depend on the will of the individual" (qtd. in Sobieszek 45).

Although Duchenne believes that the spirit animates the movement of the face, the way he conducts his investigation and analysis demonstrates his intuition that the automaton of the face can be deciphered, and therefore it reveals the presence of a clear system or logic within its physicality. Georges Didi-Huberman notes that at that time, Duchenne "sought the differential muscular commissures of every emotion, pathos, and pathology"; his work was "an art of the detailed, the tenuous, the fragmented – an art of the commissure of territories, but always in search of a law prescribing their minuscule differences" (49).

In addition to the structural presentation of the facial orthography, by means of photographic plates, Duchenne's project demonstrated *reproducibility* of the facial

expressions by means of triggering muscular contractions with electrical probes.

According to Duchenne, the fact that the identical shapes of the contractions could be initiated over again in a form of recognizable facial expressions allowed him to identify them as a language-like set of means for communicating emotions.<sup>77</sup> He argued this language was given to humans by God and thus, the real source of this “mechanism” is a human soul that “activates the muscles that portray our emotions on the face with characteristic patterns” (Duchenne 1). Such argumentation reveals that he is simultaneously an investigating scientist-positivist (who, however, elevated himself to a God-like status by unmasking the facial mechanism of a divine origin) and a Cartesian thinker for whom “facial expression had another interior – the spirit.” “For Duchenne,” Tom Gunning writes, “the face was an extremely flexible medium on which the spirit writes a translatable message of emotions in a language created by God himself” (151, 153). While Gunning reads Duchenne’s understanding of ‘the face’ as a medium, it can also be seen as an interface: the entire apparatus of skin and muscles (hardware) is separate from the language installed there by the divine agency (software). When the face-machine is activated by the human spirit, the facial surface exhibits the “readable” physiognomic signs of language, which refer to certain established meanings. Or, as Duchenne put it himself,

In the face our Creator was not concerned with mechanical necessity. He was able in his wisdom or—please pardon this manner of speaking—in pursuing a divine fantasy, to put any particular muscles into action, one alone or several muscles together to be written briefly on man’s face. Once this language of facial

---

<sup>77</sup> Shortly afterwards, Charles Darwin, who was influenced by Duchenne’s work, went beyond the realm of exclusively human communication by suggesting that human facial “expressions provide a link between men and animals” in his own study *The Expression of the Emotions in Man and Animals* (1872) (Gunning 154).



expression was created, it sufficed for him to give all human beings the instinctive faculty of always expressing their sentiments by contracting the same muscles. This rendered the language universal and immutable. (19)

Didi-Huberman notes with regard to both Duchenne and Charcot that “this portraiture was a very particular art, in which ‘face’ was understood as ‘facies’”; he explains that “it was an art of surface territories, yet always seeking a more intimate localization, the concomitant convolution in the brain”:

Facies simultaneously signifies the singular air of a face, the particularity of its aspect, as well as the genre of species under which this aspect should be subsumed. The facies would thus be a face fixed to a synthetic combination of the universal and the singular: the visage fixed to the regime of representation, in a Hegelian sense. (Didi-Huberman 49)

In Duchenne’s book *Le Mécanisme de la physionomie humaine*, these synoptic plates lock the photographs in as a visual representation of the structured language of human emotions. It is important that Duchenne photographed the contraction of individual facial muscles in isolation, and his grid did not suggest (unless unintentionally) that these elements of the “language” are deictic. Our understanding of language as a system in which basic units can be identified on a differential basis had to wait for another half century, until Ferdinand de Saussure’s courses on linguistics in 1907. Duchenne conceived his “language” as consisting of the ideational signified and its material “production” on the facial surface, recognizable on the basis of its difference from other materializations. Indeed, in Duchenne’s investigation of the nuances of differentiation between the elements of this “language,” he assumed that their value depended precisely on such difference between the elements: the grids consisted of multiple data sets measured against each other, which pertains the two and three-item sets. Besides these intricacies, the signs that constituted Duchenne’s language of emotions were not

Saussurean but rather, Peircian. According to Charles Sanders Peirce's trichotomy of signs formulated between 1895 and 1902,

An Index is a sign which refers to the Object that it denotes by virtue of being really affected by that Object. [...] In so far as the Index is affected by the Object, it necessarily has some Quality in common with the Object, and it is in respect to these that it refers to the Object. It does, therefore, involve a sort of Icon, although an Icon of a peculiar kind; and it is not the mere resemblance of its Object, even in these respects which makes it a sign, but it is the actual modification of it by the Object. (Peirce 102)

In other words, it can be said that Duchenne's technique indexes the fragments of human face, claiming that such "index" is "inscribed" within the body by God. The difference between *Le Mécanisme de la physionomie humaine* and Charcot's album, *Iconographie photographique de la Salpêtrière*, is the difference between an index and an icon. To quote Peirce again,

An Icon is a sign which refers to the Object that it denotes merely by virtue of characters of its own, and which it possesses, just the same, whether any such Object actually exists or not. It is true that unless there really is such an Object, the Icon does not act as a sign; but this has nothing to do with its character as a sign. Anything whatever, be it quality, existent individual, or law, is an Icon of anything, in so far as it is like that thing and used as a sign of it. (102)

Before I proceed with *Iconographie*, I have one final remark with regard to Duchenne's method of localized faradization. In 1883, in one of the early responses to Duchenne's work, Charcot and his assistant photographer Paul Richer, as well as Étienne-Jules Marey and D. Hack Tuke, a writer for *The Journal of Mental Science*, see the parallels between their work precisely on the basis of their techniques which altogether Tuke identified as "tracing" (621), which he supported by the earlier observation of "MM Charcot and Richer" who had already "[drawn] a parallel between [the] mechanical excitation by hypnotism and localized faradization" (631).

## Photography

Foucault theorizes the neurological body as a body that does not only respond to the doctor's orders such as "sit," "stand," "breath," "lay down," and so on, but is able to produce the symptoms the doctor requests – beyond the patient's control: in other words, "neuropathology now provides the clinical instrument by which it is thought the individual can be captured at the level of this will itself" (302). Thus, he maintains, "it becomes possible to set out the phenomena analyzed in different levels according to an axis of the voluntary and the automatic" (301). The collected data (by Duchenne, Charcot and others) became subject to analysis and systematization in a form of a new cartography of the body that was now drafted with the consideration of mental agency. In the words of Elaine Showalter, "Having started with the intention of making objective scientific discoveries about hysteria, Charcot ended with a rigid model, a theoretical cage into which he squeezed all his patients" (36).

As Freud also noted in Charcot's obituary, the publication of *Iconographie photographique de la Salpêtrière* was especially important for making hysteria an object of medical nosology and changing its status. According to Freud, "in [Charcot's] mind's eye the apparent chaos presented by the continual repetition of the same symptoms then gave way to order: the new nosological pictures emerged, characterized by the constant combination of certain groups of symptoms"; and also, Freud maintains,

[Charcot] succeeded in proving, by an unbroken chain of argument, that these paralysees were the result of ideas which had dominated the patient's brain at moments of a special disposition. In this way, the mechanism of a hysterical phenomenon was explained for the first time. (Freud, "Charcot" 34)

Under Charcot's supervision, *Iconographie photographique de la Salpêtrière* was assembled by French physiologist and amateur photographer Paul-Marie-Léon Regnard (1850-1927) and French neurologist Désiré-Magloire Bourneville (1840-1919), then both at the beginning of their careers. In addition to his job as Charcot's interne des hôpitaux, Bourneville was also sharing his time and skills between other Parisian hospitals, such as the Bicêtre, the Hôpital Saint-Louis, and the Pitié, by doing similar work for these institutions, while Regnard was nearing the completion of his medical doctorate. At the Salpêtrière, they split the work in the following way: Regnard was in charge of the photographic process and Bourneville supplied the descriptions to accompany Regnard's photographs of hysterical patients. Regarding Charcot's engagement in this process, historians have offered different opinions. As Tom Gunning notes, some of his biographers "have questioned Charcot's personal devotion to photography as a method of medical investigation" and argued that Bourneville's enthusiasm was the driving force behind involving photography at the Salpêtrière (Gunning 159). Others have objected to this assertion, pointing out that Charcot was a student of Duchenne, whom he "willingly cited ... as a master," specifically referring to his work with photography (Marie 736; qtd. in Goetz, Bonduelle, and Gelfand 78). At the same time, both Regnard and Bourneville were not unfamiliar with Duchenne's work on human physiognomy, and were just as much influenced by his work as their supervisor. In fact, Regnard began working as Charcot's assistant in 1875 (Bergstein 89), the year of Duchenne's death, in order to re-establish the continuity of "the master's" innovative experimentations, for which Charcot's established an equipped room at the Salpêtrière and named it after Duchenne.

Both *Le Mécanisme* and *Iconographie* were conducted within the nineteenth-century system of thought and, thus, responded to the demand of their time: to “tie the act of seeing to the act of knowing” (Gunning 158, 154). Both used photography as the means of ‘vision,’ both presented the object of study ‘as seen through the lens of a photo camera.’ However, they were looking at it in a very different way, and documenting rather different phenomena. Duchenne’s grid was a systematized ‘complete’ record of the body’s responses to electro-stimulation, a set of elements of the “language of emotions” of which they were a visual presentation. Nothing, it seemed, could be added to that closed set. Charcot’s albums constituted an open set that implied the transitional moments that were not represented, but nevertheless were significant for the structure. As Joan Copjec notes about Charcot’s albums, “the photographs [were] to trace these movements as a way of identifying the symptoms’ difference from others, which would otherwise appear to be the same because the movements are executed too quickly and fluidly for the human eye to distinguish them” (“*Flavit et Dissipati Sunt*” 302). Thus, on the one hand, Charcot’s photographs were meant “to fix” the liability of hysteria; on the other hand, they demonstrated the essential incompleteness of such forms of representation: the continuity of the event called for analytic division by producing more graphic traces.

### *Conclusion*

Unlike Duchenne’s collection of the discrete elements of the language of emotions with each element possessing a semiotic value. Charcot’s album is an experiment in distinguishing the stages of hysterical attack by “measuring” them against one another in terms of their intensity and speed. With his photographers, he worked towards

constructing the logic of its continuity by converting it into data. Charcot's albums are an experiment in digitization of a psychosomatic event. As James Charlton describes such a process,

[it] is an instance of a digital structural method that is a function of both a shared agency and a fragmented isolation that relocates the individual at the spatio-temporal centre of the materiality that is the work. What we have is not one continuous material but multiple co-constituted materialities all of which are inter-connected in the relational network of the piece. (n.p.)

The work of Albert Londe, who continued working with Charcot in the 1880s, is crucial to this process of digitization. He is mostly known for experiments on chronophotography as combined processes of fragmentation and mobilization of data. In the 1880s, in addition to chronophotography, Londe used stereoscopic three-dimensional photography to produce better records of the body's surface. "In his drive to master the analysis of space and time through photography," Gunning comments, "Londe seems to have created a counterforce to his subject's lack of bodily control; he attempted to master through technology behavior that otherwise defied order" (160). What also follows from Gunning's intuitive reading of Londe's work is that a photographic apparatus (in all its variations) was not a "neutral" machine for observing and producing scientific proofs. Instead, it was one of the actants of the assemblage of the in-mixed systems that affected the reproducibility of hysterical symptoms. In other words, the processes mobilized by the engagement with writing machines of the nineteenth century suggest the definition of digitization as a process of division, not limited to electronic binarism. They reveal the communicational, and hence control, functions of digitization (qua Wiener) and the reproducibility of digitized psychoanalytic processes i.e. the performativity of hysteria.

## PART III

### Eximate Machines

*...cybernetics gets more and more complicated, makes a chain, then a network.*

*Yet it is founded on the theft of information, quite a simple thing.<sup>78</sup>*

*– Michel Serres*

---

<sup>78</sup> Serres, *The Parasite*, 37.

## Chapter 6

### Complicity and Interpassivity

#### 1. Ideology of Tracing

The epoch of graphocentrism did not end in the nineteenth century. We are living it now. After a journey through several centuries, this chapter returns us to the present in order to suggest a structural similarity of writing assemblages of the nineteenth century and today. The writing machines to which we are attached today are “extimate,” to use Lacan’s term, theorized by Miller. Despite the ideologies of personalization and the promises of security, they explicitly deny the very possibilities of intimacy by revealing the Other present at the very core of subjectivity (Miller, “Extimity” n.p.). The inside includes the outside.

By investigating the case of one of the most recent technologies, mobile apps (and “smart” technologies in general) in this chapter, I address the questions of governance and control envisioned by cybernetics. As in the previous chapter, here I look at the human-machine assemblages we create with our machines today to argue that mobile apps are different from other software because of the role they play in transforming the configuration of actors in such assemblages. The meaning of such a reconfiguration is veiled by discourses of “innovation,” “creativity,” “sustainability,” “productivity,” and “transparency,” which advocate the extensive use of cloud-based technology for the sake



of generating more data. This process results in the creation of an environment where “the body-across-platforms as the body with the data” becomes “the body as the data it produces” (Clough 2012, 2015). The body-across-platforms acquires the property of programmability when the users “actively participate in staging the scene of [their] own passive submission – and ... view such participation as a form of power sharing” (Andrejevic 15). Slavoj Žižek identifies this as a relation of “interpassivity” (*The Žižek Reader* 102-124) – a forced pretense of being passive, while actually being frantically engaged in the production of data. In this context, I suggest that mobile apps as elements of cloud computing are a “media species” (Manovich 2013) unlike other software; they impose a kind of “totalitarian interactivity” (Manovich 1996), which manipulates users by imposing on them its demand for attention, dedication, and complicity to and with the machinic network 24/7.

The interpassive relation with technology, I argue, is based on the logic of “prosthesis,” which can be and should be distinguished from the logic of “extension.” They are different modalities or configurations of possibilities, impossibilities, contingences and necessities of being with technology. I argue that the distinction between these two logics and modalities, developed, among several others, by Marshall McLuhan, whose concept of technology as “the extensions of man” was adapted by media theory, can be made explicit in the context of cybernetics, which conceives the two modalities as continuously and mutually transforming in how they work, in time, against any boundary. And finally, I explain why such a distinction is useful for reading mobile apps and the practices they enable for the production of the “data subject” (Bauman et al., 2014). This discussion

responds to the question formulated by Lydia H. Liu, “Where is writing in digital media?”

Cybernetic self-regulating systems cannot be thought without the notion of “network” that enables the feedback and transmission of information between automata and the environment or between different systems. In his 1954 book, *What Is Cybernetics?*, Guilbaud clarifies that the network of relations, or “the pattern of interwoven connections,” has been of the primary concern for cyberneticians:

“Network” here is at once a metaphor and more than a metaphor. ... In a system of cells or boxes interconnected by pathways, it is possible, as in the case of the simplest of schemas – family tree – that there may never be more than one way of going from one cell to another, so that in order to return to the starting-point we have to retrace our path. There are thus no closed circuits, and the “network” scarcely deserves the name. But as soon as the schema becomes more complicated, closed circuits (also termed “loops” or “meshes”) make their appearance. The presence of such loops in the schema of a servo-mechanism is quite fundamental; it is from them that “reflex” and “reactive” structures are formed. (15, 17)

The notions of “feedback” and “communication” between self-regulating systems imply that these systems are networked. This complicates the understanding of boundaries between complex systems, which can now be thought of as either porous or imaginary. This is where a “network” is no longer simply a metaphorical figure of thought, but becomes a metonymical relation of systems that insists on their material contiguity (in space) and continuity (in time).

Such a model of a complex mesh or network materialised a decade later, in 1964, when American electrical engineer Paul Baran invented a packet switching technology designed for transmitting fragmented messages through the best available nodes of a distributed network. This distributed structure, different from centralised and

decentralised networks, soon became a model for the ARPANET, the first large wide-area communication network established by the U.S. Department of Defence in 1969.

This distributed structure of regulated communication expressed “a distinctly cybernetic notion of design” (Pickering 32). As Andrew Pickering explains, unlike the usual notion of design, which privileges theory and

... entails the formulation of a plan which is then imposed upon matter ... the cybernetic approach entails ... a continuing interaction with materials, human and nonhuman, to explore what might be achieved – what one might call an evolutionary approach to design, that necessarily entails a degree of respect for the other. (32)

This decidedly optimistic description, however, does not deny the possibility of distributed control on the micro-level (which the notion of “regulation” implies), and as such cybernetics remains a way of subsuming “the other” to the system.

