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The “Other” in the Machine: Oriental Automata and the  
Mechanization of the Mind

A dissertation submitted in partial satisfaction of the requirements for the degree  
Doctor of Philosophy

in

Communication and Cognitive Science

by

Ayhan Ayteş

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2012

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2012



## **DEDICATION**

To the memory of my father

Galip Ayteş

## EPIGRAPH

“Every machine is the spiritualization of an organism.”

Theo van Doesburg

Banham, Reyner. *Theory and Design in the First Machine Age*. MIT Press, 1980. P.12

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## **ABSTRACT OF THE DISSERTATION**

The “Other” in the Machine: Oriental Automata and the Mechanization of the Mind

by

Ayhan Ayteş

Doctor of Philosophy in Communication and Cognitive Science

University of California, San Diego, 2012

Professor David Serlin, Chair  
Professor Stefan Tanaka, Co-Chair

This dissertation project is a media archaeological inquiry into a long-term cultural dialectic between the rise of intelligent automata and the rise of Western discourses of Orientalism. I organize my analysis around the archetypal theme of the chess-playing machine, the Mechanical Turk, which has played many significant roles as a metaphor, as an abstract machine, as a behavioral prototype and as a thought experiment throughout the history of the mechanization of the mind. In almost every implementation of the chess-playing automaton as a conceptual device— from the essays of Edgar Allan Poe to Claude Shannon’s computer

models—there is a direct reference to its archetype, the 18th century chess-playing automaton invented by Austrian engineer Wolfgang von Kempelen. The Enlightenment chess automaton depicted a puppet dressed as an Ottoman subject who performed the role of the chess-player on behalf of the machine while secretly it was controlled by a chess-master hidden inside the cabinet. This intricate artifice designed into the chess-playing automaton is probably one of the reasons why it stayed relevant in explaining the human-machine symbiosis throughout the modern and industrial eras. This might also explain why the chess automaton became so readily applicable as a conceptual apparatus throughout the history of the mechanization of the mind. My initial approach, borne out in the following chapters, is to show how that this particular human-machine configuration can be seen as the physical embodiment of the irreconcilable contradictions of the Enlightenment’s ideological presumptions. Through the historical analysis of this configuration, I particularly aim to investigate the interaction between the cultural “Other” as a systematic epistemological design and the technological “Other” of the European mind. These converge in the archetypal apparatus of the mechanized mind concept, which, as I will argue, become crucially active in later industrial and postindustrial configurations such as the cybernetic apparatus of the 20<sup>th</sup> Century and the contemporary distributed cognitive labor platforms of the early 21<sup>st</sup> Century.

## Introduction:

This dissertation project is a media archaeological inquiry into a long-term cultural dialectic between the rise of intelligent automata and the rise of Western discourses of Orientalism.<sup>1</sup> In the following chapters I will organize my analysis around the archetypal theme of the chess-playing machine, the Mechanical Turk, which has played many significant roles as a metaphor, as an abstract machine, as a behavioral prototype and as a thought experiment throughout the history of the mechanization of the mind. In almost every implementation of the chess-playing

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<sup>1</sup> Schaffer, S. “Enlightened automata.” *The Sciences in Enlightened Europe* (1999): 126–65.

automaton as a conceptual device— from the essays of Edgar Alan Poe to Claude Shannon’s computer models—there is a direct reference to its archetype, the 18th century chess-playing automaton invented by Austrian engineer Wolfgang von Kempelen. (Poe, 1836; Benjamin, 1940; Shannon, 1950) The Enlightenment chess automaton depicted a puppet dressed as an Ottoman subject who performed the role of the chess-player on behalf of the machine while secretly it was controlled by a chess-master hidden inside the cabinet. This intricate artifice designed into the chess-playing automaton is probably one of the reasons why it stayed relevant in explaining the human-machine symbiosis throughout the modern and industrial eras. This might also explain why the chess automaton became so readily applicable as a conceptual apparatus throughout the history of the mechanization of the mind. My initial approach, borne out in the following chapters, is to show how that this particular human-machine configuration can be seen as the physical embodiment of the irreconcilable contradictions of the Enlightenment’s ideological presumptions.

The constellations of the predicaments imparted by the chess-playing automaton are largely informed by the late 18<sup>th</sup> Century concept of *man-a-machine*. Michel Foucault identified the technico-political and the anatomico-metaphysical aspects in the concept of *man-a machine* presented by physician and philosopher Offray de La Mettrie. Foucault regards the *man-a-machine* as an example of the human body as analyzable and manipulable, and subject it to the knowledge practices of the science and disciplinary routines of the social and administrative

entities.<sup>2</sup> Yet the Turkish chess-player's cultural alterity has not been a significant topic for Foucault or his followers. This is because the cultural alterity expressed by the chess automaton was already inscribed through medieval theological rhetoric that associated mechanistic behavior with Oriental docility. Consequently, the cultural layer of the mechanized mind discourse of the Enlightenment was based on a reification of distinctions between the European self and its Others, which, as a large-scale discursive process, was identified by Edward Said as an integral part of European material civilization and culture.<sup>3</sup> In this dissertation I aim to investigate the interaction between the cultural Other as a systematic epistemological design and the technological Other of the European mind. These converge in the archetypal apparatus of the mechanized mind concept, which, as I will argue, become crucially active in later industrial and postindustrial configurations such as the Cybernetic apparatus of the 20<sup>th</sup> Century and the contemporary distributed cognitive labor platforms of the early 21<sup>st</sup> Century.

What was the function of the figure of the Oriental in Western configurations of power/knowledge relationships around the mechanization of the mind? How did these technological "Others" interact with their contemporaneous Western subjectivities— from Cartesian machine-human, to liberal humanist subject, and finally the dispersed subjectivities of the digital network? How did the cultural

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<sup>2</sup> Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. London: Allen Lane, 1977.

<sup>3</sup> Said, Edward W. *Orientalism*. New York: Vintage Books, 1994.

conditions of this interaction influence and ultimately run parallel with the developments of technical sensory media that have critically influenced contemporary discourses of Artificial Mind?

## Technology and Alterity

In the first season of the Fox TV series aired in 2008, *Terminator: Sarah O'Connor Diaries*, there is a great deal of tension around locating and recovering a chess-playing computer called The Turk. This computer would later evolve into Skynet, a wicked artificial intelligence network that revolts against its creators. But Skynet's attempt to eradicate all humanity remains the central theme in the TV series and provides the motive for the human protagonists to organize a resistance against it. Skynet is a perfect example of how a sci-fi fantasy of human-machine relationships is based either explicitly or implicitly on technological alterity.

Technological alterity is a form of human machine relationship, which is similar to the ones seen among individual subjects. *Alteration*, according to Michael Theunissen is a process of *depointalization*, which he describes as follows: "I loses its world-instituting power, in that through Others, it is thrown out of that middle point of the world that it occupies in its transcendental originality."<sup>4</sup> Theunissen employs the Lacanian concept of big Other in this description. French psychoanalyst

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<sup>4</sup> Theunissen, Michael. *The Other: Studies in the Social Ontology of Husserl, Heidegger, Sartre, and Buber*. Cambridge, Mass: MIT Press, 1984. Print. Studies in contemporary German social thought.

Jacques Lacan defines the other in two levels, the little other is not an authentic being but a mere reflection of the Ego, as one's image appears on the surface of a mirror creating the specular image of oneself.<sup>5</sup> The little other belongs to the *imaginary* order in Lacan's tripartite structure of human psyche, which consists of *imaginary, symbolic and real* orders. On the other hand, the big Other, is inscribed in the *symbolic* order and defines an absolute alterity, by constituting an alterity beyond the imaginary difference as it can not be incorporated to the self through identification. The "Other" is where the self ends and another subject begins, consequently the self establishes the relationship with the symbolic system through language and law. Philosopher of science and technology Don Ihde suggests that humans can also establish an "alterity relation" with technology, in which they experience technology as a quasi-other. One significant mode through which technological alterity is founded is through anthropomorphism, which can be most clearly observed in discourses around technologies of the mechanization of mind. Not surprisingly, Don Ihde's examples to technological-alterity overlap significantly with the focus of this dissertation research, which ranges from early-modern automata to contemporary Artificial Intelligence research.