Spatially, the cybernetic communicational network has spread, at first, through the United States and later, across the globe, gradually creating a smooth area of regulated communication through the micro-management of information flows. Luciana Parisi, in *Contagious Architecture*, provides an example of the subsumption of “the other” by the system, noting that neoliberal space is “defined by the (networking) movement of people” (160). The space of the urban and the space of business thus become isomorphic, as they are mediated by an invariant function that establishes a topological connectedness driven by local interactions. It has been argued that this fusion between architectural space and the space of the market – this “movement-space” that has joined them together into a decentralized neoliberal managing of subjectivity – only affirms “the generalization of the market form itself” (160). In other words, contemporary architecture and design have been accused of adopting the philosophical and critical conceptions of

space, and in particular the smooth space of control, to the operations of the neoliberal market, the ontological being of which has come to engulf all forms of aesthetics, culture, and technology (160).

Temporally, the distributed structure of regulated communication has established a new relation between and among past, present, and the future, one founded on the idea of the recordable and retrievable past and of the pre-mediated (Grusin, 2010), predictable and pre-planned by apps future – a smooth temporality of the now where we live a life “on the record” that is ubiquitously stored by machines without our consent. As Rob Coley and Dean Lockwood write, capitalism “deteritorializes, renders fluid, unleashes desire,” “but only to record, to regulate, to sort, sieve, anticipate and modulate [it] by virtue of the technology of control” (23). Christopher Nolan’s film *Inception* (2010) about “a team of professional corporate thieves” exploring the possibilities of “extracting lucrative industrial information from their targets’ subconscious minds as they sleep” provides a potent metaphor for “cloud time”: “the inception of the future” (Coley and Lockwood 3). This is George Orwell’s *Nineteen Eighty-Four*: “Who controls the past controls the future; who controls the present controls the past,” with a new twist: ... who controls the future controls the present.

Shortly after Baran’s invention of the message transmission via a distributed network, “man’s movement [was linked] to his communication,”<sup>79</sup> marking the “move from a mechanical to an electronic environment” (Wigley 385). As Mark Wigley points out in

---

<sup>79</sup> The title of the special issue of *Ekistics* (a journal dedicated to the science of human settlements defined by Constantinos Doxiadis) from May 1970 that discussed the “move from a mechanical to an electronic environment.” The topic of the Delos conference that year, was “From Man’s Movements to His Communications” (Wigley 385).

“Network Fever,” these topics became the subject of Greek architect Constantinos Doxiadis’ annual Delos Symposia of Ekistics held on board his yacht New Hellas from the early 1960s to the mid-1970s. During these meetings, renowned architects, biologists, archaeologists, engineers, linguists, geneticists, psychologists, psychiatrists, anthropologists, along with musicians, literary scholars, historians and philosophers gathered to discuss the future of human dwelling. Doxiadis defined Ekistics as the study of a “universal settlement” in the form of “a worldwide city, threatened by its own torrential expansion” (1963). He believed such a city would be constituted by a constellation of connected “units of space” and, as such, would form a complex “system of Networks, physical and managerial, by which our society operates”<sup>80</sup> (*Ekistics*, 1969). The “relationship of the units of space” would condition “to a great extent the relationship between people”<sup>81</sup> (*Ekistics*, 1968) in that it would teach them to associate their need for connectedness with a certain technological design, be it a system of dwelling or a mobile network.

Rethinking the notion of a “network” of dwelling in terms of circulation and traffic actually began several decades prior to the Delos symposium, during the fourth Congrès internationaux d'architecture modern (CIAM) held in Moscow in 1933. The floating Delos symposium was modelled upon the CIAM, and picked up its concerns in the 1960s. It was McLuhan who took “the CIAM argument in the direction of electronics” by announcing “on the second morning of the first Delos boat trip that electronics presents new challenges to planners because this latest prosthetic extension of the body defines an

---

<sup>80</sup> “Networks: Lanwair.” *Ekistics* (April, 1969).

<sup>81</sup> “Relationship of Units in Space.” *Ekistics* (June, 1968).

entirely new form of space” (Wigley 382, 383). In the setting of that floating conference, on July 6, 1963, McLuhan met his longtime inspirational figure, from whom he borrowed the notion of “prosthetic extension,” American neo-futuristic architect, inventor, and systems theorist Buckminster Fuller. In his illuminating discussion of the Delos conferences, Wigley describes this meeting of “a short man in dark pants, close-fitting white jacket, crisp shirt, and tie with a tall man in light pants and a loose-fitting summer shirt covered with a geometric pattern” as the historic moment that began “the radical confusion of architecture and networks” (377, 376).<sup>82</sup>

Both Fuller and McLuhan spoke of prosthetics in their work. McLuhan was influenced by Fuller’s *Nine Chains to the Moon* (1938), in which Fuller described technology as an extension of the body and “had been insisting that traditional architecture had to give way to a ‘world wide dwelling services network’ modeled on the telephone network;” here, he “visualized global electronic networks long before they arrived” (Wigley 376). However, McLuhan’s notion of a “global village,” which conceptually was pre-figured by Fuller, could be traced to more than one source. Eric McLuhan, for example, suggests that “it comes either from James Joyce’s *Finnegans Wake* or else from P. Wyndham

---

<sup>82</sup> Wigley mentions that this meeting, as enticing as it was for both thinkers, was not without some tension:

[Fuller] felt that his ideas, including the concept of the global village with which McLuhan would soon become famous, had been taken without acknowledgment. Yet a strong friendship was immediately established. This was greatly assisted by the fact that, as Fuller recalls it, McLuhan was carrying copies of his *Nine Chains to the Moon* (which had just been republished) and *No More Second Hand God* when they first met on the boat, declaring, “I am your disciple. ... I have joined your conspiracy.” McLuhan, who had denied getting the idea of prosthetic extension from anyone until he met Fuller, later told his friends that Fuller was too much a “linear” thinker. Fuller told his friends that McLuhan never had original ideas, nor claimed to. He simply remixed available material in an original way. (377-378)

Lewis's *America and Cosmic Man* if it comes from anywhere but [Marshall McLuhan's] own imagination" (n. p.).<sup>83</sup>

Passionately engaged with the interdisciplinary discussions during the Delos symposium, McLuhan was eager to develop this notion of prosthetics even further. As Wigley writes,

...the boat became an amplifier for his argument that electronics is actually biological, an organic system with particular effects. The evolution of technology is the evolution of the human body. Networks of communication, like any technology, are prosthetic extensions of the body. They are new body parts and constitute a new organism, a new spatial system, a new architecture. This image of prosthetics – which McLuhan had first presented a year earlier in *The Gutenberg Galaxy* and was busy elaborating for *Understanding Media: The Extensions of Man*, which would launch him to superstardom when it came out a year later – was now reframed as an architectural image. (376)

Indeed, in *Understanding Media*, McLuhan specifies the technological enhancement of various human capacities: he defines the written word as “an eye for an ear,” clothing as “our extended skin,” clocks as producing “the scent of time,” and the telegraph as “the social hormone.” In the last chapter of the book he arrives at a cybernetic scenario of automation based on continuous exchanges between human and machine facilitated by their extensions. McLuhan explores the meanings of such relations, thereby expressing a

---

<sup>83</sup> In the commentary Eric McLuhan provided for *McLuhan Studies*, he clarified it further: “In it he uses two phrases, both allusive of the Pope’s annual Easter message to the City (of Rome) and the World, ‘Urbi et Orbi.’ Joyce turned this into ‘urban and orbal’ in one place in the *Wake*, and into ‘the urb, it orbs’ in another.” As far the Lewis reference, Eric McLuhan writes the following: “Wyndham Lewis and my father were friends in the 40s and 50s. Lewis published *America and Cosmic Man* in 1948 (Britain) and 1949 (US). Here is the eleventh paragraph of Chapter Two of that book:

If you look at North America on the map of the world, you see a very uniform mass. It is more concentrated and uniform than any other land mass. You see an immense area full of people speaking one tongue: not a checkerboard of ‘united states’ at all but one huge State. ‘United States’ is today a misnomer. And since plural sovereignty anyway – now that the earth has become one big village, with telephones laid on from one end to the other, and air transport, both speedy and safe – must be a little farcial, the plurality implied in that title could be removed as a good example to the rest of the world, and the U. S. A. become the American Union.” (“The Source of the Term, ‘Global Village’” n. p.)

I thank Allan Pero for brining the work of Wyndham Lewis to my attention.

non-static view of technology. Take, for example, the passage from his essay “The Gadget Lover,” where he writes:

Physiologically, man in the normal use of technology (or his variously extended body) is perpetually modified by it and in turn finds ever new ways of modifying his technology. Man becomes, as it were, the sex organ of the machine world, as the bee of the plant world, enabling it to fecundate and to evolve ever new forms. The machine world reciprocates man’s love by expediting his wishes and desires, namely, in providing him with wealth. (McLuhan 46)

This description seems more than apt today, when we constantly feed data to our machines that subsequently “learn” our preferences, search our requests and “memorise” the patterns of our online activity in order to improve their algorithmic responses and, thereby pass as “intuitive,” “intelligent” or simply, “friendly” to their users.

McLuhan’s vision of the technologically enhanced, or networked, user dovetails with the cybernetic conception of the world as a regulatory machine on a planetary scale.

“Because of this, cybernetics is often credited with inaugurating a particular historical relationship between subject and world,” Alexander Galloway writes; “specifically, cybernetics refashions the world as a system and refashions the subject as an agent” (“The Cybernetic Hypothesis” 113). As we know, the agent in the cybernetic system does not need to be human, but can also be machine or animal. And it was cybernetic thought, with its notion of “cybernetic synthesis” that opened up the way to think of each of these “agents” in terms of one another. As David Mindell points out, the notion of “synthesis” is at the foundation of Wiener’s theory of “communication in the animal and the machine.” Wiener argued that “human behavior and dynamic mechanisms operated according to similar principles” and, thereby “posited the analogy between the digital computer ... and the human nervous system,” which he called “a new science of



feedback” (4). Within this new science, any kind of agent can be exploited, even a machine; the human agent, however, is not simply being exploited, deceived or manipulated, but overtly allows for such exploitation, deception and manipulation to happen by being complicit with the system, or systems, of intelligent machines.

## 2. Prosthetic Extension

In the scholarship from media and technology studies to posthumanism, the line between “extension” and “prosthesis” has always been rather blurry and a clear distinction between them has never been made. In this chapter, I argue that the concepts of extension and prosthesis are two modalities of being with technology, and I use these concepts to highlight the difference between mobile apps and other software. At the same time, I suggest two parallel ways of distinguishing between these two modalities by reading the difference between them as the difference between 1) metonymy and metaphor and 2) surplus and lack.

	two parallel ways of differentiating	
modalities	1	2
extension (other software)	metonymy	surplus
prosthesis (mobile apps)	metaphor	lack
production	body-across-platforms	complicit subject

**Table 1. Two modalities of our relation with technology.**

As I have suggested, the modalities of extension and prosthesis are logically different. The notion of extension is governed by the logic of metonymy that implies contiguity, but the logic of prosthesis is governed by the logic of metaphor. Metonymy and metaphor are both sustained by the law of substitution: while metonymy is a substitution of a part for a whole, however, metaphor is a substitution on the basis of resemblance.

This understanding allows us to speak about the production of the body-across-platforms as one that itself becomes a platform. As Marc Andreessen conceives it, a platform is “a system that can be reprogrammed” and customised in order to adapt “to countless needs and niches that the platform’s original developers could not have possibly contemplated.” This implies its essential programmability: “If you can program it, then it’s a platform. If you can’t, then it’s not.”<sup>84</sup> The logic of “softwarization” (Manovich, 2013) is the logic of extension; while the logic of “appification” (IDC, 2010)<sup>85</sup> is that of prosthesis. The former is also the logic of metonymy and it implies contiguity as the adjacency of different entities; the latter is the logic of metaphor and it is based on the laws of discontinuity and substitution on the basis of resemblance. Yet neither the case of extension and prosthesis, nor that of softwarization and appification, constitute stable oppositions.

The modality of extension implies an “addition” of something “extra” in order to extend the body or enhance a certain physical or mental capacity. Extended, the body is “more

---

<sup>84</sup> Quoted in Bogost, Ian and Nick Montfort. “Platform Studies: Frequently Questioned Answers.” *Digital Arts and Culture*, December 12–15 (Irvine, Calif., 2009), [http://nickm.com/if/bogost\\_montfort\\_dac\\_2009.pdf](http://nickm.com/if/bogost_montfort_dac_2009.pdf).

<sup>85</sup> See: “IDC Predicts 2014 Will Be a Year of Escalation, Consolidation, and Innovation as the Transition to IT’s ‘3rd Platform’ Accelerates,” <http://www.businesswire.com/news/home/20101213005128/en/IDC-Forecasts-Worldwide-Mobile-Applications-Revenues-Experience>.

than itself.” Such a description could be quite problematic if we treat the body prior to extension as original or normal. However, the body is always in continuous transformation; it either absorbs or rejects, but only to absorb something else again. An “original” form does not exist. The body is not insensitive to extensions or “surpluses” however; addiction is a constant risk. From here we can make a connection to the psychopathology of the prosthesis that often accompanies the move from prosthesis as a surplus to this surplus’s constitution of a lack. This is crucial to a psychoanalytic reading of an addiction to technology. As Luca Bosetti notes, “the words ‘addiction’ and ‘prosthesis’ have a very similar meaning;” he continues:

Theorists of addiction point out that the term “addiction” comes from the Latin *ad-dictum* and is linked to the terms ‘edicts’ that originally designated a new law added to the juridical body, and then came to designate the juridical act that assigns a person or a thing to the will of another. Theorists of the posthuman, on the other hand, remind us that the term prosthesis comes from the Greek *pro* and *thesis* and literally also means ‘addiction’, although originally it had a grammatical, rather than medical, meaning in English and referred to the addition of a syllable at the beginning of a word and not to a replacement for a part of the body. Both addiction and prosthesis, therefore, refer to something that is added. Moreover, ... these definitions show that prosthesis and addiction originally also both referred not – as they currently do – to something that is added to the body, but to something that is added to signification, to the signifier of the law in the case of addiction and to the signifier as such in the case of the grammatical prosthesis. (411)

For the reasons like these, there is often an absence of a clear distinction between the two modalities of being with technology – extension and prosthesis. Indeed, there are constant reversals from one mode to another. This is not a coincidence and can be traced to the foundations of cybernetic thought. At the same time, the two terms are not interchangeable in the works of early cyberneticians; rather, they designate a certain degree of difference or alteration observable in the object, either because of processes of interaction with the outside world or because of certain internal developments.

A user engaged with what is now a global network managed by “smart” technologies often has his or her experience configured for her in the modality, on the one hand, of an extension; his or her devices are fashioned as useful and empowering additions, for example, when it comes to managing multiple daily tasks, organising a big research project, or maintaining social or communal exchanges. On the other hand, this modality leads towards the modality of the prosthesis. It further reifies and alienates users by leaving them no other option but to engage with machines for the sake of data production which in turn increases the virtualisation of labour. Today, it is common knowledge that the performance of the human-machine “collaboration” is only optimised when the relation between them tends towards prosthetic modality. When the elements of the assemblage synchronise and merge, their systems become analogous and they enter the regime of co-dependency: when the matter is informational, as Clough insists,<sup>86</sup> both the information machine and the human find themselves in need of each other.

Here, alongside the production of the body-across-platforms, need constitutes the production of the complicit subject.<sup>87</sup> Both productions, the body-across-platforms and the complicit subject, are important for my discussion of the difference between softwarization and appification as a dialectic relation between the modalities of extension and prosthesis. The body-across-platforms is a volatile formation that is constantly being subjected to measurement and surveillance. The complicit subject is lodged in the

---

<sup>86</sup> See, for example, my interview with Clough and Galloway in *Fibreculture* 25 (2015): “On Governance, Blackboxing, Measure, Body, Affect and Apps. A Conversation with Patricia Clough and Alexander R. Galloway.”

<sup>87</sup> The terms “complicit subject” is not ideal as it is a form of “terminological stuttering,” since this specific form of complicity as dependence is already a pure form of subjectivity, as I understand it. However, for the purposes of my discussion on the phenomenon on complicity, I retain the use of this term.

inexistent realm between the surplus and the lack, always in never ending labour, re-producing itself as a gap.

The two modalities are in the process of continuous transformation in how they work, in time, against any boundary whatsoever – just as such a transformative relation was conceived by cybernetics. Thus, the lack of distinction between them is not a coincidence; it is a programmed omission. Let us look at Wiener. In the introduction to *Cybernetics*, he outlines the practical benefits of cybernetic ideas in different areas, and ‘one of these is the matter of prosthesis for lost or paralyzed limbs’ (25). He writes:

The loss of a segment of limb implies not only the loss of the purely passive support of the missing segment or its value as mechanical extension of the stump, and the loss of the contractile power of its muscles, but implies as well the loss of all cutaneous and kinesthetic sensations originating in it. The first two losses are what the artificial limb-maker now tries to replace. The third has so far been beyond his scope. (Wiener, *Cybernetics* 26).

Although it might seem that he uses both terms “prosthesis” and “extension” when referring to the same object, they designate different relations between the organic matter of the human body and the non-organic matter of the technological object. For Wiener, both prosthesis and extension are replacements or substitutions for loss. However, while an extension is a “passive” or “mechanical” support of the stump that may also have an aesthetic value and restore the imaginary consistency of the body, a prosthesis is cybernetic because it functions as “the replacement of lost senses” (25). A cybernetic prosthesis is different to extension in that it merges with the organic tissue of the body and the nervous system by means of feedback; the information flow trespassing the boundaries of organic and non-organic matter. In this sense, although the prosthesis is still partly imaginary, it also presents the possibility for change or transgression of the

imaginary body acquired at the “mirror stage,” to use a Lacanian notion, which sometimes leads to original solutions for “virtualising” and “remixing” senses. Wiener writes: “The ideas of communication engineering have already been applied by McCullough to the problem of the replacement of lost senses,” he writes, “in the construction of an instrument to enable the blind to read print by hearing” (25).<sup>88</sup> With the cybernetic prosthesis, when ‘data move across various kinds of interfaces, analogical relationships are the links that allow patterns to be preserved from one modality to another. As N. Katherine Hayles writes in *How We Became Posthuman*, “(a)nalogy is thus constituted as a universal exchange system that allows data to move across boundaries” (98).

It is in this analogical reasoning of cybernetics that we find the origins of McLuhan’s theory of extension. In “The Phantom Captain,” a short story from Fuller’s book *Nine Chains to the Moon*, which McLuhan held in his hands when he met the author on Doxiadis’ yacht, there are several passages that anybody familiar with even a “basic McLuhan” might recognise immediately. In one of the passages, Fuller writes that it has “been but a step from false adornment and artificial surface extensions of the human body, in the matter of clothing, to shelter; and from shelter to the myriad of tools and instruments that were rationally evolved at an earlier time by [man] in the extension of his own mechanism” (25). In another he writes: “Holding the full significance of this thought in mind, one can suddenly comprehend, ... that the automobiles ... are extensions of their drivers, just as are the drivers’ hats, coats, shoes and faces; it is the

---

<sup>88</sup> On the research on disability conducted by the Bell Labs and, later, the MIT, see Mills, Mara. “On Disability and Cybernetics: Helen Keller, Norbert Wiener, and the Hearing Glove.” *differences: A Journal of Feminist Cultural Studies* 22.2-3 (2011): 74-111.

progression of boxes within boxes of childhood play” (Fuller 28). In another example, Fuller reaches an astonishing conclusion about the “extended man,” whose “inner spirit” or “consciousness” he describes in a Cartesian manner as “the phantom captain.” “The thrilling inference of the phantom captaincy conception is that it not only precludes the possibility of the operation of extended machinery without the volition of inner man,” Fuller writes, “but that the unit mechanisms are doing for man what politics has consistently failed to accomplish” (28-29). Without such captaincy, Fuller maintains, man disintegrates.

Thus, McLuhan’s term “prosthetic extension” is not a mere collision of two modalities, but, rather, points to the moment of their synchronisation, the moment when they become analogues and contiguous, however temporarily. For McLuhan, the “message” means the change of scale that occurs as a cascade, or “the progression of boxes within boxes,” such as when old media become the content of new media and so on. Should not the same logic apply to “extension” and “prosthesis”? Every extension eventually becomes prosthetic, as the self-regulating system circulates between a surplus (extension) and a lack (prosthesis). McLuhan’s “prosthetic extension” does not just simply maintain the agent’s ubiquitous connection or relation with a self-regulatory and self-referential system, but sets the system up itself. A “system,” he says, is the entire assemblage: 1) Narcissus 2) mesmerised by 3) his reflection in 4) the water:

This extension of himself by mirror numbed his perceptions until he became the servomechanism of his own extended or repeated image. ... He had adapted to his extension of himself and had become a closed system. ... men at once become fascinated by any extension of themselves in any material other than themselves. (41)

In other words, an extended man is the one who has locked himself out or, as McLuhan puts it, is “self-amputated” (42-43) from the world. Such a conception of a man and his extension is a reversal of Jacques Lacan’s notion of the subject. For Lacan, the subject misrecognises a reflection in the mirror as the “self,” which produces the split subject. In the words of Samo Tomšič, “Prosthesis is the visibility of Splatung, the bodily split” (146); thus, the “self” is a secondary imaginary creation that masks inconsistency and the split. For McLuhan, on the contrary, the “self” seems to be initially present, but the engagement with media causes the substitution of the “self” with an extension so that the “self” gets detached or, “amputated”: “the image produces a generalized numbness or shock that declines recognition. Self-amputation forbids self-recognition” (43). Despite the difference, both thinkers suggest technology traumatises, affects, and deceives.

### Figure of Recursion

When Jay David Bolter and Richard Grusin introduce the term “remediation,” they also make a reference to McLuhan’s notion of “extension” “of the human sensorium” that “can even be regarded as an anticipation of Donna Haraway’s cyborg” (77) which, as above, also fulfils the logic of the prosthesis. Indeed, as I have argued above, if extension and prosthesis are two modalities of being with technology, they cannot be simply opposed. Similarly, the cyborg and the human cannot be simply opposed because these modalities co-exist topologically as two sides of one surface. Yet there are subtle differences between them. It is true that, over time, the cyborgian modality, when beset by misbalance and disturbance, strives for equilibrium by means of an extension that calms it down. Yet over time, the prosthetic figure of the human constantly re-emerges to unbalance the system all over again and to open it up for the next circuit towards change.



McLuhan takes this on and suggests a move from cyborgisation (by an extension) to humanisation (by a prosthesis), not the other way around. This has to do with the recursive figure of human, or rather, the subject, from within the machinic self-regulating system.

It is true that McLuhan does not distinguish between the notions of “extension” and “prosthesis” because a distinction would imply an essential difference between the two, one which he tries to avoid. Yet, especially in *Understanding Media*, he conceives “extension” and “prosthesis” as two different modalities, stages, or patterns of engagement with technology that differ both temporally and spatially. McLuhan’s “medium as the message” is his way of conceptualising the transition of the extension towards the prosthesis: “What we are here ... are the psychic and social consequences of the designs or pattern as they amplify or accelerate existing processes,” he claims. “For the ‘message’ of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs” (McLuhan 8). “The pressure of new burdens resulting from the acceleration by ... media [is] the immediate oscillation of the extension or “amputation” of this function from our bodies,” he writes (McLuhan 42). A user “embraces” the tool that substitutes a certain faculty or sense. This leads to a merging with technology or the production of a “closed system” (McLuhan 44). The “closure” occurs where the extension turns into the prosthesis and, by oscillating between “human” and “cyborgian,” produces the interpassive subject of the machine.

In *Technology and the Canadian Mind: Innis / McLuhan / Grant*, Arthur Kroker describes McLuhan as “a technological humanist of the blood”:

...his conviction, repeated time and again, was that if we are to recover a new human possibility it will not be “outside” the technological experience, but must, of necessity, be “inside” the field of technology. What is really wagered in the struggle between the opposing tendencies towards domination and freedom in technology is that which is most personal, and intimate, to each individual: the blinding or revivification of ordinary human perception. (64)

I would add to this incisive observation only that McLuhan goes as far as to question the very possibility of the “‘outside’ of the technological experience.” If the world has become one in which the environment is equated with a network as an assemblage of externalised senses or an infrastructure of the interconnected “internet of things,” then either way this world is sustained by complex relations materialised as flows of information. As Kroker comments,

It is the human destiny in the modern age to be programmed by an information order which operates on the basis of algorithmic and digital logic, and which, far from conscious human intervention, continues to move through the whirring of its own servomechanisms. ... By putting our physical bodies inside our extended nervous systems by means of electric media, we set up a dynamic by which all previous technologies that are mere extensions of hands and feet and teeth and bodily controls – all such extensions of our bodies, including cities – will be translated into information systems. (67)

But what is this “human destiny” if not the programmability of the body-across-platforms, the condition that Fuller describes in his 1938 essay (from which McLuhan’s borrows the notion of “extension”): “[Man] may be likened to the variant of polarity dominance in our bipolar electric world which, when balanced and unit, vanishes as abstract unity of 1 and 0” (19). McLuhan’s theory is often regarded as technologically deterministic (Williams, 1974); however, I agree with Kroker that McLuhan’s view of technology is more complex and ambiguous than the constraints of determinism would allow. When McLuhan’s work is taken in the context of wider cybernetic discourse, the human is configured as positive feedback, part of the machinic assemblage that drives it

towards reproduction for the sake of change, not the preservation of the old forms: remember McLuhan's "man becomes, as it were, the sex organ of the machine world, as the bee of the plant world, enabling it to fecundate and to evolve ever new form" (46).

Here I return to the difference between softwarization and appification. I suggest that software is more likely to be associated with the mode of extension. Thus, mobile apps operate according to the logic of prosthesis, not only because of their constant presence as an addition to a user, available to serve her or him 24/7, but also because they inevitably transform into pre-emptive generators of needs. While the extension is an addition, the prosthesis is an addiction.<sup>89</sup> Given this, we need to differentiate between users' agency, i.e. as resistance or disobedience, and user activity facilitated by prosthetic technologies.

### Reactionary Activity

There is a way to argue that the agency the subject acquires in the cybernetic assemblage because of "the production of singular subjectivities" is immediately taken away from her by "the production of collective totalities" that absorbs subjects: "It acts out the fantasy of a Same that always manages to integrate the Other; as one cybernetician puts it, 'all real integration is based on a prior differentiation'" (Tiqqun n.p.). This strategy is typical of neoliberal discourse; it interpolates subjects in such a way that everyone receives an "individualised" call for action, but, in reality, they are merely called to engage in the activity required of subjects by the system in order to sustain the system. Eugene Thacker makes a similar observation when referring to ideological deception in the time of ever

---

<sup>89</sup> See Bosetti, Luca. "Three Questions on Prosthetic Technology and A-(d)iction," *Paragraph* 33.3 (2010).

“new” media: “Activity is ... not as grandiose as “agency,” because this term carries with it all the baggage of being interpolated as a certain kind of subject” (98). Activity here is mere reaction, not agency. Cybernetically speaking, “Gordon Pask called this ‘it-referenced’ interaction, because the controlling system treats the other like an ‘it’ – the system receiving the poke cannot prevent the poke in the first place” (Dubberly et al., 2009). Thacker also differentiates between “activity” and “action” outside of the cybernetic model, by opposing the two notions on the basis of their significance or weight: “The action marks an event, while activity just sort of goes on;” and yet, he concludes, “activity is not quite so progressive as ‘interactivity’” (98).

While the concept of interactivity seems a response to the inadequacy of the binary opposition activity/passivity, there is little theoretical consensus about its meaning. When mobile apps are regarded as “interactive tools,” what first comes to mind is a robust feedback loop where human and technology supply each other with the information necessary to launch several different, yet, interdependent processes. At least at their current stage of development, most mobile apps are still rather simple programs, compared to other software that runs (on) our computers. However, as a swarm of small fragments of application software, each oriented towards a particular task, mobile apps constitute a complex synchronised system of harvesting data that exceeds a first-order cybernetic model.

There is an ambiguity about apps. After the user agrees to grant the app the access to personal information stored on a phone or a tablet, such as GPS location tracking, photos and media files, camera and microphone, and Wi-Fi connection information, the app, attached to the user as their information source, initiates a process of reading the data of

the user, for whom it delivers a solution in accordance with the app's declared purpose or goal. The attraction of apps is related to the creative way in which they use the limited number of technological functions and properties of mobile platforms. In this sense, most apps still remain imaginary.<sup>90</sup> Manovich is right to point out, with a reference to Althusser's concept of "interpellation," that interactivity is a myth, since 'interactive media' simply ask us "to follow pre-programed, objectively existing associations," "to identify with someone's else mental structure" (*Language of New Media* 61) by mistaking "the structure of somebody's else mind for our own" (Manovich, "On Totalitarian Interactivity" n. p.).<sup>91</sup> As such, apps are meant to trick – either the system or the user. At their best, to employ the MIT's slang-term from the 1970s, they are witty hacks. At their worst, apps are parasites.

### Parasitic Passivity

"The system constructed here beginning with a production, temporarily placed in a black box, is parasitic in a cascade," Michel Serres writes; "one parasite (static), in the sense that information theory uses the word, chases another, in the anthropological sense," and he continues: "The parasited one parasites the parasites" (5, 6, 13). The notion of "parasite" and the "abuse value" it carries is Serres' way to substitute the binary of activity / passivity with his own subversive "universal" couple of the terms "host" and

---

<sup>90</sup> See Eric Kluitenberg, "Second Introduction to an Archaeology of Imaginary Media," in Eric Kluitenberg (ed.) *Book of Imaginary Media: Excavating the Dream of the Ultimate Communication Medium* (NAi/De Balie, 2006), 5.

<sup>91</sup> In the earlier published version of this argument in 1996, in the essay "On Totalitarian Interactivity," Manovich even calls interactivity "totalitarian": "interactive computer installations indeed represent an advanced form of audience manipulation, where the subject is put within a structure very similar to an experimental setup of a psychological laboratory or a high-tech torture chamber of CIA or KGB, the kind we saw frequently in spy films of the Cold War era" (1996). Also see Alexander Galloway's discussion of this essay in *The Interface Effect*. Cambridge, UK: Polity, 2012. 6-9.

“guest”. Here, both words correspond to one French word, *hôte*, so that the two meanings are present simultaneously and shared by both notions – active “eater of all” is also passive as “eaten by all” (2007: 26). According to Serres, the abuse value is primary: it precedes any other kind of value. The abuse value is a secret of the cybernetic system, in which it is “covered up” with the notions of exchange, communication, and equilibrium. The parasite always moves in one direction and trespasses different strata of organic and non-organic, material and immaterial. The parasite does not confiscate: it sneaks and steals to relieve itself of obligations to return or barter for what it grabs while crawling. The parasite is sustained by theft.

For Coley and Lockwood, this theft constitutes the production of ‘the body of the multitude,’ despite Michael Hardt and Antonio Negri’s insistence that a “living social flesh ... is not a body” (52). It is this “body of the multitude,” that the cloud turns into “a technologically ‘smart’ body, an intensified coalescence of a prosthetic, proximal body of nodal points.” The “networked body of the social,” being at the same time the host and the parasite, “feeds off the monstrous body of capital while it, in turn, is nourished by that very body of the collective” (Coley and Lockwood 52). For Matteo Pasquinelli, the figure of the “immaterial parasite” within a distributed network refers to the system’s hunt for material energy and economic surplus; it “functions first as a spectacular device,” he explains, “simulating a fictional world, building a collaborative environment or simply providing communication channels, it accumulates energy through and in favour of its physical substratum” (672). It advocates and promotes user agency, but in reality it facilitates a low key, ambivalent activity of “sharing,” “liking,” reposting as ways of appreciating someone’s expression passively by mindless somnambulant clicking across

the network void. The growing numbers of app downloads just within the last four years – from 300,000 downloaded applications in 2010 to 76.5 billion downloads in 2014 – is a result of the IT industry’s shift towards the so-called “Third Platform,” where the formerly independent forces of mobile computing, cloud computing, big data analytics and, of course, social media and networking, now converge.<sup>92</sup> Apps are believed to perform the important task of managing our lives as personal organisers and interpersonal connectors. However, apps are part of the network infrastructure – especially with the arrival of the “Third Platform,” the last interfacial layer between a user and the environment.