Ihde, describes the experience of technological alterity in relation to computers as an extension of anthropomorphism ascribed to humanoid automata: "To characterize computer 'intelligence' as human like is to fall into a peculiarly

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<sup>5</sup> Lacan, J., *The Seminar of Jacques Lacan: Book II: The Ego in Freud's Theory and in the Technique of Psychoanalysis 1954–1955* (W. W. Norton & Company, 1991)

contemporary species of anthropomorphism, however sophisticated.”<sup>6</sup> For example, during an interaction with a computer game, Ihde argues that the user may perceive the computer as a competitor: “in competition there is a kind of dialogue and exchange. It is the quasi-animation, the quasi-otherness of the technology that fascinates and challenges. I must beat the machine or it will beat me.”<sup>7</sup> Ihde suggests that the anthropomorphic relationship that can be found between humans and automata is based on their semblance of the animate and the similitude of humans and animals. “That which is more “like” us seemed to center the fascination and make the alterity more-quasi-animate.”<sup>8</sup> By quoting Descartes, Ihde emphasizes that the semblance of automata may also present anxiety, which could be observed in the contemporary “I-can-be-fooled-by-a-cleverly-conceived-robot” argument.

Nevertheless, computers are still the strongest examples for demonstrating the experience of technological alterity, although their otherness stay as quasi-otherness. Ihde identifies a tendency to fantasize this quasi-otherness into an authentic otherness, as exemplified by “HAL” in Stanley Kubrick’s 1968 film, *2001: A Space Odyssey* that reflects the fear of the replacement of human thinking by computer processes. Ihde argues that HAL represents a moment of crisis in our relationship with the technology of mechanized mind, or its “breakdown.” In Ihde’s

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<sup>6</sup> Ihde, Don. *Technology and the Lifeworld: From Garden to Earth*. Indiana University Press, 1990, pp.100

<sup>7</sup> *ibid* pp.101

<sup>8</sup> *ibid.* pp. 101



work, “breakdown” denotes those moments of malfunction during which the meaning of the technological object itself changes in various ways. In the example of HAL, the breakdown transforms the alterity of the technological object to an extreme level, which threatens the very existence of humans.

It is possible, of course, to identify another type of breakdown in human computer relationship—that is, the breakdown of the subject who loses against the machine. In his account of the famous chess match between then reigning world chess champion Kasparov and IBM Deep Blue, John Johnston identifies the moment when Kasparov starts to confuse the machine with a genuine rival Other. Johnston implies that the IBM Deep Blue was partially built to imitate its opponent’s style in order to win against him: a specular image of the opponent as an imaginary other. When Kasparov started to imagine Deep Blue as a genuine Other, however, his fear significantly reflected his breakdown as “a spectral decomposition of the ego function,” according to Johnston. There are other instances where Kasparov explains Deep Blue’s final winning move as the “hand of God,” thereby denoting a new level of breakdown, the confusion of the imaginary with the real. There are similar accounts about the audience reaction to the fierce performance of Kempelen’s chess automaton in the European courts, including the confusion of The Turk with metaphysical beings that I discuss in detail in Chapter 1. It is crucial to note, however, the mutual breakdown between the thinking machine and the human is closely related to the fear of the domination of the machine against its human opponents, reflecting a similar fear in racial and colonial contexts. Skynet, for

instance, the 21st century reincarnation of the Turk mentioned earlier, not only borrows a racialized technological alterity from its 18<sup>th</sup> century predecessor, but also brings about the extensive lineage of associated anxieties of the mechanization of mind into the present context. The question that needs to be asked is, why has the perennial Western anxiety of becoming machine been expressed as a racialized technological alterity? What is afforded by the Oriental image, so often utilized in the human-machine interface of the evolving mechanical mind apparatus, particularly in the most critical states of mutual “breakdown”?

### *Oriental Automata*

The Western discourse of Artificial Mind is replete with references to non-Western cultures. These references mostly appear as depictions of Oriental figures in humanoid automata and hypothetical devices that were crucial in the formation of the Artificial Mind discourse. Notable examples, which I will analyze in the following chapters, are the 18<sup>th</sup> century Chess-playing automaton of Wolfgang von Kempelen, the 19<sup>th</sup> century ‘Amazing Talking Machine’ of Joseph Faber, John Searle’s ‘Chinese Room’ in the 20<sup>th</sup> century and Amazon.com’s 21<sup>st</sup> century version of the Mechanical Turk. Although the mechanization of human senses and cognitive processes have been ascribed to novel inscription technologies,<sup>9</sup> their experimental models, such as humanoid automata, preceded the actual implementation of these

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<sup>9</sup> Kittler, Friedrich A. *Gramophone, Film, Typewriter*. Stanford, Calif: Stanford University Press, 1999. Print. Writing science.

technologies by centuries and inspired public debates that directly informed their implementation into industry and society.<sup>10</sup> It is crucial, therefore to understand the socio-cultural reasons for frequent deployment of the Oriental human-machines in these experimental machines of the Artificial Mind discourse in order to understand their immediate effects as well as later stages of its development.

Edward Said has explored one of the most elaborate and complex intellectual projects on Western history of epistemic violence, Orientalism, which he describes as “a style of thought based upon an ontological and epistemological distinction made between ‘the Orient’ and ‘the Occident.’” Orientalism is an ideological product of the European material civilization and culture that constructs “the Orient” as a mode of discourse.<sup>11</sup> This discourse, especially after the end of the 18th century becomes a “Western style for dominating, restructuring and having authority over the Orient” by primarily functioning as a geopolitical awareness as well as allocating this awareness into a “whole series of interests” including aesthetic, academic, economic and sociological domains.<sup>12</sup> Said explains one of the crucial means of this domination is to render the Oriental subject impossible to be “a free subject of thought or action.”

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<sup>10</sup> Zielinski, Siegfried. *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means*. Cambridge, Mass: MIT Press, 2006.

<sup>11</sup> Said, Edward W. *Orientalism*. New York: Vintage Books, 1994.

<sup>12</sup> *Ibid* pp.3

For Said, Orientalism historically corresponds with the European colonial expansion period that took shape between 1815 and 1914. It is critical to note that the construction of Orientalism as an epistemic violence was not an isolated formation. This period also coincides with other large-scale epistemic projects in Europe, including the redefinition of sanity and the construction of scientific knowledge in a hierarchic order within the emerging institutions of the modernity at the end of the eighteenth century and the beginning of the nineteenth century.<sup>13</sup> Foucault's study on this topic, however, mainly focuses on the European experience and ignores the concurrent colonial experiences. From this crucial historical overlap Gayatri Spivak deduces that these two epistemic projects may belong to a larger narrative of history in Europe and as well as in colonies: "What if the two projects of epistemic overhaul worked as dislocated and unacknowledged parts of a vast two-handed engine."<sup>14</sup> As a result, the constitution of the colonial subject as the "Other" and the subjugation of knowledge to the hierarchic order of scientificity become crucial counter-parts of a colonial apparatus, according to Spivak.

In this dissertation, I argue that one of the critical mechanisms in this two-handed engine is the rendering of the Oriental as unable to produce meaning. The Oriental is portrayed as a machine-like being that entails a theological "foreclosure

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<sup>13</sup> Foucault, Michel. *Madness and Civilization: A History of Insanity in the Age of Reason*. 1st ed. Vintage, 1988. Print.

<sup>14</sup> Spivak, Gayatri Chakravorty. "Can the Subaltern Speak?" in *Marxism and the Interpretation of Culture*. Eds. Cary Nelson and Lawrence Grossberg. Urbana, IL: University of Illinois Press, 1988: 271-313. pp.281

of semiosis.”<sup>15</sup> Through the European conception of *Oriental automata*, which combined the unknown world of automata with the unknown world of the Oriental,<sup>16</sup> medieval Christian theology symbolically annihilated Islam by assigning the religion and its subjects to the “mindless” mechanical world of gears.<sup>17 18</sup> Thus, it is crucial to consider the peculiar relationship between intelligent automata and the “Other” in an extended historical and socio-cultural perspective, in order to understand the significance of the ideological assumptions rooted in medieval theology that made this association relevant in subsequent socio-cultural registers. In fact, assuming the perspective of a cultural Other for establishing a liminal outlook has been a recurring component of much wider Western discursive practices. As Ziauddin Sardar points out, an entire genre of European letters was based on the idea of seeing European society through the eyes of noble savages. Originated by Thomas Moore in *Utopia*,

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<sup>15</sup> Biddick, Kathleen “Dead Neighbors...” forthcoming in *Points of Departure: Political Theology on the Scenes of Early Modernity*, ed. by Julia Reihard Lupton and Graham Hammill, U. of Chicago Press, 2010

<sup>16</sup> Truitt, E. R. “Trei poëte, sages dotors, qui mout sorent di nigromance”: Knowledge and Automata in Twelfth-Century French Literature.” *Configurations: a journal of literature, science, and technology* (Soc. for Literature and Science; Georgia Inst. of Technology) (Baltimore, MD) 12.2 (2004): 167.