In his earlier reading of cyberspace, Slavoj Žižek discusses “the strange phenomenon of interpassivity, a phenomenon that is the exact obverse of ‘interactivity’ in the sense of being active through another subject who does the job for me” (*The Žižek Reader* 104). The examples of such a phenomenon, he argues, do not necessarily belong to Internet culture, but can be found in different historical periods as well as in cultural and religious practices – from the Chorus in Greek tragedy to Akihiro Yokoi’s and Aki Maita’s Japanese digital pet-toy tamagochi, to the Christian God the Father, whom Žižek describes as “the ultimate tamagochi,” produced by our unconscious and attacking us with endless requests and demands (108). Just like interactivity, Žižek argues, the notion of “interpassivity” subverts the standard opposition between activity and passivity, but in a twisted way: “if in interactivity..., I am passive while being active through another, in interpassivity, I am active while being passive through another” (105). However, he emphasises that the interpassive “acting through” another masks the subject’s activity by

---

<sup>92</sup> See Wikipedia entry on the “Third Platform”: [https://en.wikipedia.org/wiki/Third\\_platform](https://en.wikipedia.org/wiki/Third_platform).

making it invisible to the outside observer: one may look passive or disengaged, whereas in reality, “the subject is incessantly – frenetically even – active, while displacing on to another the fundamental passivity of his or her being” (106). In the end, users’ “frenetic activity” is a consequence and a symptom of what Geert Lovink (2011) defines as the “psychopathology of information overload” – a condition describing the unstoppable urge to keep oneself “in a loop” of constantly flowing updates, endlessly accumulating downloaded books, films and music, perpetually bookmarking numerous webpages instead of reading them – due to the lack of time and the pressure to keep up with the flow – and sharing them via social networks. These typical symptoms are far too familiar to nearly any user and are exploited within a 24/7 economy fuelled by user-generated content – and data-mined and appropriated by corporations.

The interpassive user defers both her labour and her enjoyment to the Other of the network; after all, the user is always left with nothing, and without a choice to opt out when it comes to networking and sharing. In the “programmed sociality” (Bucher, 2012) of the networked communities, “the ultimate tamagochi” is a swarm of apps. Therefore, the notion of “interpassivity” is not as harmless as it seems to Lovink (2012) and as it was, perhaps, in the original context of Žižek’s essay of the late 1990s where he spoke about “the delegation of passions and desires to others (the outsourcing of affect)” at the beginning of the exploration of cyberspace’s frontiers.

### Cynicism at the Limits of Enjoyment

In 2014, the high density of networked populations, and the scope of the algorithmization of sociality and cybernetic exploitation, combined with new economic models, force us to



consider a different form of interpassivity. With Web 2.0, users' interpassivity is now at the very core of the parasitic engagement with the network. As Franco 'Bifo' Berardi warns us, this leads to "the ultimate enslavement of human activity such as memory, language and so on." The automation of cognitive activity by means of user friendly interfaces reduces complexity, and is nothing more than "the automation of passive connection."<sup>93</sup>

Interpassivity operates according to the logic of a double deception in which the subject pretends to pretend: the user pretends to be passive by engaging in rather meaningless activity, avoiding acting or refusing agency, which inevitably requires the condition of another, less comfortable, passivity by stepping off the grid. The epistemological dimension of interpassivity does not concern knowing per se: it concerns a relation to knowledge,<sup>94</sup> in that it often takes the form of what Peter Sloterdijk has called the "enlightened false consciousness" of modern cynicism (5).

---

<sup>93</sup> Franco 'Bifo' Berardi's lecture "Abstraction and Poetry in the Age of Financial Capitalism" at the University of Western Ontario on 29 November 2014.

<sup>94</sup> In a sense, the "cybernetic hypothesis" sank into today's discourse of "network freedom" that draws the attention away from the questions of surveillance and exploitation. In *From Counterculture to Cyberculture*, Fred Turner demonstrates how the transformative power of the "New Economy" and the potentials of the networked entrepreneurship were evident only to certain circles of those who envisioned and proclaimed cyberspace as the new "electronic frontier" of freedom (7). Discussing the role of Stewart Brand, who allegedly coined the term "personal computer," and his crowd, Turner observes:

Although they rejected the military-industrial complex as a whole, as well as the political process that brought it into being, hippies from Manhattan to Haight-Ashbury read Norbert Wiener, Buckminster Fuller, and Marshall McLuhan. Through their writings, young Americans encountered a cybernetic vision of the world, one in which material reality could be imagined as an information system. To a generation that had grown up in a world beset by massive armies and by the threat of nuclear holocaust, the cybernetic notion of the globe as a single, interlinked patterns of information was deeply comforting: in the invisible play of information, many thought they could see the possibility of global harmony. (5)

The psychic apparatus has become elastic enough to incorporate as a survival factor a permanent doubt about their own activities. They know what they are doing, but they do it because, in the short run, the force of circumstances and the instinct for self-preservation are speaking the same language, and they are telling them that it has to be so. Others would do it anyway, perhaps worse. Thus, the new integrated cynicism even has the understandable feeling about itself of being a victim and of making sacrifices. (5)

This new type of interpassivity of the user-subject is behind a user's complicity with the network-machine – even after Snowden's revelations about the totality of the NSA's surveillance. But then, what does "after" mean? To quote Sloterdijk again,

Psychologically, present-day cynics can be understood as borderline melancholics, who can keep their symptoms of depression under control and can remain more or less able to work. Indeed, this is the essential point in modern cynicism: the ability of its bearers to work – in spite of anything that might happen, and especially, after anything that might happen. (5)

Jussi Parikka is right to suggest that "the 'Post-NSA'-world implies the question of the Pre-NSA; Post-Snowden Leaks imply also the Pre-Snowden-Era,"<sup>95</sup> but indeed, where did it begin – in 2013 or, for example, with the publication of James Bamford's books about the NSA back in the 1980s? The first of these, *The Puzzle Palace: Inside the National Security Agency, America's Most Secret Intelligence Organization*, came out 1983 and caught the attention of Friedrich Kittler, who wrote a short review of Bamford's book entitled "No Such Agency," published in 1986. Kittler concludes the review with the following:

With foresight, and while the rest of the world works according to John von Neumann's classical computer architecture, the NSA is already switching again:

---

<sup>95</sup> See Parikka's post "Echelon" on his blog: <http://jussiparikka.net/2014/07/23/echelon>.

to optical computers, surface acoustic wave filters and CCDs or charged-coupled-devices, which guarantee more than a thousand trillion multiplications per second.

This way, one day, those 99.9% of the data flow that still run past the NSA might become graspable and evaluable. (2014)

It matters whether we call Kittler's account a "prediction" or a logical conclusion drawn from materials such as Bamford's book. It matters because the way we identify it reveals our relation to this knowledge of surveillance as either a staged unawareness or denial (if not a total foreclosure). In one of his essays for *The Guardian*, Žižek addresses the intolerable feeling caused by the disclosures of Snowden, Manning, and Assange. What makes it so unbearable, he speculates, is not that what they reveal is shocking news, but that this "non-news" is finally made public:

...we are facing the shameless cynicism of the representatives of the existing global order, who only imagine that they believe in their ideas of democracy, human rights etc. What happens in WikiLeaks disclosures is that the shame – theirs, and ours for tolerating such power over us – is made more shameful by publicising it. What we should be ashamed of is the worldwide process of the gradual narrowing of the space for what Kant called the "public use of reason." (Žižek, 2013)

Here knowledge itself is not as important as our relation to knowledge. In Lacanian psychoanalysis, the relation to knowledge involves the question of pleasure, even extreme pleasure, *jouissance*, and therefore, it pertains to the question of a clinical structure.

Thus, another important question involves users' relation to the unbearable pleasures of non-stop networking. The latter produces the effect and affect of merging with the machinic Other of the network which, to employ Lacanian vocabulary, exhibits a tendency to transform from a law-giving paternal function to an affective maternal body – overwhelming, consuming, and granting access to unlimited *jouissance* (Bosetti, 2010).

In 2010, three years after apps became part of everyday experience, media analysts, scholars, producers and users were still debating their significance and impact on computational practices.<sup>96</sup> That year, the International Data Corporation (IDC), the major market intelligence firm that provides advisory services for the information technology, telecommunications, and consumer technology markets, acknowledged in its annual report that “one of the most striking impacts of the extraordinary growth and evolution of the mobile apps ... has been the ‘appification’ of broad categories of interactions and functions in both the physical and the digital worlds” (2010). Further, the report quotes Scott Ellison, vice president of the IDC’s Mobile and Wireless research, who confirms the company’s evaluation of apps’ impact by using the earlier introduced neologism: “Mobile app developers,” he says, “will ‘appify’ just about every interaction you can think of in your physical and digital worlds” (IDC, 2010).

In *Software Takes Command*, Manovich offers us a new term, “softwarization,” to describe the development and spread of “media software” between 1960 and 2010. The term describes the state of things when “creating cultural artifacts and interactive services which contain representations, ideas, beliefs, and aesthetic values,” “accessing, appending, sharing, and remixing such artifacts,” “participating in the online information ecology by expressing preferences and adding metadata,” as well as “communicating with other people” is done by means of software (Manovich 23). Although Manovich does not distinguish between “appification” and “softwarization,” by the end of the book,

---

<sup>96</sup> See, for example, Chris Anderson and Michael Wolff, “The Web is dead, long live the Internet,” *Wired*, August 2010 (<http://www.wired.com>). Also, Tim Berners-Lee, “Long live the Web: A call for continued open standards and neutrality,” *Scientific American*, November 22, 2010 (<http://www.scientificamerican.com>).

he locates apps in the global network of heterogeneous objects that the IDC identifies as “the Third Platform”:

None of the software apps and websites of the “social media era” function in isolation. Instead, they participate in the larger ecology, which includes search engines, recommendation engines, blogging systems, RSS feeds, and other web technologies; inexpensive consumer electronic devices for capturing and accessing media (digital cameras, mobile phones, music players, video players, digital photo frames, internet enabled TVs); and technologies that enable transfer of media between devices, people, and the web (storage devices, wireless technologies such as Wi-Fi and WiMax, and communication standards such as USB and 4G). Without this ecology most web services and mobile apps would not be possible. Therefore, this ecology needs to be taken into account in any discussion of social networks and their software – as well as consumer-level content access and media development software designed to work with web-based media sharing sites. (334)

It is not difficult to see how appification becomes the technique and expression of the cybernetic lifestyle.

### *Conclusion*

When any activity has an app for tracking it, the interpassive user has become a major actor in what Benjamin Bratton once called a “reversed panopticon.” Unlike Jeremy Bentham’s famous design of the greatest surveillance machine, where the subject is aware of the possibility of being the object of surveillance and, as a result, changes her behaviour by “internalising the authority,” the subject of the “reversed panopticon” of the network is fully complicit with the governing machine despite the risks. This is an ‘ideal user’ who never stops performing for the gaze of the network, never stops clicking, never detaches from mobile gadgets.

Through the lens of Lacanian psychoanalysis, the “reversed panopticon” is nothing less than the “perverse panopticon” where the subject, as Bosetti suggests, strives to achieve a

unity with the maternal body that promises direct access to unlimited *jouissance* (comments, “likes” and many other continuous signs of simulated recognition, which are immensely more significant in the eyes of the user than those who “like” and comment on that user’s posts). The embrace by the network is perceived as similar to a merging with the maternal figure. To stay with the architectural model, think of the “smart” or parametric architecture that Parisi sees as the arrival of the post-cybernetic mode of soft control based on an infallible prediction of the dweller’s next move: not just the incursion of the future, but multiple futures, all at once.

For Lacan, a perverse structure (as any “structure” in the Lacanian understanding of the term) is not a problem, but rather, a solution to a problem that an individual invents in order to deal with the pain of existence (Swales 54). In this case, the identification with the imaginary object of mOthers’ desire gives himself or herself up completely to the mOther’s enjoyment. This “fantasy” of being the object of enjoyment (“they read me,” “they like me,” “they see me,” “they want me” – 24/7!) is a solution to not being able to give up or even limit one’s enjoyment. Such inability is stimulated by the capitalist network. If *jouissance* is the kind of intense pleasure that hurts and kills you, to learn how to renounce the pleasure attached to the experience of being the networks’ object of attention seems to be a key survival technique in the world of “Lilliputian robots” that govern our lives.

I often think about some of the lost meanings and practices of solitude, of sensations of mild joy, and of a life that does not necessarily need to be happy and full, but is, in fact, lacking and cannot only bear, but actually treasure its own incompleteness. “Today, only

the person who no longer believes in a happy ending,” Ernst Jünger wrote at the dawn of the cybernetic empire, “only he who has consciously renounced it, is able to live” (207).

## Conclusion

### Psychoanalysis and cybernetics, *après-coup*

*Afterwardness* in psychoanalysis is a mode of belated understanding or retroactive attribution of meaning to earlier events. *Afterwardness* is also what constitutes any “prehistory” as a process of determining a relation between the episodes that initially were considered unconnected. In doing this, I followed two claims of Lacan. One is that psychoanalysis and cybernetics occurred synchronously. Another claim is that they both operate on “the subject of science” that emerged in the seventeenth century as a result of a major shift in understanding of the relation between man and the world. Man became the subject of the *automated* universe. But a discarded care-taker found the ways of *inscribing* or *attaching* oneself back to the universal order: by envisioning a conjectural order and by synchronizing oneself with the world by means of machines – from Pascal’s triangle to a clock.

In this regard, Kittler agrees with Lacan who pointed out that any transformation of the “relation of man to the world that has always been regarded as knowledge” (*Seminar XI* 63). To identify this event, I used the term “episteme”: this *cybernetic episteme* began several decades prior to the end of the nineteenth century when the question of source, nature and degree of automation on micro- and macro levels, its determinacy and indeterminacy, became unavoidable and haunting for many thinkers or practitioners regardless the field: philosophers, scientists and artists. By the end of the century, the knowledge produced in response to this question caused the erosion of Humanism.



In *Gramophone, Film, Typewriter*, Kittler suggests that “the fabrication of so-called Man became possible” around 1880, when “his essence escapes into apparatuses” (16), so that “Man’s delusion of possessing a ‘quality’ called ‘consciousness,’ identifies him as something other and better than a ‘calculating machine’” (17) ended. Psychoanalysis, Lacan insisted, is not humanism. This understanding originated in an outlook where, “both people and computers are ‘subject to the appeal of the signifier’; that is, they are both run by programs” (17), Kittler writes. “‘Are these humans,’ Nietzsche already asked himself in 1874, eight years before buying a typewriter, ‘or perhaps only thinking, writing, and speaking machines?’” (17). Kittler’s “so-called Man” and Lacan’s “the subject of science” are not identical notions, but strongly related concepts at the foundation of the posthumanist thought. Lydia H. Liu’s “Freudian robot” is one of its most recent versions.

Without denying many important differences between psychoanalysis and cybernetics, my project focuses on tracing the original similarities between them in the critical analysis of the current technologies and techniques of mediation, the conditions of mediality as “in-betweenness,” and the increasing awareness of the integration of human life in a variety of different technologies and *vice versa*. I have argued that both psychoanalysis and cybernetics belong to the epoch of *graphocentrism*, which began in the nineteenth century and extends to the present moment.

Despite the apparent differences between the machines of the nineteenth century – from a chronophotoraph to a polygraph – by which the subject was inscribed in the symbolic / institutional / power structures, they belong to the same family of writing machines with today’s computers or mobile apps. The process of softwarization of writing machines is

not new and began in the nineteenth century as well: the work of Charles Babbage and Ada Lovelace are the examples. I hope that by this project I have established the basis for further exploration of graphocentrism, which calls for rethinking of the relation between the notions of “digital” and “analog,” one not limited to electronic binarism.

To demonstrate how the complex dynamics of the analog processes and digitization is at the core of the cybernetic and psychoanalytical practices, I have drawn on Florian Cramer’s clarification of the two notions – as *division* and *continuity*. Only *together* do they constitute what Wiener called “control and communication in the animal and the machine.” With this in mind, I read the cases of different machines engaged in clinical practices of the nineteenth century – from a photographic apparatus to a photographic grid, and from the architectural machine of the Salpêtrière to language itself. I have investigated the specifics of their effect on the formation of the psychoanalytic practice, since, just as with any technology, the function of these machines always exceeds their initial assignment.

I have also discussed the communicational, as both regulatory and control functions of digitization and the reproducibility of digitized psychoanalytic processes, for example, via the performativity of hysteria. This discussion has become a basis for my reading of the case of the *complicit user* within the mobile, social, and/as surveillance networks, to which he or she donates their time, life, and labour, often without their consent – in a way not so different from the hysterical patients of Jean-Martin Charcot at the Salpêtrière who manifested their symptoms for the doctor *and* in the presence of the documenting and measuring apparatuses. This is what we need consider today tracing the history of Lacan’s concept of *parlêtre*. In his *Seminar XXIII* (1975-1976), Lacan introduced the

notion of *parlêtre* as a new name for “the unconscious, when it is conceptualized starting off from speech and no longer from consciousness” (Miller, “The Unconscious and the Speaking Body” 129). My goal was to show that despite the emphasis on “speech” in the root of the word, this notion concerns *writing* as the effect of the structure.

The *parlêtre*, or the *interpassive user*, is what is produced in the process of the cybernetic *inmixing* of various machines – language, body, flesh, photographic apparatus, social media, mobile networks, and even, capitalism – which translates into the event of binding the real, the imaginary and the symbolic, where the *parlêtre*, as the data subject, performs the knotting of these machines together – beyond meaning.

And certainly, beyond the pleasure principle.

## Bibliography

- After Freud Left: A Century of Psychoanalysis in America*. Ed. John Burham. Chicago: University of Chicago Press, 2012. Print.
- Althusser, Louis. *Writings on Psychoanalysis: Freud and Lacan*. New York: Columbia University Press, 1996. Print.
- Andrejevic, Mark. *iSpy: Surveillance and Power in the Interactive Era* (Lawrence, Kans.: University Press of Kansas, 2007). Print.
- Apollon, Willy. "The Letter of the Body." *After Lacan. Critical Practice and the Subject of the Unconscious*. Ed. Apollon, Willy, Danielle Bergeron, and Lucie Cantin. New York: SUNY Press, 2002. 103-115. Print.
- Armand, Louis. "Symptom in the Machine: Lacan, Joyce, Sollers." *The Symptom 3* (2003): n. pag. Web. 30 Sep. 2010. < <http://www.lacan.com/sympmachf.htm> >.
- Armitage, John and Friedrich A. Kittler, "From Discourse Networks to Cultural Mathematics: An Interview with Friedrich A. Kittler," *Theory, Culture & Society* 23 (2006). Print.
- Ashby, W. Ross. "Homeostasis," *Cybernetics: Transactions of the Ninth Conference*, Josiah Macy Foundation, March, 1952. 73-108. Print.
- Ashby, W. Ross. *An Introduction to Cybernetics*. New York: John Wiley & Sons, Inc., 1966 [1963]. Print.
- Ashby, W. Ross. *Design for a Brain; The Origin of Adaptive Behaviour*, Second Edition, John Wiley and Sons: New York, NY, 1960. Print.
- Babinski, Joseph. "Preface," *Charcot, The Clinician. The Tuesday Lectures*. New York: Raven Press, 1987. xv-xvii. Print.
- Bacopoulos-Viau, Alexandra. "Automatism, Surrealism and the Making of French Psychopathology: The Case of Pierre Janet." *History of Psychiatry* 23.3 (2012): 259-276. Print.
- Bamford, James. *The Puzzle Palace: Inside the National Security Agency, America's Most Secret Intelligence Organization* (New York: Penguin Books, 1983). Print.
- Bassols, Miquel. "There Is No Science of the Real." *Psychoanalytical Notebooks* 27 (2013): 21-28. Print.

- Bauman, Zygmunt; Didier Bigo, Paulo Esteves, Elspeth Guild, Vivienne Jabri, David Lyon and R. B. J. Walker, "After Snowden: Rethinking the Impact of Surveillance," *International Political Sociology* 8 (2014): 121–144. Print.
- Beer, Stafford. *Decision and Control*. London: Wiley, 1966. Print.
- Bell, Daniel. *The Social Sciences Since the Second World War*. New York: Transaction Publishers, 1981. Print.
- Beniger, James R. *The Control Revolution. Technological and Economic Origins of the Information Society*. Cambridge, MA: Harvard University Press, 1986. Print.
- Bergstein, Mary. *Mirrors of Memory: Freud, Photography, and the History of Art*. Ithaca: Cornell University Press, 2010. Print.
- Bernfeld, Seigfried and Feitelberg, Sergei. "The Principle of Entropy and the Death Instinct" *International Journal of Psycho-Analysis* 12 (1931): 61-81. Print.
- Biddle, Francis. "The Criminal, the Judge and the Public: A Psychological Analysis by Franz Alexander and Hugo Staub (Berlin, 1931)." *University of Pennsylvania Law Review and American Law Register* 80.1 (November 1931): 146-148. Web.
- Bogost, Ian and Nick Montfort. "Platform Studies: Frequently Questioned Answers." *Digital Arts and Culture*, December 12–15 (Irvine, Calif., 2009). Web.
- Bohm, Steffen; Batta, Aanka, "Just Doing It: Enjoying Commodity Fetishism with Lacan," *Organization* 17.3 (2010): 345-361. Web.
- Bolter, Jay and Richard Grusin. *Remediation. Understanding New Media* (Cambridge, Mass.: MIT Press, 2000). Print.
- Bosetti, Luca. "Three Questions on Prosthetic Technology and A-(d)diction." *Paragraph* 33.3 (2010): 410-422. Print.
- Bourneville, Désiré-Magloire. "Mémoire sur la condition de la bouche chez les idiots, suivi d'une étude sur la médecine légale des aliénés, à propos du Traité de Médecine légale de M. Casper," *Journal des connaissances médicales et pharmaceutiques*, nos. 13, 15, 22, 26 (1862) and 3, 19, 20, 22 (1863): 7–13. Print.
- Bracher, Mark. "On the Psychological and Social Functions of Language: Lacan's Theory of the Four Discourses." *Lacanian Theory of Discourse. Subject, Structure, and Society*. Eds. Mark Bracher, Marshall W. Alcorn, Ronald J. Corthell, and Françoise Massardier-Kenny. New York: NYU Press, 1994. Print.
- Breger, Louis. *A Dream of Undying Fame: How Freud Betrayed His Mentor and Invented Psychoanalysis*. New York: Basic Books, 2009. Print.
- Breton, André, and Louis Aragon. "Le cinquantenaire de l'hystérie 1878-1928," *La*

- Révolution surréaliste XI* 15 Mar. 1928: 20-22. Print.
- Breton, André; Paul Eluard and Philippe Soupault. *The Automatic Message. The Magnetic Fields. The Immaculate Conception*. London: Atlas Press, 1997. Print.
- Breton, André. *Communicating Vessels*. Trans. Mary Ann Caws and Geoffrey T. Harris. Lincoln: University of Nebraska, 1990. Print.
- Breton, André. *Manifestos of Surrealism*. Ann Arbor: The University of Michigan Press, 1969. Print.
- Brousse, Marie-Hélène. "The Drive (I)." *Reading Seminar XI. Lacan's Four Fundamental Concepts of Psychoanalysis*. Ed. Richard Feldstein, Bruce Fink, Maire Jaanus. New York: SUNY P, 1995. 99-107. Print.
- Burgy, Martin. "The Concept of Psychosis: Historical and Phenomenological Aspects." *Schizophrenia Bulletin* 34.6 (2001): 1200-1210. Print.
- Cannon, Walter B. *The Way of an Investigator, A Scientist's Experiences in Medical Research*. New York: W. W. Norton, 1945. Print.
- Cannon, Walter B. *The Wisdom of the Body*. New York: W. W. Norton, 1932. Print.
- Carotenuto, Aldo. *A Secret Symmetry: Sabina Spielrein Between Jung and Freud. The Untold Story of the Woman Who Changed the Early History of Psychoanalysis*. New York: Pantheon Books, 1983. Print.
- Caws, Mary Ann. "Linkings and Reflections: André Breton and His Communicating Vessels." *Dada/Surrealism* 17 (1988): 91-100. Print.
- Charlton, James. "On Remembering a Post-Digital Future." *APRJA: Post-Digital Research* 3.1 (2014). Web.
- Chiesa, Lorenzo. *Subjectivity and Otherness. A Philosophical Reading of Lacan*. Cambridge, MA: The MIT Press, 2007. Print.
- Chun, Wendy Hui Kyong. *Control and Freedom. Power and Paranoia in the Age of Fiber Optics*. Cambridge, MA: The MIT Press, 2006. Print.
- Clarke, Bruce. "Heinz von Foerster's Demons. The Emergence of Second-Order Systems Theory." *Emergence and Embodiment. New Essays on Second-Order Systems Theory*. Ed. Bruce Clark and Mark B. N. Hansen. Durham, NC: Duke University Press, 2009. 34-61. Print.
- Clarke, Bruce. *Energy Forms: Allegory and Science in the Era of Classical Thermodynamics*. Detroit: University of Michigan, 2001. Print.
- Clough, Patricia. "Feminist Theory: Bodies. Science and Technology." Bryan S. Turner

- (ed.) *Routledge Handbook of Body Studies*. New York: Routledge, 2012. 94-105. Print.
- Clough, Patricia. "The Technical Substrates of Unconscious Memory: Rereading Derrida's Freud in the Age of Teletechnology." *Sociological Theory* 18.3 (2000): 383-398. Print.
- Coley, Rob and Dean Lockwood. *Cloud Time: The Inception of the Future* (Winchester, UK: Zero Books, 2012). Print.
- Conley, Katharine. "Surrealism and Outsider Art: From the 'Automatic Message' to André Breton's Collection." *Yale French Studies* 109: Surrealism and Its Others (2006): 129-143. Print.
- Copjec, Joan. "Flavit et Dissipati Sunt." Eds. Annette Michelson, Rosalind Krauss, Douglas Crimp, Joan Copjec, *October: The First Decade, 1976-1986*. Cambridge, Mass., The MIT Press, 1987. 296-316. Print.
- Copjec, Joan. *Read My Desire. Lacan Against Historicists*. Cambridge MA: MIT Press, 1994. Print.
- Cordeschi, Roberto. *The Discovery of the Artificial: Behavior, Mind and Machines Before and Beyond Cybernetics, Canada: Studies in Cognitive Systems*, 2002. Print.
- Cottingham, John. "'A Brute to the Brutes?': Descartes' Treatment of Animals." *Philosophy* 53 (1978): 551-559. Print.
- Crabtree, Adam. "'Automatism' and the Emergence of Dynamic Psychiatry." *Journal of History of the Behavioral Sciences* 39.1 (2003): 51-70. Print.
- Cramer, Froilan. "What Is 'Post-Digital'?" *APRJA: Post-Digital Research* 3.1 (2014). Web.
- Cuéllar, David Pavón. *From the Conscious Interior to an Exterior Unconscious. Lacan, Discourse Analysis and Social Psychology*. London: Karnac Books, 2010. Print.
- Cybernetics: Transactions of the Eighth Conference; Josiah Macy, Jr. Foundation*, New York (Heinz von Foerster, Margaret Mead, Hans Lukas Teuber), 1952. Print.
- Cybernetics: Transactions of the Sixth Conference*, (editor), Josiah Macy Jr. Foundation: New York, 1949. Print.
- Daston Lorraine and Elizabeth Lunbeck. (Eds.) *Histories of Scientific Observation*. Chicago: Chicago UP, 2011. Print.
- Daston, Lorraine and Peter Galison. "The Image of Objectivity," *Representations* 40 (1992): 81-128. Print.

- Daston, Lorraine. "Enlightenment Calculations." *Critical Inquiry* 21.1 (1994): 182-202. Print.
- Davis Raskin, Valerie. *When Words Are Not Enough: The Women's Prescription for Depression and Anxiety*. New York: Broadway Books, 1997. Print.
- Davis, Frederick. "Three Letters: From Sigmund Freud To André Breton," *Journal Of The American Psychoanalytic Association* 21.1 (February 1973): 127-134. Print.
- De Laplace, Pierre Simon. "Concerning Probability." *The World of Mathematics*. Vol. Two. Ed. James R. Newman. New York: Simon and Schuster, 1956. 1325-1333. Print.
- Declercq, Frediric, "Lacan on the Capitalist Discourse: Its Consequences for Libidinal Enjoyment and Social Bonds." *Psychoanalysis, Culture & Society* 11 (2006): 74–83. Print.
- Deleuze, Gilles. "Postscript on the Societies of Control," *October* 59 (1992): 3–7. Print.
- Derrida, Jacques. "Freud and the Scene of Writing." *Yale French Studies* 48 (1972): 74-117. Print.
- Derrida, Jacques. "La Parole Soufflée." *Writing in Difference*. Trans. and introduction Alan Bass. New York: Routledge, 2002. 212-245. Print.
- Des Chene, Dennis. *Spirits and Clocks. Machine and Organism in Descartes*. London: Cornell University Press, 2001. Print.
- Descartes, René. *The Philosophical Writings of Descartes*. Eds. and trans. John Cottingham, Robert Stoothoff, Dugald Murdoch, Anthony Kenny. Vol. III, V. Cambridge: Cambridge University Press, 1991. Print.
- Didi-Huberman, Georges. *Invention of Hysteria. Charcot and the Photographic Iconography of the Salpêtrière*. Cambridge, MA: MIT press, 2004.
- Doane, Mary Ann. "Temporality, Storage, Legibility: Freud, Marey, and the Cinema." *Critical Inquiry* 22. 2 (1996): 313-343. Print.
- Dow, Suzanne; Wright, Richard. "Introduction: Towards a Psychoanalytic Reading of the Posthuman." *Paragraph* 33.3 (2010): 299-317. Print.
- Dravers, Philip. "To Peo, Logically Speaking: From 'The Purloined Letter' to the Sinthome." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 205-246. Print.
- Drouin, Emmanuel; Yann Péréon. "Unique drawings by Duchenne de Boulogne." *The Lancet Neurology* 12 (2013): 330-331. Web.