<sup>17</sup> For a fascinating analysis of a Christian theological discourse with wide-ranging influence in Western politics for foreclosing the semiosis to Muslim people see Biddick, Kathleen “Dead Neighbors...” forthcoming in *Points of Departure: Political Theology on the Scenes of Early Modernity*, ed. by Julia Reihard Lupton and Graham Hammill, U. of Chicago Press, 2010

<sup>18</sup> These automata were also referred to as *mammets* whose etymology is traced to Mahomet or Muhammed.

the theme of alien reporter held up itself as a mirror to European society and reappeared in the works of many authors, including Voltaire, Montesquieu and Goldsmith. In this tradition the cultural alterity acts as a screen, a surface for projection against which the European colonizers can define themselves upon their encounter with new worlds.<sup>19</sup>

Yet while Oriental figures in Western Artificial Mind discourse are highly prevalent, the literature that engages with this phenomenon is rare. Edgar Allen Poe, for example does not reference the Turkish appearance of the chess-playing automaton of Maelzel in his seminal essay published on *Southern Literary Messenger*<sup>20</sup> (1836). Among contemporary works, James Berkley, in his recent essay that focuses on Poe's literature from a post-humanist perspective, acknowledges the ethnic appearance of the automaton, but does not bring up the American Orientalism as its key cultural context.<sup>21</sup> Mark Sussman's analysis of the performative aspects of Chess Playing Automaton mentions Orientalist fantasy that the machine evokes, but does not elaborate further.<sup>22</sup> Similarly, N. Katherine Hayles makes a passing remark about the Orientalist aspect of Searle's Chinese Room in a recent blog post, but does

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<sup>19</sup> Sardar, Ziauddin, and Sean Cubitt, eds. *Aliens R Us: The Other in Science Fiction Cinema*. London: Pluto Press, 2002.

<sup>20</sup> Poe, Edgar Allan. *Maelzel's Chess-Player*. Dodo Press, 2009.

<sup>21</sup> Berkley, James. "Post-Human Mimesis and the Debunked Machine: Reading Environmental Appropriation in Poe's 'Maelzel's Chess-Player' and 'The Man That Was Used Up'." *Comparative Literature Studies* 41.3 (2004): 356-376.

<sup>22</sup> Sussman, Mark J. "Performing the Intelligent Machine: Deception and Enchantment in the Life of the Automaton Chess Player." *TDR: The Drama Review* 43.3 (1999): 81-96.

not engage with that point any further.<sup>23</sup> Simon Schaffer is one of those rare scholars who emphasized the role of the Oriental in the various experimentations of Artificial Mind and speculated about the possibility of “a long-term political and aesthetic relationship”<sup>24</sup> between intelligent automata and Orientalism, but has not pursued this insight in any of his later works.

It is important to note that the crucial commonality in temporally distant performances of the Oriental in the Artificial Mind discourse is their peculiar appearance at the moments of crisis and transformation of the Western subjectivity. For example, in contrast with other automata of the 18th century, Kempelen’s Chess Playing Automaton did not merely act as clockwork but instead gave the impression of a self-regulating system that could counter external actions within the symbolic logic of chess. As historian of technology Otto Mayr suggests, in contrast to the idea of clockwork universe, which was the political universe of autocratic feudalism, the mechanical, political, and economic ideas of self-regulating systems influenced the Enlightenment ideas of liberal subjects and democracy.<sup>25</sup> However, it is crucial to note that the chess-playing automaton’s articulation of the idea of the self-regulating liberal subject, by means of the symbolic universe of the chess game, was partly enabled by the cultural alterity performed by its status as an Oriental mannequin. In

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<sup>23</sup> Hayles, N. Katherine. “Distributing/Disturbing the Chinese Room.” *On the Human*. Web. 9 Nov. 2011.

<sup>24</sup> Schaffer, S. “Enlightened automata.” *The Sciences in Enlightened Europe* (1999): 126–65.

<sup>25</sup> Mayr, Otto. *Authority, Liberty, and Automatic Machinery*, 1970, 39

its later incarnations, the chess-playing automaton reiterated this role by adopting other technical media that heralded the further mechanization of human senses, such as the voice synthesizer implemented by Maelzel in its later versions presented throughout the Americas in the mid to late 19<sup>th</sup> Century.

In the late 20<sup>th</sup> century, John Searle's infamous thought experiment, the "Chinese Room" performed a machine that can simulate an intelligent conversation in Chinese. As an "abstract machine" the Chinese room was a proof of Searle's statement that "[t]he appropriately programmed computer really is a mind, in the sense that computers given the right programs can be literally said to understand and have other cognitive states."<sup>26</sup> This view inherently suggests that computers as tools are extensions of our cognitive capacities and their integration into the cultural and industrial production processes entails the reassembly of the human-technical media periphery.<sup>27</sup> Therefore Searle's Chinese Room experiment marked another point of shift in the Artificial Mind discourse from a human mind enclosed in a room to an extended cognitive system.

Most recently, in Amazon's Mechanical Turk<sup>28</sup>, this extended cognitive system enters into experimentation with cognitive capitalism, which uses the digital

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<sup>26</sup> Searle, John (1980), "Minds, Brains and Programs", *Behavioral and Brain Sciences* 3 (3): pp.417

<sup>27</sup> Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago, Ill: University of Chicago Press, 1999.

<sup>28</sup> In November 2005, Amazon Web Services started a web-based digital labor market where workers from across the world choose and complete human intelligence tasks (HITs)



network to expand its reach to the global realm.<sup>29</sup> However the main shift that the Amazon Mechanical Turk represents in the Artificial Mind discourse is the reversal of the relationship between tools and humans as formulated in the extended cognitive system model. The Mechanical Turk embodies a model where the machine becomes the processing center of the system, which extends toward human minds as its constitutive cognitive margin.

Each appearance of an Oriental Cyborg in Artificial Mind discourse heralds another significant shift in the configurations of Western subjectivity. These are also instances where the ongoing process of the delegation of human senses onto technical media requires a complete overhaul in the relationship between humans and machines mainly in parallel with the shifts in the socio-economic systems of production.

### Simulation and Mimicry

I consider two distinct qualities of automata as the basis of their performance: as simulation media, and as mimetic machines. Automata as a simulacrum presents a

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designed by corporate or individual developers. Amazon's virtual workshop emulates artificial intelligence systems by replacing computing with human brainpower. This human/machine assemblage powered by an "artificial artificial intelligence" platform represents a crucial formation on a global scale as it facilitates the supply of cognitive labor needs of the emerging semantic web industry from a global workforce.

<sup>29</sup> In its various uses by Nick Dyer-Witheford, Paolo Virno and Yann Moulier Boulang, the term cognitive capitalism refers to the accumulation of capital primarily characterized by post-Fordist modes of production and consumption of information in the network society.

perspective that is situated in a larger, mechanistically conceived universe, such as that of an Enlightenment metaphysical system. The mimetic function of automata directly relates to their discursive role in the anatomico-metaphysical domain. In his book, *Automata and the Origins of Mechanism and Mechanistic Philosophy* (1964,) science historian Derek de Solla Price identifies a correlation in development of technologies of automata and astronomical and biological simulacra (e.g. clockworks and jackworks). He explains this affinity by the interdependence of the technologies involved in making them. In addition, Price asserts that the ideas about the mechanistic universe preceded the actual production of automata: “[S]ome strong innate urge towards mechanistic explanation led to the making of automata, and that from automata has evolved much of our technology, particularly the part embracing fine mechanism and scientific instrumentation”<sup>30</sup>

On the other hand, many scholars and mathematicians since antiquity have used clockwork as a metaphor and epistemic apparatus for the mechanistic universe argument. The expression “machina mundi,” as used by Lucretius and other ancient authors after him, generally emphasized the systemic operation and the createdness of the universe, which were influenced by the mechanical technology of their times.<sup>31</sup> Cicero, for example, had actually seen and expressed his fascination with Archimedes’ mechanical planetarium, which led him to compare Archimedes’

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<sup>30</sup> Price, Derek J. de Solla. (1964) *Automata and the Origins of Mechanism and Mechanistic Philosophy*. *Technology and Culture* 5.1 (1964): 9-23. pp.15

<sup>31</sup> Mayr, Otto. *Authority, Liberty, and Automatic Machinery*, 1970, pp.39

achievement with that of the God characterized as the Platonic concept of “the creator of the universe.”<sup>32</sup>

Plato’s craftsman-God creates the world based on an unchangeable *original*, which could only be apprehended by reason. Therefore, the created universe is essentially a copy, a simulacrum of that original. Plato’s cosmology privileges *the original* over *the simulacrum* in order to sustain a metaphysical hierarchy. In *Timaeus*, the simulacrum universe is described as a living being (*zoon*) endowed with a soul (*anima mundi*), which contains the divine intelligence in itself. Furthermore, Plato describes this living creature with concepts such as, “visible animal,” “ideal animal,” and “perfect and intelligible animal.” In *Timaeus*, the animal metaphor is further extended onto the celestial realm; fixed stars for example are described as “divine and eternal animals.” In Plato’s use of the animal metaphor *zoon* is defined exclusively as a product of an act of creation by *the craftsman* as opposed to an entity that subsists by itself. The inherent function of the biological simulacrum in Plato’s *Timeaus* may just be the expression of the desire of the philosopher for a dynamic model that would be used for simulation of a complex conceptual system. Nevertheless, the idea continuum between the concepts of state, cosmos and simulacra in *Timeaus* mainly occurs in the representational realm where both philosopher and his conception of God use simulacra for their creations of the state and of nature.