- Dubarle, Dominique. "Vers la machine à gouverner?" *Le Monde*, December 28, 1948. Web.
- Dubberly, Hugh, Paul Pangaro, and Usman Haque. 'What is interaction?' Are there different types?', *ACM, Interactions* XVI.1 (January – February, 2009): 1-10. Web.
- Duchenne (de Boulogne), G. B. *The Mechanism of Human Facial Expression*. Ed. and trans. R. Andrew Cuthbertson. Cambridge: Cambridge University Press, 1990. Print.
- Dupuy, Jean-Pierre. *Economy and the Future: A Crisis of Faith*. East Lansing: Michigan State University, 2014. Print.
- Dupuy, Jean-Pierre. *On the Origins of Cognitive Science. The Mechanization of the Mind*. Trans. M. B. DeBevoise. Cambridge, MA: MIT Press, 2009. Print.
- Eidelsztein, Alfredo. *The Graph of Desire. Using the Work of Jacques Lacan*. London: Karnac Books, 2009. Print.
- Einstein, Albert. "Bemerkungen zu der Notiz von Hrn. Paul Ehrenfest: 'Die Translation deformierbarer Elektronen und der Flächensatz'." *Annalen der Physik* 23 (1907) 206-208.
- Einstein, Albert. *Out of My Later Years*. New York: Philosophical Library, 1950. Print.
- Elder, Bruce R. *Dada, Surrealism, and the Cinematic Effect*. Waterloo, ON: Wilfrid Laurier University Press, 2013. Print.
- Ellenberger, Henry F. *The Discovery of the Unconscious. The History and Evolution of Dynamic Psychiatry*. New York: Basic Books, 1970. Print.
- Elmer, Jonathan. "Blinded Me with Science: Motifs of Observation and Temporality in Lacan and Luhmann." *Cultural Critique* 30 (1995): 101-136. Print.
- Elsaesser, Thomas. "Freud as Media Theorist: Mystic Writing pads and the Matter of Memory." *Screen* 50.1 (2009): 100-113. Print.
- Eric Kluitenberg (ed.) *Book of Imaginary Media: Excavating the Dream of the Ultimate Communication Medium* (NAi/De Balie, 2006), 5. Print.
- Ernst, Wolfgang. *Digital Memory and the Archive*. Minneapolis: University of Minnesota Press, 2012. Print.
- Evans, Dylan. *An Introductory Dictionary of Lacanian Psychoanalysis*. New York: Routledge, 1996. Print.
- Feher-Gurewich, Judith. "A Lacanian Approach to the Logic of Perversion." *The*

- Cambridge Companion to Lacan*. Ed. Jean-Michel Rabeté. Cambridge, UK: Cambridge University Press, 2003. 191-207. Print.
- Fink, Bruce. "The Nature of Unconscious Thought or Why No One Ever Reads Lacan's Postface to the 'Seminar on 'The Purloined Letter'.'" *Reading Seminars I and II: Lacan's Return to Freud*. Eds. Richard Feldstein, Bruce Fink, Maire Jaanus. New York: SUNY Press, 1996. 173-191. Print.
- Fink, Bruce. *Lacanian Subject: Between Language and Jouissance*. Princeton, NJ: Princeton University Press, 1995. Print.
- Finkelstein, Gabriel. *Emil du Bois-Reymond. Neuroscience, Self, and Society in Nineteenth-Century Germany*. Cambridge, MA: MIT Press, 2013. Print.
- Fisher, Mark. *Capitalist Realism*. London: Zero Books, 2012. Print.
- Flieger, Jerry Aline. "Is There a Doctor in the House? Psychoanalysis and the Discourse of the Posthuman." *Paragraph* 33.3 (2010): 354-375. Print.
- Forrester, John. "The True Story of Anna O." *Social Research* 53:2 (Summer 1986): 327-347. Print.
- Fotopoulou, Aikaterini. *From the Couch to the Lab: Trends in Psychodynamic Neuroscience*. Oxford: Oxford University Press, 2012. Print.
- Foucault, Michel. "What Is an Author?" *The Foucault Reader*. Ed. Paul Rabinow. New York: Random House, 1984. 101-121. Print.
- Foucault, Michel. *Foucault Live: Interviews, 1961-1984*. Ed. Sylvère Lotringer, trans. Lysa Hochroth & John Johnson. New York: Semiotext(e), 1996.
- Foucault, Michel. *Psychiatric Power: Lectures at the Collège de France, 1973-1974*. New York: Palgrave MacMillan, 2006. Print.
- Foucault, Michel. *The Birth of the Clinic*. London: Routledge, 2003. Print.
- Foucault, Michel. *The Foucault Reader*. Ed. Paul Rabinow. New York: Random House, 1984. Print.
- Foucault, Michel. *The History of Sexuality, Volume 1: An Introduction*. Trans. Robert Hurle. New York: Vintage. 1990. Print.
- Foucault, Michel. *The Order of Things*. New York: Vintage, 1994. Print.
- Freud, Sigmund. "A Note on the 'Mystic Writing Pad' (1925)." *The Standard Edition of the Complete Psychological Works of Sigmund Freud*. Trans. James Strachey. Vol. VII. London: The Hogarth Press, 1966. 227-232. Print.
- Freud, Sigmund. "Fragment of an Analysis of a Case of Hysteria. (1905)." *The Standard*

- Edition of the Complete Psychological Works of Sigmund Freud*. Trans. James Strachey. Vol. VII. London: The Hogarth Press, 1953. Print.
- Freud, Sigmund. "Project for Scientific Psychology (1895)." *The Standard Edition of the Complete Psychological Works of Sigmund Freud*. Trans. James Strachey. Vol. I (1886-1889). London: The Hogarth Press, 1966. 295-391. Print.
- Freud, Sigmund. *Beyond the Pleasure Principle*. Trans. and ed. James Strachey. New York: W. W. Norton, 1961.
- Freud, Sigmund. *Civilization and Its Discontents*. New York: W. W. Norton & Company, 1961. Print.
- Freud, Sigmund. *The Complete Correspondence of Sigmund Freud and Karl Abraham, 1907-1925*. Ed. Ernst Falzeder. London: Karnac, 2002. Print.
- Fuller, Buckminster. 'The Phantom Captain', in *Nine Chains to the Moon* (New York: Doubleday & Company, 1963 [1938]): 18-29. Print.
- Galbis-Reig, David. "Sigmund Freud, MD: Forgotten Contributions to Neurology, Neuropathology, and Anesthesia." *The Internet Journal of Neurology* 3.1 (2003). Web.
- Galloway, Alexander R. 'The Cybernetic Hypothesis', *differences: A Journal of Feminist Cultural Studies* 25.1 (2014): 107-131. Print.
- Galloway, Alexander R. "In the Aftermath of the Cybernetic Hypothesis." Winchester Centre for Global Futures in Art Design & Media, Winchester School of Art, University of Southampton, UK. 2012. Keynote Address.
- Galloway, Alexander R. *Laruelle: Against the Digital*. Minneapolis: University of Minnesota Press, 2014. Print.
- Gamwell, Lynn and Mark Solms. *From Neurology to Psychoanalysis- Sigmund Freud's Neurological Drawings and Diagrams of the Mind*. Binghamton: Binghamton University Art Museum; SUNY, 2006. Print.
- Geoghegan, Bernard Dionysius. "From Information Theory to French Theory: Jakobson, Levi-Strauss, and the Cybernetic Apparatus," *Critical Inquiry* 38.1 (2011): 96-126. Print.
- Geoghegan, Bernard, and Benjamin Peters. "Cybernetics." *The John Hopkins Guide to Digital Media*. Eds. Marie-Laure Ryan, Lori Emerson, Benjamin J. Robertson. Baltimore: John Hopkins University Press, 2014. 109-113. Print.
- Gibson, Jennifer. "Surrealism before Freud: Dynamic Psychiatry's 'Simple Recording Instrument'," *Art Journal* 46.1: Mysticism and Occultism in Modern Art (Spring 1987): 56-60. Print.

- Gleick, James. *The Information. A History. A Theory. A Flood*. London: Fourth Estate, 2012. Print.
- Goetz, Christopher G., Michel Bonduelle and Toby Gelfand. *Charcot: Constructing Neurology*. New York: Oxford University Press, 1995. Print.
- Goetz, Christopher. "Introduction," in *Charcot, The Clinician. The Tuesday Lectures*. New York: Raven Press, 1987. xix-xxx. Print.
- Goetz, Christopher. "Visual Art in the Neurologic Career of Jean-Martin Charcot," *Archives of Neurology* 48.4 (1991): 421-425. Print.
- Greenfield, Adam. *Everyware: The Dawning Age of Ubiquitous Computing*. New York: New Riders, 2006.
- Greniewski, Henryk. *Cybernetics without Mathematics*. Trans. Olgierd Wojtasiewicz. New York: Pergamon Press, 1960. Print.
- Grigg, Russell. "On the Need for A Philosophy of Technology in Its Own Right." *Umbr(a): Technology* (2012): 43-58. Print.
- Grigg, Russell. Footnotes to *The Psychoses (1955-1956). The Seminar of Jacques Lacan. Book III*. Ed. Jacques-Alain Miller. Trans. Russell Grigg. New York: W. W. Norton & Company, 1997. Print.
- Grigg, Russell. *Lacan, Language, and Philosophy*. New York: SUNY Press, 2008. Print.
- Gross, Charles G. "Claude Bernard and the constancy of the internal environment." *Neuroscientist* 4 (1998): 380-385. Print.
- Grubrich-Simitis, Ilse. *Early Freud and Late Freud: Reading Anew 'Studies on Hysteria' and 'Moses and Monotheism'*. New York, Routledge, 1997. Print.
- Grusin, Richard. *Premediation: Affect and Mediality After 9/11*. New York: Palgrave Macmillan, 2010. Print.
- Guéguen, Pierre-Gilles. "Discretion of the Analyst in the Post-interpretative Era." *The Later Lacan*. Eds. Véronique Voruz and Bogdan Wolf. New York: SUNY Press, 2007. 10-24. Print.
- Guilbaud, Georges-Théodule. *What Is Cybernetics?* Trans. Valerie MacKay. Toronto: Heinemann: 1961 [1959]. Print.
- Gunning, Tom. "In Your Face: Physiognomy, Photography, and the Gnostic Mission of Early Film," in Ed. Mark S. Micale. *The Mind of Modernism. Medicine, Psychology, and the Cultural Arts in Europe and America, 1880-1940*. Stanford: Stanford University Press, 2004. 141-169.

- Haan, Joost; Peter J. Koehler, and Julien Bogousslavsky. "Neurology and surrealism: André Breton and Joseph Babinski," *Brain: A Journal of Neurology* 135 (December 2012): 3627-3634. Print.
- Hack Tuke, D. "Psychological Retrospect. French Retrospect." *The Journal of Mental Science* 28 (January 1883): 620-631. Print.
- Hacking, Ian. "Nineteenth Century Cracks in the Concept of Determinism." *Journal of the History of Ideas* 44.3 (1983): 455-475. Print.
- Hansen, B. N. Mark. *New Philosophy for New Media*. Cambridge, MA: MIT Press. 2004. Print.
- Harris, James C., "A Clinical Lesson at the Salpêtrière," *Archives of General Psychiatry* 62.5 (May 2005): 470-472. Print.
- Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics*. Chicago: Chicago University Press, 1999. Print.
- Heims, Steve J. *John von Neumann and Norbert Wiener: From Mathematics to the technologies of Life and Death*. Cambridge, MA: MIT Press, 1982. Print.
- Heims, Steve J. *The Cybernetics Group*. Cambridge: MIT Press, 1991. Print.
- Holmes, Frederic L. "Claude Bernard, The 'Milieu Intérieur', and Regulatory Physiology." *History and Philosophy of the Life Sciences* 8.1 (1986): 3-25. Print.
- Horn, Eva. "Editor's Introduction: There Are No Media." *Grey Room* 29 (2007): 6-13. Print.
- Jameson, Fredric, "Imaginary and Symbolic in Lacan: Marxism, Psychoanalytic Criticism and the Problem of the Subject." *Yale French Studies*, 55/56: 338-95. Print.
- Jaspers, Karl. *General Psychopathology*. Manchester: Manchester University Press, 1963. Print.
- Jenny, Laurent and Thomas Trezise. "From Breton to Dali: The Adventures of Automatism," *October* 51 (Winter, 1989): 105-114. Print.
- Jentsch, Ernst. "On the Psychology of the Uncanny." *Angelaki: Journal of Theoretical Humanities* 2.1 (1997): 7-16. Print.
- Johannessen, Jon-Arild and Arnulf Hauan. 'Communication – A Systems Theoretical Point of View (Third-Order Cybernetics)', *Systems Practice* 7.1 (1994): 63-73. Print.
- Johnson, Barbara. "The Frame of Reference: Poe, Lacan, Derrida." *The Purloined Poe*.

- Lacan, Derrida, and Psychoanalytic Reading*. Eds. John. P. Muller and William J. Richardson. Baltimore: John Hopkins University Press, 1988. 213-251. Print.
- Johnston, Adrian. *Žižek's Ontology: A Transcendental Materialist Theory of Subjectivity*. Chicago: Northwestern University Press, 2008. Print.
- Johnston, John. "Introduction." Friedrich Kittler. *Literature, Media, Information Systems. Essays*. Ed. John Johnston. Amsterdam: G+B Arts International, 1997. 2-26. Print.
- Johnston, John. *The Allure of Machinic Life: Cybernetics, Artificial Life, and the New AI*. Cambridge, MA: MIT Press, 2008. Print.
- Jones, Ernest. *The Life and Work of Sigmund Freud*. New York: Penguin, 1964. Print.
- Jünger, Ernst. *The Glass Bees*. New York: NYRB Classics, 2000. Print.
- Kapp, R.O. "Comments on Bernfeld and Feitelberg's 'The Principle of Entropy and the Death Instinct'." *International Journal of Psycho-Analysis* 12 (1931): 82-86. Print.
- Kenny, Vincent. "'There's Nothing Like the Real Thing': Revisiting the Need for a Third-Order Cybernetics." *Constructivist Foundations* 4.2 (2009): 100-111. Web.
- Kittler, Friedrich A. 'No Such Agency', trans. Paul Feigelfeld, introd. Paul Feigelfeld and Jussi Parikka, *Theory, Culture & Society* (2014). Web.
- Kittler, Friedrich. *Discourse Networks 1800 / 1900*. Stanford, CA: Stanford UP, 1990. Print.
- Kittler, Friedrich. "Dracula's Legacy." *Literature, Media, Information Systems. Essays*. Ed. John Johnston. Amsterdam: G+B Arts International, 1997. 50-84. Print.
- Kittler, Friedrich. "The World of the Symbolic – A World of the Machine." *Literature, Media, Information Systems. Essays*. Ed. John Johnston. Amsterdam: G+B Arts International, 1997. 130-146. Print.
- Kittler, Friedrich. *Gramophone, Film, Typewriter*, Stanford, CA: Stanford UP, 1999. Print.
- Klein, Matrin J. "Thermodynamics in Einstein's Thought." *Science* Vol. 157, No 3788 (1967): 509-516. Web.
- Klein, Ronald R. *The Cybernetics Moment, Or Why We Call Our Age the Information Age*. Baltimore, MD: John Hopkins University Press, 2015. Print.
- Kovacevic, Filip. *Liberating Oedipus?: Psychoanalysis as Critical Theory*. Lanham, MD: Lexington Books, 2006. Print.

- Kroker, Arthur. *Technology and the Canadian Mind: Innis / McLuhan / Grant*. Montreal: CTheory Books, 2001. Print.
- Kubie, Lawrence S. *Neurotic Distortion of the Creative Process*. New York: Noonday Press, 1961. Print.
- Kubie, Lawrence. "Communication between sane and insane: Hypnosis." *Cybernetics: Transactions of the Eighth Conference; Josiah Macy, Jr. Foundation*, New York (Heinz von Foerster, Margaret Mead, Hans Lukas Teuber), 1952. Print.
- Kubie, Lawrence. "Discrimination and Learning in Octopus." *The Proceedings of the Ninth Conference on Cybernetics*. Caldwell, N. J.: Josiah Macy, Jr. Foundation, 1953. 109-119.
- Kubie, Lawrence. "Psychoanalysis as science." *The Hixon lectures on the scientific status of psychoanalysis* Ed. E. Pumpian-Mindlin. Westport, Conn.: Greenwood Press, 1970, [c1952]. Web.
- Kunkle, Sheila. "Psychosis in a Cyberspace Age." *Other Voices*, v.1, n.3 (January 1999). Web.
- La Sagna, Phillipe. "Controversies Over the Mental." Trans. Jack Stone. *(Re)-Turn: A Journal of Lacanian Studies* 5 (2010): 33-43. Print.
- Lacan, Jacques; Jacques-Alain Miller, James Hulbert. "Desire and the Interpretation of Desire in *Hamlet*." *Literature and Psychoanalysis. The Question of Reading: Otherwise. Yale French Studies* 55/56 (1977): 11-52. Print.
- Lacan, Jacques. "Beyond the 'Reality Principle'." *Écrits*. Trans. Bruce Fink. New York: W.W. Norton & Company, 2006. 58-74. Print.
- Lacan, Jacques. "British Psychiatry and the War," Trans. Philip Dravers and Veronique Voruz. *Psychoanalytical Notebooks of the London Circle: Psychiatry and Psychoanalysis* 4 (Spring 2000a): 9-34. Print.
- Lacan, Jacques. "Columbia University: Lecture on the Symptom." *Culture/Clinic: Applied Lacanian Psychoanalysis* 1 (2013): 8-16. Print.
- Lacan, Jacques. *Écrits* Trans. Alan Sheridan. London: Tavistock Publications, 1977. Print.
- Lacan, Jacques. "Freud Forever: An Interview with Panorama." Conducted by Emilia Granzotto. *Hurly-Burly* 12 (January 2015): 13-21. Print.
- Lacan, Jacques. "Kant with Sade." *Écrits*. Trans. Bruce Fink. New York: W.W. Norton & Company, 2006. 645-668. Print.
- Lacan, Jacques. "On Hysteria." *Psychoanalytic Notebooks* 21 (2010): 9-14. Print.