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<sup>32</sup> Plato extensively described the creation of the universe by a demiurge (craftsman-creator) God. Plato. *Timaeus*. Indianapolis: Hackett Pub. Co, 2000.

It is crucial to note, however that Plato's simulacrum should not be understood as mere imitation "but rather the act by which the very idea of a model or privileged position is challenged and overturned," as expressed by Gilles Deleuze.<sup>33</sup> In other words, the model inheres in its materialization a peculiar volatility, a perpetual effort to test the perceived stability of the present status of the known universe. In his critical reading of Plato's notion of simulacrum Deleuze affirms that "the simulacrum [...] contains a positive power which negates both original and copy, both model and reproduction."<sup>34</sup> At this juncture, one needs to consider the main function of the humanoid automata as to challenge the ontological status of "human" in relation to its mechanical copy. Consequently, what makes humanoid automata an indispensable apparatus of simulacrum is its ability to integrate both sacred and secular lines of contestations due to its embodiment of critical ontological liminalities. This role is often played in the anatomic-metaphysical register of humanoid automata during the Enlightenment.

With their mimetic performance for conveying scientific ideas, Enlightenment automata were instances where mimesis functioned as a discursive tool for early modern science. Their public demonstrations were part of the naturalist

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<sup>33</sup> Deleuze, Gilles, *Difference and Repetition*, 1994 pp.69

<sup>34</sup> Deleuze, Gilles. "Plato and the Simulacrum." Trans. Rosalind Krauss. October 27 (1983): 45-56. Deleuze's particular understanding of the simulacrum needs to be considered within the context of his project of breaking up the Platonist duality of idea and its image as well as dissolving the Platonic notion of father creator who privileges his divine ideals over his simulacrum universe.

representational tradition; *nature-as-theater* conveyed messages of ethics and good behavior by exploiting ambiguous metaphysical status of automata.<sup>35</sup> Indeed, Adorno and Horkheimer, in their *Dialectic of Enlightenment* (1972) suggest that the particular use of mimesis as a tool for dominating nature later transformed into a hidden force as a result of its repression and distortion in modern science.<sup>36</sup> Adorno and Horkheimer consider the weakening and functioning of the mimetic faculty in an interaction with the repression of the body by the social transformation of industrialized production.

According to Michael Taussig, mimetic faculty is "the nature that culture uses to create second nature, the faculty to copy, imitate, make models, explore difference, yield into and become Other. The wonder of mimesis lies in the copy drawing on the character and power of the original, to the point whereby the representation may even assume that character and that power."<sup>37</sup> Enlightenment automata utilized this "second nature" for exploring the alterity presented by the idea of "man-à-machine". Automata's performance of mimicry was geared towards the larger socio-technical changes of becoming "Other" that the man-à-machine presented. Becoming the technological "Other," could be conflated by ethnic Others, as in the example of Kempelen's chess playing automaton. In Chapter 1, I will talk

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<sup>35</sup> Schaffer, S. "Natural philosophy and public spectacle in the eighteenth century." *History of Science; an Annual Review of Literature, Research and Teaching* 21.51 Pt 1 (1983): 1-43.

<sup>36</sup> Horkheimer, Max, and Theodor W Adorno. *Dialectic of Enlightenment*. New York: Continuum, 2000.

<sup>37</sup> Taussig, Michael. *Mimesis and Alterity* . (New York: Routledge, 1993) xiii.

about the methods of this conflation in detail, by tracing the transformation of the idea of the mechanized mind through the footsteps of the chess playing Turk – of von Kempelen and later Maelzel- and the formations around its performative and discursive work.

### *Automaton as Apparatus*

An automaton may perform its mimetic role in various modes –as epistemic object, discursive tool, imaginary media, or, as a scientific model. But these can all be put into the service of modeling a larger sociotechnical *apparatus*. I use the term *apparatus*, the English translation of Michel Foucault’s original French term *dispositif*, in line with its original description, in order to denote strategic constellations of tangible and intangible tools, institutions and discourses that are inscribed into politics of knowledge and power. *Dispositif*, according to Foucault is, “a set of strategies of the relations of supporting, and supported by certain types of knowledge.”<sup>38</sup> Foucault uses *apparatus* in order to move beyond discourses to include material, behavioral and institutional elements for describing formations of structures of knowledge. The term frequently appears in relation to his studies on governmentality from the mid 1970s.

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<sup>38</sup> Foucault explains this term in his interview published in Michael Foucault, *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977*, ed. C. Gordon pp194-98. Deleuze prefers the term *social apparatus* in his translation of dispositive in Deleuze, Gilles. “What is a Dispositif.” *Michel Foucault, philosopher : essays translated from the French and German*. Ed. Timothy Armstrong. New York: Routledge, 1992.

Foucault uses the prison as an example of an apparatus by emphasizing its optic attributes that are configured based on Bentham's Panopticon architecture. The prison in this view, is simultaneously a technical medium designed for seeing without being seen and consequently a tool for subjectification by internalization of surveillance. As Agamben succinctly describes, the apparatus "is first of all a machine that produces subjectifications, and only as such it is also a machine of governance."<sup>39</sup> Thus, the term apparatus provides for this dissertation a very useful vantage point in establishing a historical framework for studying mechanization of mind in relation to an integrated focus on its technical mediations such as division of *cognitive labor* and its constitutive disciplinary discourses.

In order to describe the particular type of immaterial labor that characterizes the industrial production of symbolic-analytical services, I prefer to use the term *cognitive labor*. This distinction is helpful in order to avoid the perceived emphasis on the "immateriality" of the so-called immaterial labor under consideration, although various authors have carefully pointed it out that the term does not denote solely immaterial processes neither in terms of production nor consumption. The concept of immaterial labor, however, still has traces of some of the conventional assumptions about the processes of mind as separate from the body.

Cognitive labor provides a critical vantage point for analyzing subjectifications configured within the apparatuses of the artificial mind because

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<sup>39</sup> Agamben, Giorgio. "*What Is an Apparatus?*" and *Other Essays*. Stanford University Press, 2009. , pp.20

these are also the modes of actual human-machine interaction that exist in processes of production with wider implications. Cognitive labor also marks an epistemological and discursive culmination point in postindustrialism that is apparent in the academic, military and socio-economic prominence of the parallel systematization of the concept. As Mateo Pasquinelli argues,

Cognitive labour produces machines of all kinds, not only software: electronic machines, narrative machines, advertising machines, mediatic machines, acting machines, psychic machines, social machines, libidinous machines. In the XIXth century the definition of machine referred to a device transforming energy. In the XXth century Turing's machine - the foundation of all computing - starts interpreting information in the form of sequences of 0 and 1.<sup>40</sup>

Another critical advantage of using the concept of cognitive labor for a critical historical analysis of the mechanization of the mind is that it is possible to talk about the historical relationship between the associated sociotechnical systems and constitutive subjectivities by means of its embodied and distributed characteristics. It is particularly necessary to look at the history of the mechanization of mind at the current cultural conjuncture when the digital network has become a global socio-technical apparatus that mediates, regulates and controls a wide array of human conditions. Cognitive labor is one of the main constituents of the 21<sup>st</sup> century post-industrial capitalism that animates this apparatus and plays a key structural

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<sup>40</sup> Pasquinelli, Matteo. "Radical machines against the techno-empire. From utopia to network." 23 Feb. 2004. Web. 28 Aug. 2011.



role.<sup>41</sup> One of the most salient forms of cognitive labor in the network economy, crowdsourcing is also one of the key applications that are transforming the network society into its next stage, the semantic web. By matching the vast global human resources for the endless digital labor required for the transformation to semantic web, crowdsourcing applications also influence how we would produce, disseminate and consume digital information as a cultural commodity in the future. Semantic web is based on the premise of automation of extracting meaning out of digital data available on the networks with minimal or no human intervention. But in order for this to be done, machine learning applications need to be trained by human experts for the precision of the automated meaning extraction. This is one of the most creative sourcing of the crowds that could be observed in cognitive labor markets such as Amazon's Mechanical Turk.

The formation of subjectivity via cognitive labor apparatus has also been dependent on its claim of novelty that situates the subject within a process of *becoming*. Deleuze explains this point as follows; "We belong to social apparatuses and act within them. The newness of an apparatus in relation to those, which have gone before is what we call its actuality, our actuality. The new is the current. The current is not what we are in the process of becoming- that is the Other, our becoming-other. In each apparatus it is necessary to distinguish what we are, and

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<sup>41</sup> Hardt, Michael, and Antonio Negri. *Multitude: War and Democracy in the Age of Empire*. Penguin (Non-Classics), 2005. p.68

what we are in the process of becoming: *the historical part and the current part.*”<sup>42</sup>

In a larger historical context, Deleuze suggests that during the current major transformation from disciplinary societies into societies of control, the social apparatus plays a key role in designating the conditions of becoming “Other.” In that transformation, it is critical to look at the apparatuses of cognitive labor not only for their history but also for their current process of becoming, or as Deleuze suggests: “that which belongs to analytical and that which belong to the diagnostics.” In this dissertation I study various cognitive labor apparatuses for their aspect of becoming “Other,” both in the registers of cultural and technological alterity.

### Automata and the Technological Sublime

As the subjectification of the Western self in front of the evolving apparatus of mechanized mind since Enlightenment science found its counterpart in the cultural margins of the Oriental, this role was not limited to the process of the mechanization of mind. It has also been part of another long-term Western representational tradition that is the technological sublime. With the advance of industrial revolution, the colonialist representational tradition was projected onto the discourse of the technological sublime. As a form of technological utopianism, the technological sublime reifies the myth of progress, which places the Golden Age in the future, and

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<sup>42</sup> Deleuze, Gilles. 1992. What is a Dispositif. In *Michel Foucault, philosopher : essays translated from the French and German*, ed. Timothy Armstrong. New York: Routledge. pp.164

substitutes that sacralized temporal zone for Heaven.<sup>43</sup> This formulation of sublime future was instrumental in the secularization of the idea of Christian redemption. According to Michael Adas, for nineteenth century colonial powers, rhetoric of technology became the main criteria of intelligence, rationality and the good society, superseding Christianity.<sup>44</sup> The combination of the ideas of progress, religion and colonialism also manifested itself in the racialization of the new technologies. Technological progress, as “white magic,”<sup>45</sup> became the new sublime and a marker of difference. As Leo Marx illustrates, “to look at a steamboat ... [was] to see the sublime progress of the race.”<sup>46</sup>

The computer, in particular, reveals a new set of sublime experiences beyond any of the technological object has evoked. As Sherry Turkle notes, computers defamiliarize the mind and provoke self-reflections about our human identity.<sup>47</sup> In the specific technological process of the mechanization of the mind that produced computers, Cybernetics presented a milestone in the post-war Anglo-American

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<sup>43</sup> Dinerstein, Joel. “Technology and Its Discontents: On the Verge of the Posthuman.” *American Quarterly* 58.3 (2006): 569-595.

<sup>44</sup> Adas, Michael. *Machines as the measure of men: science, technology, and ideologies of Western dominance*. Cornell University Press, 1990.

<sup>45</sup> Moretti, Franco. *Modern Epic: The World-System from Goethe to Garcia Marquez*. Verso, 1996.

<sup>46</sup> Marx, Leo. *The machine in the garden: technology and the pastoral ideal in America*. Oxford University Press, 2000., 195-197

<sup>47</sup> Turkle, Sherry. *The Second Self: Computers and the Human Spirit*. 1st ed. Simon & Schuster, 1984.

context. Within a particularly American discourse of technological sublime, computers were based on an ideological premise of disembodiment of information. Carolyn Marvin has suggested that an Anglo-American preference for digital information over context-dependent analog information mainly meant that an “ideological call for born-again unity in a clean and rigidly uniform world, a world more like ours than anyone else’s.”<sup>48</sup>

Cybernetics, as a key instance in the history of Artificial Mind discourse, represents the pinnacle of the Enlightenment idea of bringing the management of capital, military and bureaucracies of the nation state under the scientific rule. Because of its centrality in the technomythical formulations of purely rational socioeconomic apparatus, the Artificial Mind discourse had a specific use for the varying performances of cultural alterity. Mostly triggered by developments of novel technical media, these formulations also carried the traces of the ensuing contemporary anxieties for imminent alternative subjectivities. In Cybernetics discourse, for example, with its allusions to Christian precepts of spiritual transcendence, the disembodiment of information by means of digitization was a moment of peril for the liberal subjectivity.<sup>49</sup> The idea that the boundaries of the human subject are a construction rather than given, directly undermined the idea of

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<sup>48</sup> Carolyn Marvin, “Information and History” in Slack and Fejes, *The Ideology of the Information Age*, pp. 49-62.

<sup>49</sup> Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago, Ill: University of Chicago Press, 1999. Print.

an autonomous self-regulating subject and consequently a self-regulating liberal socio-economic system, according to N. Katherine Hayles. Cybernetics also marked a critical point in the trajectory of Artificial Mind discourse in terms of the potential for control over mental processes similar to what the Taylorist division of labor had achieved in the early 20<sup>th</sup> century through a process of rationalization, fragmentation, mechanization and routinization.<sup>50</sup> After the demise of the Cybernetics project, this particular task was commissioned to Artificial Intelligence project.

In a more recent juncture, the Artificial Intelligence project has been adopted by what Richard Barbrook and Andrew Cameron describe as “Californian ideology.” In their critique of West Coast cyber-libertarianism, they describe how the AI project still hinders its initial desire for control in racial terms: “Unable to surrender wealth and power, the white people of California can instead find spiritual solace in their worship of technology. If human slaves are ultimately unreliable, then mechanical ones will have to be invented. The search for the holy grail of Artificial Intelligence reveals this desire for the Golem - a strong and loyal slave whose skin is the colour of the earth and whose innards are made of sand.”<sup>51</sup> In other words, Artificial Intelligence project hinders the colonial desire for controlling and exercising power over an authentic Other, modeled after the 18<sup>th</sup> century chess-playing Turk.

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<sup>50</sup> Berman, Bruce J. “Artificial intelligence and the ideology of capitalist reconstruction.” *AI & Society* 6.2 (1992): 103-114.

<sup>51</sup> Barbrook, Richard, and Andy Cameron. “The Californian ideology.” *Science as Culture* 6 (1996): 44-72.

## Media Archaeology

One of the critical areas that have informed this dissertation is the emerging field of Media Archaeology, which provides an indispensable framework for an integrated analysis of the long-term process of the mechanization of the mind. This is due to its interdisciplinary attention to the contact zones between the technical and the cultural in a deep historical perspective. Pioneers of media archaeology, Friedrich Kittler, Siegfried Zielinski, Oliver Grau, Lisa Gitelman, Erkki Huhtamo, Eric Kluitenberg and Bruce Sterling shared this approach in order to respond to the novelty claims associated with the digital media from a critical and comprehensive historical perspective. Erkki Huhtamo, for example, has proposed the main goal of the media archaeology to be “a way of studying such recurring cyclical phenomena which reappear and disappear and reappear over and over again in media history and somehow seem to transcend specific historical contexts.”<sup>52</sup> These recurrences are in a way the results of a constant endeavor inherent in the imaginary media which is often not only about the machines that mediate the human imagination but also the human aspirations that are aimed to be resolved by these machines and yet left unresolved after every attempt.<sup>53</sup> Thus, the imaginary media are not only sights of

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<sup>52</sup> Huhtamo, Erkki ‘Towards an Archaeology of the Media’ *Kaleidoscomaniac to Cybernerd Electronic Culture-Technology and Visual Representation*, 1996

<sup>53</sup> Kluitenberg, Eric: ‘Second Introduction to an Archaeology of Imaginary Media’, *Book of Imaginary Media*, 2006

imagination but they also reflect irreconcilable desires of power and control in their configurations of human machine relationship.

The perspective of technical media as extensions of human senses has been central for the question of artificial mind since antiquity. Since Plato's discussion on how writing affects memorization, many tools were considered in relation to this question. Descartes, Diderot, Condilliac and many others used the perennial analogy of blind person's cane, in order to explain the relationship between objects, senses and human subjects.<sup>54</sup> Similarly, “tools as extensions of humans” was an important theme in the works of Marshall McLuhan. His work was centered on the idea that the technical media directly affects the human cognitive system, which in turn affects social organization. This technological determinist view has privileged the material manifestations of technical systems by entirely ignoring their socially constructed nature:

[I]f a new technology extends one or more of our senses outside us into the social world, then new ratios among all of our senses will occur in that particular culture. It is comparable to what happens when a new note is added to a melody. And when the sense ratios alter in any culture then what had appeared lucid before may suddenly become opaque, and what had been vague or opaque will become translucent.<sup>55</sup>

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<sup>54</sup> Jessica Riskin's *Science in the Age of Sensibility* has a very detailed historical account on this general topic with a focus on the French Enlightenment and empiricism. Riskin, Jessica. *Science in the age of sensibility: the sentimental empiricists of the French enlightenment*. University of Chicago Press, 2002.