- Lacan, Jacques. "On My Antecedents," *Écrits*. Trans. Bruce Fink. New York: W.W. Norton & Company, 2006. 51-57. Print.
- Lacan, Jacques. "On Psychoanalytic Discourse." *Lacan in Italia, 1953-1978. En Italie Lacan*, Milan, La Salmandra, 1978, pp. 32-55. Trans. Jack W. Stone. *Jack W. Stone's Joyce/Lacan/SintHome Page*. Web. 5 Sep. 2015. Web.
- Lacan, Jacques. "Radiophonie." 20 Nov. 2014. Web.
- Lacan, Jacques. "Science and Truth." *Écrits*. Trans. Bruce Fink. New York: W.W. Norton & Company, 2006. 726-745. Print.
- Lacan, Jacques. "The Instance of the Letter in the Unconscious, or Reason Since Freud." *Écrits*. Trans. Bruce Fink. New York: W.W. Norton & Company, 2006. 412-439. Print.
- Lacan, Jacques. "The Mirror Stage as Formative of the I Function as Revealed in Psychoanalytic Experience." *Écrits*. Trans. Bruce Fink. New York: W.W. Norton & Company, 2006. 75-81. Print.
- Lacan, Jacques. "The Signification of the Phallus." *Écrits*. W. W. Norton & Company, New York, 2002. 573-584. Print.
- Lacan, Jacques. "The Subversion of the Subject and the Dialectic of Desire in the Freudian Unconscious." *Écrits*. Trans. Bruce Fink. New York: W.W. Norton & Company, 2006. 671-702. Print.
- Lacan, Jacques. "Yale University: Lecture on the Body." *Culture/Clinic: Applied Lacanian Psychoanalysis* 1 (2013): 5-7. Print.
- Lacan, Jacques. *On the Names-of-the-Father*. Trans. Bruce Fink. Cambridge: Polity Press, 2013. Print.
- Lacan, Jacques. *Television. A Challenge to the Psychoanalytic Establishment*. Ed. Joan Copjec. Trans. Denis Hollier, Rosalind Krauss, and Annette Michelson; Jeffrey Mehlman. New York: W. W. Norton & Company, 1990. Print.
- Lacan, Jacques. *The Seminar of Jacques Lacan, Book I: Freud's Papers on technique (1953-1954)*, Ed. Jacques-Alain Miller. New York: Norton, 1991. Print.
- Lacan, Jacques. *The Seminar of Jacques Lacan, Book II: The Ego in Freud's Theory and in the Technique of Psychoanalysis*, Ed. Jacques-Alain Miller. New York: Norton, 1988. Print.
- Lacan, Jacques. *The Seminar of Jacques Lacan, Book III: The Psychoses 1955-1956*, Ed. Jacques-Alain Miller. New York: W. W. Norton & Company, 1997 [1993].
- Lacan, Jacques. *The Seminar of Jacques Lacan, Book X: L'angoisse, 1962-63*. Trans.



Cormac Gallagher. Manuscript.

Lacan, Jacques. *The Seminar of Jacques Lacan, Book XI: The Four Fundamental Concepts of Psychoanalysis*, Ed. Jacques-Alain Miller. Trans. Alan Sheridan. New York: Norton, 1998. Print.

Lacan, Jacques. *The Seminar of Jacques Lacan, Book XVII: The Other Side of Psychoanalysis 1969-70*. Trans. Cormac Gallagher. Manuscript.

Lacan, Jacques. *The Seminar of Jacques Lacan, Book XX: Encore. On Feminine Sexuality, The Limits of Love and Knowledge, 1972-1973*, Ed. Jacques-Alain Miller. Trans. Bruce Fink. New York: Norton, 1999. Print.

Lacan, Jacques. *The Seminar of Jacques Lacan, Book XXII: R.S.I. 1974-1975*. Trans. Cormac Gallagher. Manuscript.

Lafont, Jeanne. "Topology and Efficiency." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 3-27.

Latour, Bruno. "Visualization and Cognition: Thinking with Eyes and Hands." *Knowledge and Society* 6 (1986): 1-40. Print.

Latour, Bruno. *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge, Massachusetts: Harvard University Press, 1999. Print.

Latour, Bruno. *Reassembling the Social. An Introduction to Actor-Network Theory*. Oxford: Oxford University Press, 2005. Print.

Laurent, Eric. "Psychosis, or Radical Belief in the Symptom," *Hurly-Burly* 8 (October 2012): 243-251. Print.

Laurent, Eric. "The Oedipus Complex." *Reading Seminar I and II: Lacan's Return to Freud*. Eds. Richard Feldstein, Bruce Fink, Maire Jaanus. New York: SUNY Press, 1996. 67-75. Print.

Laurent, Eric. "Uses of the Neurosciences for Psychoanalysis." Trans. Jack Stone. *(Re)-Turn: A Journal of Lacanian Studies* 5 (2010): 45-62. Print.

Laurent, Eric. *Lost in Cognition. Psychoanalysis and Cognitive Sciences*. Trans. Adrian Price. London: Karnac Books, 2014. Print.

Laycock, Thomas. "Reflex, automatism, and unconscious cerebration," *Journal of Mental Science*, Pt. 1, 21 (1876): 477-498 and Pt. 2, 22 (1876): 1-17. Print.

Le Roux, Ronan. "Psychanalyse et cybernétique. Les machines de Lacan." *L'Evolution Psychiatrique* 78.2 (2007): 346-369.

Lerner, Vladimir and Eliezer Witztum. "Gaétan Gatian de Clérambault, 1872-1934," *The*

- British Journal of Psychiatry* 197 (2010): 371. Print.
- Lettvin, J.Y., Maturana, H.R., Pitts, W.H., and McCulloch, W.S. "Two Remarks on the Visual System of the Frog." *Sensory Communication*. Ed. Walter Rosenblith, Cambridge, MA: MIT Press and John Wiley and Sons: New York, 1961. Print.
- Lettvin, J.Y., Maturana, H.R., Pitts, W.H., and McCulloch, W.S. "Two Remarks on the Visual System of the Frog." In *The Mind: Biological Approaches to its Functions*. Eds., William C. Corning, Martin Balaban, 1968, 233-258. Print.
- Leupin, Alexandre. (Ed). *Lacan and the Human Sciences*. Small Town: Nebraska UP, 1991. Print.
- Libbrecht, Katrien. *Hysterical Psychosis. A Historical Survey*. New Brunswick, Transaction Publishers, 1995. Print.
- Liu, Lydia. *The Freudian Robot: Digital Media and the Future of the Unconscious*. Chicago: University of Chicago Press, 2010. Print.
- Lomas, David. *Simulating the Marvellous. Psychology, Surrealism, Postmodernism*. Manchester: Manchester University Press, 2013. Print.
- Londe, Albert. *L'évolution de la photographie*. Paris: Association Française pour l'avancement des sciences, 1889. Print.
- Loose, Rik. "'Per via di pore,' 'per via di levare,' 'per via di tagli.' Contemporary Symptoms and the Art of Interpretation." *Lacunae. Journal for Lacanian Psychoanalysis* 1.1 (2010): 49-61. Print.
- Lovink, Geert. 'What Is the Social in Social Media?', *e-flux* 40 (December 2012). Web.
- Lovink, Geert. *Network Without a Cause* (London: Polity, 2011). Print.
- MacCannell, Juliet Flower, "The Real Imaginary: Lacan's Joyce." *S: Journal of the Jan van Eyck Circle for Lacanian Ideology Critique* 1 (2008): 46-57. Print.
- Macey, David. *Lacan in Contexts*. New York: Verso, 1988. Print.
- Mackay, Alan L. *A Dictionary of Scientific Quotations*. London: Taylor & Francis, 1991.
- Macksey, R. and E. Donato (eds.). *The Structuralist Controversy: The Languages of Criticism and the Sciences of Man*, Baltimore: Johns Hopkins Press, 1972. Print.
- Mai, F.M. "Briquet's concept of hysteria: an historical perspective." *The Canadian Journal of Psychiatry* 26.1 (1981): 57-63. Print.
- Maltz, Maxwell. *Psycho-Cybernetics: A New Way to Get More Living out of Life*. New York: Simon & Schuster, 1969. [Englewood Cliffs, NJ: Prentice-Hall, 1960]

- Manovich, Lev. "On Totalitarian Interactivity." *The European Graduate School Blog* (1996). Web.
- Manovich, Lev. *Software Takes Command*. New York: Bloomsbury Academic, 2013. Print.
- Manovich, Lev. *The Language of New Media*. Cambridge, MA: MIT Press, 2001. Print.
- Marda, Yahya; Ozelcuk, Ceren, "Enjoying as an Economic Factor: Reading Marx with Lacan." *Subjectivity* 3, (2010): 323-347. Print.
- Marey, Étienne-Jules, *La Methode graphique dans les sciences experimentales et particulierement en physiologie et en medicine*. Paris, 1878. Web.
- Marrison, Warren. "The Evolution of the Quartz Crystal Clock." *Bell System Technical Journal* 27 (1948): 510-588. Web.
- Mason, Paul. "'I Tweet in My Dreams': The Rise of the Networked Individual," *Why It's Kicking Off Everywhere: The New Global Revolutions*. New York: Verso Books, 2012. 127-152. Print.
- Mason, Paul. "'I Tweet in My Dreams': The Rise of the Networked Individual," *Why It's Kicking Off Everywhere: The New Global Revolutions*. New York: Verso Books, 2012. 127-152. Print.
- McCulloch, Warren S. *Embodiments of Mind*. Cambridge: MIT Press, 1965. Print.
- McLuhan, Eric. "The Source of the Term, 'Global Village'." *McLuhan Studies* 2. Web.
- McLuhan, Marshall. *The Gutenberg Galaxy: The Making of Typographic Man*. Toronto: Toronto U P, 1962. Print.
- McLuhan, Marshall. *Understanding Media. The Extensions of Man*. New York, McGraw-Hill Book Company, 1964. Print.
- Metzger, David. "Interpretation and Topological Structure." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 134-149. Print.
- Milham, Willis I. *Time and Timekeepers*. New York: MacMillan, 1945. Print.
- Miller, Jacques-Alain. "Did You Say Bizarre?" *lacanian ink* 15 (1999). Web.
- Miller, Jacques-Alain. "Elements of Epistemology." *The Symptom* 9 (2008). Web. 15 Aug. 2015.
- Miller, Jacques-Alain. "Extimity." *The Symptom* 9 (2008). Web.

- Miller, Jacques-Alain. "Foreword." Lacan, Jacques. *On the Names-of-the-Father*. Trans. Bruce Fink. Cambridge: Polity Press, 2013. vi-viii. Print.
- Miller, Jacques-Alain. "How Psychoanalysis Cures According to Lacan." *Newsletter of the Freudian Field* 1.2 (1987): 4-30. Print.
- Miller, Jacques-Alain. "Interpretation in Reverse." *The Later Lacan*. Eds. Véronique Voruz and Bogdan Wolf. New York: SUNY Press, 2007. 3-9. Print.
- Miller, Jacques-Alain. "Lacanian Biology and the Event of the Body." *lacanian ink* 18 (2001): 6-29. Print.
- Miller, Jacques-Alain. "Objects a in the analytic experience." *Lacanian Compass* 9 (2008). Web.
- Miller, Jacques-Alain. "Ordinary Psychosis Revisited." *Psychoanalytic Notebooks* 26 (2013): 33-48. Print.
- Miller, Jacques-Alain. "Some Reflections on the Psychosomatic Phenomenon." *Hurly-Burly* 12 (January 2015): 133-140. Print.
- Miller, Jacques-Alain. "Teachings of the Case Presentation." *Returning to Freud: Clinical Psychoanalysis in the School of Lacan*. Ed. and trans. Stuart Schneiderman. New Haven: Yale University Press, 1980. 42-52. Print.
- Miller, Jacques-Alain. "The Real in the 21<sup>st</sup> Century." Presentation of the Theme of the IXth Congress of the World Association of Psychoanalysis. Buenos Aires, 27 Apr. 2012. *Lacan Quotidien*, 31 May 2012. Web.
- Miller, Jacques-Alain. "The Sinthome, a Mixture of Symptom and Fantasy." *The Later Lacan*. Eds. Véronique Voruz and Bogdan Wolf. New York: SUNY Press, 2007. 55-72. Print.
- Miller, Jacques-Alain. "The Unconscious and the Speaking Body." *Hurly-Burly* 12 (January 2015): 119-132. Print.
- Miller, Jacques-Alain. "The Written in Speech." *Courtil Papers of Association de la Cause freudienne*. <http://www.ch-freudien-be.org/Papers/Txt/Miller.pdf>. Web.
- Miller, James G. *Living Systems*. Toronto: McGraw-Hill Ryerson, 1978. Print.
- Mills, Mara. 'On Disability and Cybernetics: Helen Keller, Norbert Wiener, and the Hearing Glove', *differences: A Journal of Feminist Cultural Studies* 22.2-3 (2011): 74-111. Print.
- Milner, Jean-Claude. "Lacan and the Ideal of Science." *Lacan and the Human Sciences*. Ed. Alexandre Leupin. Lincoln & London: University of Nebraska Press, 1991. Print.

- Mindell, David A. *Between Human and Machine: Feedback, Control, and Computing before Cybernetics*. Baltimore: John Hopkins University Press, 2002. Print.
- Mitchell, Steven A.; Margaret J. Black. *Freud and Beyond. A History of Modern Psychoanalytic Thought*. New York: Basic Books, 1995. Print.
- Morlock, Forbes. "The Very Picture of a Primal Scene: Une leçon clinique à la Salpêtrière," *Visual Resources*, Vol. XX111 Nos. 1-2 (March-June 2007): 129-146. Print.
- Morselli, Paulo. "Maxwell Maltz, Psychocybernetic Plastic Surgeon, and Personal Reflections on Dismorphopathology." *Aesthetic Plastic Surgery* 32 (2008): 485-495. Print.
- Murrani, Sana. "Third Way Architecture: Between Cybernetics and Phenomenology." *Technoetic Arts: A Journal of Speculative Research* 8.3 (2010): 267-281. Print.
- Nasio, Juan-David. "Object a and the Cross-cap." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 98-116. Print.
- Negroponte, Nicholas. *The Architecture Machine: Towards a More Human Environment*. Cambridge, Mass.: MIT Press, 1970. Print.
- Nusselder, Andre. *Interface Fantasy. A Lacanian Cyborg Ontology*. Cambridge, MA: The MIT Press, 2009. Print.
- Nye, David E. *American Technological Sublime*. New Baskerville, MA: MIT P, 1994. Print.
- O'Sullivan, Simon. "Lacan's Ethics and Foucault's "Care of the Self": Two Diagrams of the Production of Subjectivity (and of the Subject's Relation to Truth)." *Parrhesia* 10 (2010): 51-73. Web.
- Pangaro, Paul. Interview. October 4, 2014. New York. Voice.
- Parisi, Luciana. *Contagious Architecture. Computation, Aesthetics, and Space*. Cambridge, M.A.: MIT Press, 2013. Print.
- Pascal, Blaise. *Pensées*. Trans. Roger Ariew. New York: Hackett Publishing Company, 2005. Print.
- Pask, Gordon. *An Approach to Cybernetics*. Hutchinson, 1961. Print.
- Pask, Gordon. *Conversation, cognition and learning*. New York: Elsevier, 1975. Print.
- Pask, Gordon. *The Cybernetics of Human Learning and Performance*. Hutchinson, 1975. Print.