<sup>55</sup> McLuhan, Marshall. *The Gutenberg galaxy: the making of typographic man*. University of Toronto Press, 1962., p. 41

Alternatively, the archaeological approach to studies of media is primarily influenced by Foucault's archaeological method which aims "to define discourses in their specificity, to show in what way the set of rules they put into operation is irreducible to any other."<sup>56</sup> Therefore, the periodization in the archaeological method should be specific to each discursive domain and not formed to represent large historical formations. Because of its focus on "the systematic description of a discourse object"<sup>57</sup> the archaeological method "does not have a unifying but a diversifying effect." Most importantly, "It is nothing more than a rewriting: that is, in the preserved form of exteriority, a regulated transformation of what has already been written."<sup>58</sup> In other words, precisely because of its aim of systematic description of discursive objects, media archeology presents an alternative to the writings of media histories that tends to focus solely on the materiality of media objects.

Media archaeology's alternative perspective is to consider the formative influence of wider social and cultural contexts in a diversified historical understanding of technical media. It might initially seem that the focus on discursive formations in Foucault's archaeology of knowledge presents a challenge to historical analysis of media transformations because of their inherent dependence on their

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<sup>56</sup> Foucault, Michel. *The Archaeology of Knowledge*. 1st ed. New York: Pantheon Books, 1972. Pp. 155-156

<sup>57</sup> *ibid*, p.156

<sup>58</sup> *ibid*, 140



materiality. With the concept of apparatus however, Foucault has already given solid examples in how materiality of media objects inform and informed by discursive practices, such as Bentham's Panopticon as a form of surveillance embedded in an architectural structure of administrative discipline.

I believe technical media, whether they are imagined, planned, behaviorally prototyped, allegorized or actually built and commodified, present immense possibilities for an integrated analysis of discourses, habits, institutions, scientific statements, moral propositions, and material conditions. They deeply inform the processes of subjectification that are built around them. Consequently, my study of the chess-playing automaton as an archetypal imaginary media of the mechanization of the mind focuses not only various instances of its materialization but also its conceptualizations and allegorical formulations that imply particular processes of subjectification—that is to say, the production of its own subjects.

The historical rise of technical media has been intrinsically linked to the mechanization of human senses, which has mainly focused on the delegation of three key human senses into three separate spheres: image; sound; and text. According to Kittler, technologies that synthesize these senses have had a direct effect on modern human subjectivity as they correspond to the constituent elements of Lacan's tripartite psychoanalytic system of the real, the symbolic and the imaginary.<sup>59</sup> Kittler suggests that with the introduction of typewriters, writing became associated with the

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<sup>59</sup> Kittler, Friedrich A. *Gramophone, Film, Typewriter*. Stanford, Calif: Stanford University Press, 1999.

symbolic, since linguistic signs were now stripped to their “materiality and technicity” in a finite set. Kittler linked the imaginary to film, as the flow of individual images projected a continuous wholeness that corresponded to Lacan’s mirror stage. In the mirror stage, the child sees an imagined composition of his/her perfect reflection in the mirror in contrast with his/her imperfect motor skills. Finally, Kittler associated the real with phonography, since it recorded voices independent of their signifying function and materiality. For Kittler, Lacanian psychoanalysis was a “historical effect” of technological media, as Lacan “reasoned only as far as the information machines of his era-no more no less.”<sup>60</sup>

Kittler’s focus on the technical media commodities of the gramophone, film, and typewriter, inherently privileges congealed status of technological objects over the preceding social contestations that influenced their popular realization as science and technology. Yet, ideas that preceded these technical media and previously performed by imaginary media could best be exemplified by other types of media, such as Wolfgang von Kempelen’s works. Kempelen’s automata reflect a unique combination of interests in the mechanization of human senses that prefigure the later technological developments. Particularly when we consider his voice synthesizer and the typewriter for the blind, Kempelen’s technical experiments represent a central historical conjuncture between the automation of human mind and

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<sup>60</sup> Kittler, Friedrich A. “The World of the Symbolic- A World of the Machine.” *Literature, media, information systems: essays*. Ed. John Johnston. Psychology Press, 1997. Pp.134

the mechanization of human senses. These are crucial preliminary formations as they present us a perspective on their role on larger social and cultural debates and their recovery is central to this dissertation.

Jean Pierre Dupuy uses the term mechanization of mind in order to describe the main goal of the 20<sup>th</sup> century project of Cybernetics, which presents a culmination point in the history of human conceptions of humanity.<sup>61</sup> Dupuy bases his argument on the claim that the goal of Cybernetics and later Cognitive Science was the mechanization of the mind, not the humanization of the machine.<sup>62</sup> Following a Heideggerian viewpoint Dupuy considers the production of human by humans as an objective informed by modern metaphysics that replaces God with humans. However, Dupuy also identifies a paradox in the mechanization of mind by humans as there are two minds operating in this process, the one that is being mechanized and the one that does the mechanization. From this dichotomy Dupuy suggests that Cybernetics was both the height of metaphysical humanism as well the height of its deconstruction. Because, the mechanized mind is the most inhuman entity that could be conceptualized; as Sartre once said, "The inhuman is merely . . . the mechanical."<sup>63</sup> Dupuy's distinction between the two minds was dependent on each other's relative position in Cybernetics: "[T]he mind that carries out the

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<sup>61</sup> Dupuy, Jean Pierre. *On the Origins of Cognitive Science: The Mechanization of the Mind*. Cambridge, Mass: MIT Press, 2009. pp.20

<sup>63</sup> *ibid*, pp. 18

mechanization and the one that is the object of it are two distinct (albeit closely related) entities, like the two ends of a seesaw, the one rising ever higher in the heavens of metaphysical humanism as the other descends further into the depths of its deconstruction.”<sup>64</sup> But it is critical to recognize that the relationship between these two different minds, the *metaphysical human mind* and the *inhuman mechanical mind*, is of utility entailing a direct relationship of power between them: “In mechanizing the mind, in treating it as an artifact, the mind presumes to exercise power over this artifact to a degree that no psychology claiming to be scientific has ever dreamed of attaining. The mind can now hope not only to manipulate this mechanized version of itself at will, but even to reproduce and manufacture it in accordance with its own wishes and intentions.”<sup>65</sup>

## Chapter Breakdown

The mechanized mind is the technological quasi-Other of the metaphysically conceived human mind, by its mere formulation as a reproducible artifact. It is at this point one can identify how the integrated notions of cultural alterity and the technological alterity brings forth a power relationship between the “inhuman mechanized mind” and the “metaphysical human mind” that is in charge of the sublime role of producing it. Throughout this dissertation project I aim to

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<sup>64</sup> *ibid.*, pp. 20

<sup>65</sup> *ibid.*, pp. 20

demonstrate that the racialization of these two entities of mind has been critical for the project of the mechanization of mind since Enlightenment.

In order to understand the long term relationship between the cultural and the technological alterity inscribed in the cognitive automaton, I relate three imbricated stories bridging across the history of technology and culture. In Chapter 1, I discuss the Oriental automata of Enlightenment and the anxiety of the liberal subject. In chapter 2, I discuss the modern theory of automata and Cybernetics as a universal control apparatus. And finally, in Chapter 3, I discuss Artificial Intelligence and distributed cognitive labor platforms as a neoliberal state of exception. In all three stages I aim to show the interaction between the technological alterity of the myth of the mechanized mind and the cultural alterity of the Oriental as a critical factor in the subjectifications of Western self.

## Chapter 1.

### Oriental Automata of Enlightenment

*La Mettrie's L'Homme-machine is both a materialist reduction of the soul and a general theory of dressage, at the center of which reigns the notion of 'docility', which joins the analyzable body to the manipulable body... The celebrated automata [of the 18<sup>th</sup> century] were not only a way of illustrating an organism, they were also political puppets, small-scale models of power.*<sup>66</sup>

Michel Foucault, *Discipline and Punish*

Wolfgang von Kempelen's Chess Player Automaton was constructed and presented in 1770 at the court of the Empress Maria Theresa of Austria. It gave the impression of a pipe-smoking Turk mannequin, who could play serious chess against human opponents. The seemingly mechanical mind of the Turk however was actually manipulated by Kempelen's chess master assistant who was hidden beneath

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<sup>66</sup> Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. London: Allen Lane, 1977. pp.136

the pseudo-mechanism. The automaton chess-player was exhibited for 84 years in Europe and the Americas and attracted famous challengers including Napoleon Bonaparte, Charles Babbage and Benjamin Franklin.<sup>67, 68</sup>

How might we begin to make sense of the chess-playing Turk in the context of the 18<sup>th</sup> century science and technology? In *Discipline and Punish*, Michel Foucault considers 18th century automata as paradigmatic of the way that the human body was thought to reflect the social order.<sup>69</sup> Foucault suggests that the mechanistic conception of human body needs to be read in two registers; first, *the anatomico-metaphysical* register as constituted mainly through Cartesian mind/body duality; and, second *the technico-political* register that reflected empirical methods deployed by the state to discipline the operations of the body through institutions such as, the army, the school and the hospital. In the context of these two registers, the 18<sup>th</sup> century humanoid automata functions as a model, on one hand for submission and use, on the other for empirical analysis.

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<sup>67</sup> Windisch, Karl Gottlieb. *Inanimate reason; or a circumstantial account of that astonishing piece of mechanism, M. de Kempelen's chess-player; now exhibiting at No. 8, Savile-Row, Burlington-Gardens; illustrated with three copper-plates, exhibiting this celebrated automaton, in different points of view: translated from the original letters of M. Charles Gottlieb de Windisch*. Printed for S. Bladon, 1784.

<sup>68</sup> Carroll, Charles Michael. *The great chess automaton*. Dover Publications, 1975.

<sup>69</sup> Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. London: Allen Lane, 1977.

Foucault's approach has been criticized for ignoring the racial implications of his understanding of state power in his historiography.<sup>70</sup> Particularly, Foucault's concept of docility, as a race-neutral displaces the Orientalist undercurrents, by solely focusing on the European subject in isolation. This absence becomes more pronounced when one analyzes Kempelen's chess playing automaton. The trick of the chess-playing automaton, one could argue involves more than just exchanging the enacted body of the European chess player with the represented body of the Turk animated through its mechanical artifice. It also includes initial assumptions of race by the audience that were crucial in influencing discourses on the mechanized reason, and mental activity that provided the larger context for these performances. These initial assumptions were exploited by Enlightenment era discourses in order to shape both the European docile subject and sustain image of the Oriental.

This chapter focuses on the Orientalist assumptions that were active in Enlightenment automata through the examination of the cultural function of Kempelen's automaton. I will focus on two main aspects of performing interface of the chess playing automaton, the first of which is its liminal quality. The liminality of the automaton, which derives from its Muslim and Byzantium origins, created a buffer zone against the risk associated with the idea of man-machine that the

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<sup>70</sup> Ann Stoler in her work *Race and the Education of Desire* has highlighted the oversight of racial "Others" in Foucault's historiography particularly in *The History of Sexuality*, by focusing on the colonial facts in Dutch archival records.



Enlightenment humanoid automata performed. The materialist idea of the man-machine posed a serious threat to the traditional ethics and religious values. Thus, the “potential risk” that automata carried was often associated with instigations of libertinism, atheism and insurrection in public.<sup>71</sup> However, the automaton was very useful for constructing arguments related to mechanistic conception of body, and relegating this precarious role to an Oriental figure as a cultural solution had a long tradition that had its origins in medieval romance.<sup>72</sup> The Oriental automata through its association with liminal spaces and experiences, in these literary accounts conveyed surveillance, discipline and enforcement of limits of morality. I will talk about this aspect in detail, later in this chapter.

The second aspect of the Turk’s performance is a particular form of docility that conveys the idea of the disciplined productive body, which played a salient role in the formation of Enlightenment culture.<sup>73</sup> The association of the Oriental with docility has its roots in medieval theology where Muslim subjects were considered to be strict adherents of religious code. Linking this association with the discourse of

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<sup>71</sup> Vartanian, Aram. *La Mettrie’s L’homme machine: A study in the origins of an idea*. Princeton University Press, 1960.

<sup>72</sup> Truitt, E. R. “‘Trei poëte, sages dotors, qui mout sorent di nigromance’: Knowledge and Automata in Twelfth-Century French Literature.” *Configurations: a journal of literature, science, and technology* (Soc. for Literature and Science; Georgia Inst. of Technology) (Baltimore, MD) 12.2 (2004): 167.

<sup>73</sup> Schaffer, Simon. *The sciences in enlightened Europe*. Ed. William Clark. University of Chicago Press, 1999.

Oriental automata, Christian theology configured a particular discourse of Muslim-as-automaton.<sup>74</sup>

The concept of docility also conditions the hidden chess-player's performance of intellectual labor by means of the docile performance of the Oriental figure on the interface. Foucault identifies an epistemic shift around the end of the 17th century when a move towards a system of discipline in penal justice that aimed correcting the behavior of the offender instead of violent punishment took place. For Foucault, this modification indicates an epistemic shift in relations of power in various social domains including, education, medicine, work place and the military training.

These two aspects of the Turk's performance, docility and liminality are crucial for grasping its function as a model of power for the idealization of a social order in the context of the large scale processes of mechanization of labor in the European 18<sup>th</sup> century.<sup>75</sup> An important aspect of this mechanization is the division of mental labor, which entails a reconfiguration of intellectual production in multitude of domains ranging from literary authorship to bureaucratic organizations. I will also

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<sup>74</sup> Biddick, Kathleen "Dead Neighbors..." forthcoming in *Points of Departure: Political Theology on the Scenes of Early Modernity*, ed. by Julia Reihard Lupton and Graham Hammill, U. of Chicago Press, 2010

<sup>75</sup> Schaffer, Simon. *The sciences in enlightened Europe*. Ed. William Clark. University of Chicago Press, 1999.

demonstrate how the chess-playing Turk performed critical points of contention in this reordering.

Finally, I will consider the public spectacles of the chess-playing automaton in relation to another technology embedded into its later performances, mechanized voice. Mechanized voice was one of the initial steps of the mechanization of human senses that paralleled the mechanization of the mind. This initial experimentation of a speaking automaton expressed deeper anxieties for the mechanization of the mind in relation to the question of the expressive limits of autonomous liberal subject.

### 1. Docile Automata

Humanoid automata need to be considered within the context of mechanistic universe paradigm that influenced 18<sup>th</sup> century French physician and philosopher Julien Offray de La Mettrie. La Mettrie was a military physician and a materialist philosopher whose work affirmed Descartes' idea of animals as machines.<sup>76, 77</sup> La Mettrie's and other materialists' views were fiercely persecuted because of their opposition to the Cartesian idea of the mind as a separate sacred entity, a concept which persisted as the last bastion of Christian theology about the human body. According to materialists, reason and intelligence emerged within the organization of

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<sup>76</sup> Gunderson, Keith. "Descartes, La Mettrie, Language, and Machines." *Philosophy* 39.149 (1964): 193-222.

<sup>77</sup> Vartanian, Aram. *La Mettrie's L'homme machine: A study in the origins of an idea*. Princeton University Press, 1960.

the human machinery and did not deserve a separate status.<sup>78</sup> It was the humanoid automata's role to simulate internal and external mechanisms of life to reconcile two fundamental philosophical positions.<sup>79</sup> But La Mettrie and the materialists were also influenced by human body's concurrent position as a metaphor for the social order. The 18<sup>th</sup> century automaton played a vital role for the materialization and assessment of the laboring body and functioned as a small-scale model of power.<sup>80</sup>

The chess-playing automaton performed its role as a model of power in multiple layers, the first one of which was the demonstration of knowledge as a tool of power. This demonstration followed a particular tradition, namely the nature as theater as suggested by naturalist philosophy. This aspect of the automaton is clearly visible in the staging of the show. Carl Gottlieb von Windisch, a close associate of Kempelen describes the initial stage of Kempelen's demonstration as follows:

[T]he Inventor not only opens the front doors of the chest, but also those behind, by which means all the wheels are clearly seen, so as to give the most perfect conviction that no living thing could be hid therein; to render it even more complete, the Inventor usually places a lighted taper in the interior of the chest, in order to shew still clearer, every corner... Finally, he lifts up the robe of the Automaton, and throws it over his head, in such a manner, as completely to shew the structure of the interior; where are also only seen levers and wheels,

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<sup>78</sup> Mettrie, Julien Offray de La. *Man a machine*. Trans. Gertrude Carman Bussey. Open Court, 1912.

<sup>79</sup> Riskin, J. "The defecating duck, or, the ambiguous origins of artificial life." *Critical Inquiry* (2003): 599–633.

<sup>80</sup> Schaffer, Simon. *The sciences in enlightened Europe*. Ed. William Clark. University of Chicago Press, 1999.

which so entirely occupy the body of the Automaton, that there would not be room enough to hide a cat. Even the Turkish trowsers are furnished with a small door, which he likewise opens, to remove the most remote shadow of a doubt. On this subject see the second drawing... But do not imagine, like many others, that the inventor shuts one door as he opens another; the entire Automaton is seen at the same time uncovered, his garments turned up, and the drawer opened, as well as all the doors of the chest. It is in this state that he rolls it from one place to another, and that he presents it to the inspection of the curious.<sup>81</sup>

The hidden chess-player was the open secret of Kempelen's shows.<sup>82 83</sup>

Kempelen admitted that his automaton was just a "happy deception."<sup>84</sup> As Schaffer notes one of the roles of these automata was "to allow the selective entry by th[e] power to the inner workings of art and nature."<sup>85</sup> In other words this open secret was also a conceited wink by the guardians of knowledge and power, reminding the general public about their privilege and status.