- Pasquinelli, Matteo. 'The Ideology of Free Culture and the Grammar of Sabotage,' *Policy Futures in Education* 8.6 (2010): 671-682. Print.
- Pasquinelli, Matteo. "Introducing Four Regimes of Entropy: Notes on Environmental Fatalism and Energo-Determinism" at <http://matteopasquinelli.com/> Web.
- Pavon-Cuellar, David, "Marx in Lacan: Proletarian Truth in Opposition to Capitalist Psychology." *Annual Review of Critical Psychology* 9 (2011) 70-77. Print.
- Pias, Claus. "Analog, Digital, and Cybernetic Illusion." *Kybernetes* 34.3/4 (2005): 543-550. Print.
- Pickering, Andrew. *The Cybernetic Brain: Sketches of Another Future*, Chicago: University of Chicago Press, 2009. Print.
- Pierce, John R. *An Introduction to Information Theory: Symbols, Signals & Noise*. New York: Dover Publications Inc., 1980 [1961]. Print.
- Prince, Morton. "Babinski's Theory of Hysteria." *The Journal of Abnormal Psychology* 14.5 (1919): 312-324. Print.
- Quinodoz, Jean-Michel. *Reading Freud. A Chronological Exploration of Freud's Writings*. London: Routledge, 2005. Print.
- Rabaté, Jean-Michel. "Lacan's Turn to Freud." *The Cambridge Companion to Lacan*. Ed. Jean-Michel Rabaté. Cambridge, UK: Cambridge University Press, 2003. 1-24. Print.
- Ragland-Sullivan, Ellie. "The Eternal Return of Jacques Lacan." *Literary Theory's Futures*. Ed. Joseph Natoli. Chicago: U of Illinois P, 33-81. Print.
- Ragland-Sullivan, Ellie. *Jacques Lacan and the Philosophy of Psychoanalysis*. Chicago: U of Illinois P, 1986. Print.
- Ragland, Ellie. "An Overview of the Real, With Examples from Seminar I." *Reading Seminars I and II: Lacan's Return to Freud*. Eds. Richard Feldstein, Bruce Fink, Maire Jaanus. Albany, NY: SUNY Press, 1996. 192-211. Print.
- Ragland, Ellie. "Hamlet, Logical Time and the Structure of Obsession." *Newsletter of the Freudian Field*. Vol. 2:2 (Fall 1988). 29-45. Print.
- Ragland, Ellie. "Lacan's Topological Unit and the Structure of Mind." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 49-70. Print.
- Ragland, Ellie. "The Discourse of Science, the Imaginary Axis and a Concept of the Differential, From the Perspective of Lacan's Psychoanalytic Topological Logic." *(Re)-Turn: A Journal of Lacanian Studies* 5 (2010): 63-100. Print.

- Ragland, Ellie. *Essays on the Pleasures of Death. From Freud to Lacan*. New York: Routledge, 1995. Print.
- Ragland, Ellie. *The Logic of Sexuation. From Aristotle to Lacan*. New York: State University of New York, 2004. Print.
- Rand, Nicholas T. "The Hidden Soul: The Growth of the Unconscious in Philosophy, Psychology, Medicine and Literature, 1750-1900." *American Imago* 61.3 (2004): 257-289. *Scholars Portal*. Web.
- Recouly, Raymond. "A Visit to Freud," in *Freud as We Knew Him*, ed. Hendrik M. Ruitenbeek. Detroit: Wayne State University Press, 1973. 58-62. Print.
- Richer, Paul. "Observation de contracture hystérique guérie subitement après une durée de deux années." In *Nouvelle Iconographie de la Salpêtrière* (1889): 208–213. Web.
- Rinofner-Kreidl, Sonja. "Phenomenological Intuitionism and Its Psychiatric Impact." In Fuchs, Thomas; Thiemo Breyer, and Christoph Mundt (eds.) *Karl Jaspers Philosophy and Psychopathology*. New York, NY : Springer New York : Imprint: Springer, 2014. 33-60. Print.
- Robin Robins, Kevin, & Webster, Frank. *Cybernetic Capitalism: Information, Technology, Everyday Life*. In *The Political Economy of Information*. Ed. V. W. Mosco, Janet. Madison: University of Wisconsin Press. 1988. Print.
- Rogers, Carl and Barry Stevens. *Person to Person: The Problem of Being Human. A New Trend in Psychology*. New York: Pocket Books. 1975. Print.
- Rogers, Carl. *Client-centered Therapy: Its Current Practice, Implications, and Theory*. Boston: Houghton Mifflin Company, 1951. Print.
- Ross, John F. "Pascal's Legacy." *EMBO Reports* 5 (2004): S7-S10. Web.
- Rothblatt, Ben. *Changing Perspectives on Man*. Chicago: Chicago UP, 1968. Print.
- Roudinesco, Elisabeth. *Jacques Lacan*. Trans. Barbara Bay. New York: Columbia UP, 1997. Print.
- Roudinesco, Elisabeth. *Lacan & Co: A History of Psychoanalysis in France, 1925-1985*. Trans. Jeffrey Mehlman. Chicago: Chicago UP, 1990. Print.
- Samuels, Robert. "Logical Time and Jouissance." *Newsletter of the Freudian Field* 4.12 (1999): 68-78. Print.
- San Juan, Epifanio. "Antonio Gramsci on Surrealism and the Avant-garde," *The Journal of Aesthetic Education* 37.2 (Summer 2003): 31-45. Print.

- Saucier, Jean. "Mental Automatism, A Provocative Factor of the Chronic Hallucinatory Psychoses." *The Canadian Medical Association Journal* (April, 1932): 452-455. Print.
- Scull, Andrew. *Hysteria. The Biography*. Oxford: Oxford University Press, 2009. Print.
- Serres, Michel. *The Parasite*. Minneapolis, Minn.: University of Minnesota Press, 2007. Print.
- Shannon, Claude. "A Mathematical Theory of Communication." *The Bell System Technical Journal* 3, Vol. XXVII (1948): 379-423. Print.
- Showalter, Elaine. *Hystories. Hysterical Epidemics and Modern Culture*. New York: Columbia University Press, 1997. Print.
- Skiabine, Pierre. "Clinic and Topology. The Flaw in the Universe." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 73-97. Print.
- Skiabine, Pierre. "The Clinic of the Borromean Knot." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 249-267. Print.
- Skiabine, Pierre. "The Logic of the Scansion." Trans. Adrian Price. *La Cause Freudienne* 46 (2000). Web.
- Sloterdijk, Peter. *Critique of Cynical Reason*. Minneapolis, Minn.: University of Minnesota Press, 1987. Print.
- Smith, Grosbie. *Science of Energy: The Construction of Energy Physics in the 19th Century*. New York: Humanities Press, 1995. Print.
- Sobieszek, Robert A. *Ghost in the Shell: Photography and the Human Soul, 1850-2000*. Cambridge, MA: MIT Press, 1999. Print.
- Soler, Colette. "The Paradoxes of the Symptom in Psychoanalysis." *The Cambridge Companion to Lacan*. Ed. Jean-Michel Rabate. Cambridge: Cambridge University Press, 2003. 86-101. Print.
- Solms, Mark and Oliver. H. Turnbull. "What Is Neuropsychanalysis?" *Neuropsychanalysis* 13.2 (2011). Web.
- Spencer-Brown, G. *Laws of Form*. Portland, OR: Cognizer Co., 1994. Print.
- Spielrein, Sabina. "Die Destruktion als Ursache des Werdens." *Jahrbuch für psychoanalytische und psychopathologische Forschungen* IV (1912): 465-503. Web.



- Spielrein, Sabina. "The Diary of Sabina Spielrein (1909-1912)." Aldo Carotenuto. *A Secret Symmetry: Sabina Spielrein Between Jung and Freud. The Untold Story of the Woman Who Changed the Early History of Psychoanalysis*. New York: Pantheon Books, 1983. 3-44. Print.
- Stiegler, Bernard. *Technics and Time, 1. The Fault of Epimetheus*. Trans. Richard Beardsworth and George Collins. Stanford: Stanford UP, 1998. Print.
- Stiegler, Bernard. *Technics and Time, 3. Cinematic Time and the Question of Malaise*. Stanford, CA: Stanford UP, 2011. Print.
- Stiegler, Bernard. *Technics and Time*. Stanford, CA: Stanford University Press, 2010.
- Strachey, James. "Editor's Introduction. *Project for a Scientific Psychology*" *The Standard Edition of the Complete Psychological Works of Sigmund Freud*. Trans. James Strachey. Vol. I (1886-1889). London: The Hogarth Press, 1966. 283-293. Print.
- Sulloway, Frank J. *Freud, Biologist of the Mind. Beyond the Psychoanalytic Legend*. New York: Basic Books, Inc. Publishers, 1979. Print.
- Swales, Stephanie. *Perversion: A Lacanian Psychoanalytic Approach to the Subject*. London: Routledge, 2012. Print.
- Thacker, Eugene. 'Nihilism and New Media', part II of Galloway, Alexander R., Geert Lovink, and Eugene Thacker, 'Dialogues Carried Out in Silence: An E-mail Exchange', *Grey Room* 33 (Fall 2008): 96–112. Print.
- The Proceedings of the Ninth Conference on Cybernetics*. Caldwell, N. J.: Josiah Macy, Jr. Foundation, 1953. Print.
- Thompson, Rachel Leah. "The Automatic Hand: Spiritualism, Psychoanalysis, Surrealism," *Invisible Culture: An Electronic Journal for Visual Culture* 7 (2004). Web.
- Thrift, Nigel. "Remembering the technological unconscious by foregrounding knowledges of position." *Environment and Planning D: Society and Space* 22 (2004): 175-190. Print.
- Thurston, Luke. "Specious Arithmetic: Joycean Topology." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 314-327. Print.
- Tiqqun. "The Cybernetic Hypothesis." *Tiqqun* 2. Web.
- Tomšič, Samo, "The Technology of Jouissance," *Umbr(a): Technology* (2012): 143-160. Print.

- Tomšič, Samo. "Homology: Marx and Lacan." *S: Journal of the Jan van Eyck Circle for Lacanian Ideology Critique* 5 (2012): 98-113. Print.
- Turkle, Sherry. *Alone Together: Why We Expect More from Technology and Less from Ourselves*. New York: Basis Books, 2012. Print.
- Turner, Fred. *From Counterculture To Cyberculture: Stewart Brand, The Whole Earth Network, And The Rise of Digital Utopianism*. Chicago: University Of Chicago Press, 2008. Print.
- Vadanuta Plotogea1, A.; A. Keresztes, M. Moarcas. "Guillaume Benjamin Amand Duchenne: Between Medicine And Art." *Bulletin of the Transilvania University of Braşov* 6.51(2009): 185-188. Print.
- Valente, Joe, "Lacan's Marxism, Marxism's Lacan (from Žižek to Althusser)." *The Cambridge Companion to Lacan*. Cambridge, UK: Cambridge University Press, 2003. 173-190. Print.
- Vanheule, Stijn. *The Subject of Psychosis: A Lacanian Perspective*. New York: Margrave Macmillan, 2011. Print.
- Vappereau, Jean-Michel. "Making Rings: The Hole of the Sinthome in the Embedding of the Topology of the Subject." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 361-384. Print.
- Veith, Ilza. *Hysteria: The History of a Disease* (Chicago: University of Chicago Press, 1965). Print.
- Voruz, Véronique. "Psychoanalysis at the Time of the Posthuman: Insisting on the Outside-Sense." *Paragraph* 33.3 (2010): 423-443. Print.
- Voruz, Veronique. "The Topology of the Subject of Law: The Nullibiquity of the Fictional Fifth." *Lacan: Topologically Speaking*. Eds. Ellie Ragland and Dragan Milovanovic. New York: Other Press, 2004. 282-327. Print.
- Wajcman, Gérard. "{From *Tableau* ("Painting"))}." *Critical Essays on Jacques Lacan*. Ed. Ellie Ragland. New York: G. K. Hall & Co., 1999. 142-148. Print.
- Wajcman, Gérard. "Intimate Extorted, Intimate Exposed," *S: Journal of the Jan Van Eyck Circle for Lacanian Ideology Critique* 1 (2008): 78-99. Web.
- Wajcman, Gérard. "Wall of Screens." *lacanian ink* 40 (2012): 99-107. Print.
- Walter, Grey. "A Machine that Learns." *Scientific American* (1951) 185(2): 60-63. Web.
- Walter, Grey. "An Electromechanical Animal." *Dialectica* (1950) Vol. 4: 42-49. Web.
- Walter, Grey. "An Imitation of Life." *Scientific American* (1950) 182(5): 42-45. Web.

- Walter, Grey. *The Living Brain*. W. W. Norton & Company, 1963. Print.
- Wiener, Norbert. *Cybernetics: Or Control and Communication in the Animal and the Machine*. Cambridge, Mass.: MIT Press, 1961. Print.
- Wiener, Norbert. *I Am a Mathematician: The Later Life of a Prodigy*. Cambridge: MIT Press, 1964. Print.
- Wigley, Mark. "Network Fever." Wendy Hui Kyong Chun and Thomas W. Keenan (eds.) *Old Media, New Media: A History and Theory Reader* (New York: Routledge, 2006): 375-398. Print.
- Wilden, Anthony. *System and Structure: Essays in Communication and Exchange*. New York: Tavistock Publications: 1980. Print.
- Wilson, Elizabeth A. *Psychosomatic: Feminism and the Neurological Body*. Durham: Duke University Press, 2004. Print.
- Winthrop-Young, Geoffrey and Michael Wutz. "Introduction." Kittler, Friedrich. *Gramophone, Film, Typewriter*, Stanford, CA: Stanford UP, 1999. xi-xxxviii. Print.
- Wolfram, Stephen. *A New Kind of Science*. Champaign, IL: Wolfram Media, 2002. Print.
- Zenoni, Alfredo. "A Post-scientific Real." *Psychoanalytical Notebooks* 27 (2013): 79-84. Print.
- Zielinski, Siegfried. *Deep Time of the Media. Toward an Archaeology of Hearing and Seeing by Technical Means*. Cambridge, MA: MIT P, 2006. Print.
- Žižek, Slavoj. *Enjoy Your Symptom! Jacques Lacan In Hollywood and Out*, New York: Routledge, 1992. Print.
- Žižek, Slavoj. "Is It Possible to Traverse the Fantasy in Cyberspace?" *The Žižek Reader*. Eds. Elizabeth Wright and Edmond Wright. Oxford, UK: Blackwell Publishers, 1999. 102-124. Print.
- Žižek, Slavoj. "The Lacanian Real: *Television*." *The Symptom* 9, Jun 13, 2008. Web.
- Žižek, Slavoj. "Why Lacan Is Not a 'Post-Structuralist'." *Newsletter of the Freudian Field* 1.2 (1987): 31-39. Print.
- Žižek, Slavoj. "Why Lacan is not a Heideggerian," *lacanian ink* 32 (2008): 135-149. Print.
- Žižek, Slavoj. *Less Than Nothing. Hegel and the Shadow of Dialectical Materialism*. New York: Verso, 2012. Print.
- Zupančič, Alenka. *Ethics of the Real. Kant, Lacan*. New York, Verso, 2000. Print.

Zygmunt Bauman, Didier Bigo, Paulo Esteves, Elspeth Guild, Vivienne Jabri, David Lyon and R. B. J. Walker, "After Snowden: Rethinking the Impact of Surveillance," *International Political Sociology* 8 (2014): 121–144. Print.

## Curriculum Vitae

<b>Name:</b>	Svitlana Matviyenko
<b>Post-secondary Education and Degrees:</b>	<p>University of Kyiv-Mohyla Academy Kyiv, Ukraine 1996-2000 B.A.</p> <p>University of Kyiv-Mohyla Academy Kyiv, Ukraine 2000-2001 M.A.</p> <p>University of Missouri Columbia, Missouri, USA 2004-2011 Ph.D.</p> <p>The University of Western Ontario London, Ontario, Canada 2011-2015 Ph.D.</p>
<b>Honours and Awards:</b>	Fulbright Fellowship (2004-2006)
<b>Related Work Experience</b>	<p>Lecturer (2014- ) The University of Western Ontario</p>

### Publications:

- “Interpassive User: Complicity and Returns of Cybernetics.” *Fibreculture Journal* 25 (2015).
- “Cinema for A Missing People: Gilles Deleuze’s Crystal Image and Alexander Dovzhenko’s *Zvenohora*.” *Harvard Ukrainian Studies* 32 no. 1-4 (2015).
- “(H)appy Thoughts: Introduction,” *The Imaginary App*, eds. Paul D. Miller and Svitalana Matviyenko. Cambridge, MA: MIT Press, 2014.
- “Veil and the Capitalist Discourse: A Lacanian Reading of the Veil beyond Islam.” *(Re)-Turn: A Journal of Lacanian Studies*, Volume 6 (Spring 2011).