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<sup>81</sup> Karl Gottlieb von Windisch, *Briefe über den Schachspieler von Kempelen nebst drey Kupferstichen die diese berühmte Maschine vorstellen, or Inanimate Reason; or, A Circumstantial Account of that Astonishing Piece of Mechanism, M. de Kempelen's Chess-Player, Now Exhibiting at No. 9 Savile-Row, Burlington Gardens* (London, 1784); Letter III. Sept. 14<sup>th</sup>, translation taken from Levitt, 2000.

<sup>82</sup> Carroll, Charles Michael. *The great chess automaton*. Dover Publications, 1975.

<sup>83</sup> Standage, Tom. *The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine*. 1st ed. Walker & Company, 2002.

<sup>84</sup> Cook, James W. "From the Age of Reason to the Age of Barnum: The Great Automaton Chess-Player and the Emergence of Victorian Cultural Illusionism." *Winterthur Portfolio* 30.4 (1995): 231-257.

<sup>85</sup> Schaffer, Simon. *The sciences in enlightened Europe*. Ed. William Clark. University of Chicago Press, 1999.

Kempelen studied the works on human physiology of prominent naturalists of his time, such as Denis Dodart, Antoine Ferrein and Albrecht von Haller.<sup>86</sup> Kempelen also followed the tradition of public spectacle of experimental natural philosophy in his demonstration of the automata.<sup>87</sup> His shows were meticulously designed to set up multiple assumptions in the audience about the inner workings of the automaton in order to initiate a collective investigation.

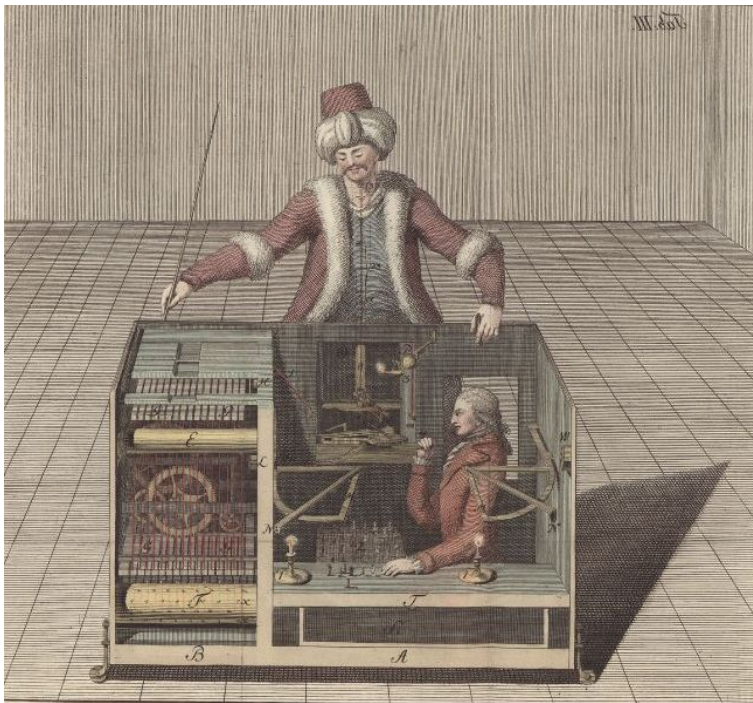


Figure.1.1 In this engraving Joseph Racknitz showed how he thought the automaton operated.<sup>88</sup>

<sup>86</sup> Hankins, Thomas L., and Robert J. Silverman. *Instruments and the imagination*. Princeton University Press, 1999.

<sup>87</sup> Schaffer, S. "Natural philosophy and public spectacle in the eighteenth century." *History of Science; an Annual Review of Literature, Research and Teaching* 21.51 Pt 1 (1983): 1-43.

<sup>88</sup> Racknitz, Joseph Friedrich *Ueber den schachspieler des herrn von Kempelen und dessen nachbildung*, 1789

Thus one could argue that element of mystery in Kempelen's performance can be considered within the system of representation of the natural philosophy, which perceived the whole nature as a "divine" theater. This system of representation could be easily exploited in order to create a particular moral impression on its audience.<sup>89</sup> Scottish philosopher Thomas Reid expounds this moral effect as follows: "Upon the theatre of nature we see innumerable effects, which requires an agent endowed with active power; but the agent is behind the scene."<sup>90</sup>

Kempelen's Oriental automaton benefited from the assumptions within this theater as a significant representation of the techno-mythical idea of the mechanized mind. It was not just a machine; it also provided the language that made it possible to explicate that myth.<sup>91</sup> As in every technical medium, it carried its own inscriptions of discursive traditions and formulations that defined its cultural system of significations. The Automaton Chess Player performed these inscribed notions through fundamental puzzles that has been relevant throughout the history of the

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<sup>89</sup> Schaffer, S. "Natural philosophy and public spectacle in the eighteenth century." *History of Science; an Annual Review of Literature, Research and Teaching* 21.51 Pt 1 (1983): 1-43.

<sup>90</sup> Hamilton, W.R, (ed.) *Works of Thomas Reid* (Edinburgh, 1846) quote appears on Schaffer 1983

<sup>91</sup> Beaune, Jean-Claude. "The Classical Age of Automata: An Impressionistic Survey from the Sixteenth to the Nineteenth Century." *Fragments for a History of the Human Body*. Ed. Michel Feher, Ramona Naddaff, & Nadia Tazi. New York, N.Y: Zone, 1989. 430-480.

artificial reason discourse and were tackled by notable scholars and practitioners that began in the 17<sup>th</sup> century with Gottfried Leibniz and continued into the 19<sup>th</sup> and 20<sup>th</sup> century with Edgar Allan Poe, Charles Babbage, Norbert Wiener and Alan Turing.

What is missing from such analyses is that the chess-playing automaton was only able to perform through the peculiar coupling of the technomythical idea of automated mind with the body of Europe's "Other," which harbored the "heretical" attempts of materialist ideas under the turban of The Turk since the medieval period.

Indeed one of the most striking puzzles in the historiography on artificial reason resides in the noticeable intellectual apathy toward the chess playing automaton's Orientalist context that can be clearly observed among contemporary scholars. James Berkley, for example in an essay that focuses on Edgar Allan Poe's literature from a post-humanist perspective, acknowledges the Turkish appearance of the automaton, but does not bring up American Orientalism as its key cultural context.<sup>92</sup> Similarly, Mark Sussman's analysis of the performative aspects of Chess Playing Automaton makes a passing remark about the Orientalist fantasy that the machine evokes but does not elaborate further.<sup>93</sup> Tom Standage in his book, *The*

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<sup>92</sup> Berkley, James. "Post-Human Mimesis and the Debunked Machine: Reading Environmental Appropriation in Poe's 'Maelzel's Chess-Player' and 'The Man That Was Used Up'." *Comparative Literature Studies* 41.3 (2004): 356-376.

<sup>93</sup> Sussman, Mark J. "Performing the Intelligent Machine: Deception and Enchantment in the Life of the Automaton Chess Player." *TDR: The Drama Review* 43.3 (1999): 81-96.



*Turk: The Life and Times of the Eighteenth Century Chess Player*, avoids the discussion entirely.<sup>94</sup>

Simon Schaffer is one of the few scholars who has discussed the peculiar role of the Oriental in Kempelen's automata and the various other experimentations of Artificial reason, and has speculated about the possibility of "a long-term political and aesthetic relationship"<sup>95</sup> between intelligent automata and Orientalism.

At this point it would be useful to look at a wider role that the automaton played as a conceptual apparatus for contesting ontological boundaries during Enlightenment.

## 2. Boundary Apparatus

The pre-modern history of wonders operates on the blurred borders between the known and the unknown and, the natural and the unnatural.<sup>96</sup> Lorraine Daston utilizes this particular attribute of wonders in support of the idea that the objects of scientific inquiry can be seen as a process of "applied metaphysics."<sup>97</sup> In applied metaphysics, one perceives the world as a dynamic entity and one's primary

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<sup>94</sup> Standage, Tom. *The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine*. 1st ed. Walker & Company, 2002.

<sup>95</sup> Schaffer, 'Babbage's dancer and the impresarios of mechanism', in Frances Spufford and Jenny Uglow, eds., *Cultural Babbage: Technology, Time and Invention* (Faber and Faber, 1996), pp.79

<sup>96</sup> Daston, Lorraine, and Katharine Park. *Wonders and the Order of Nature, 1150-1750*. New York: Zone Books, 1998.

<sup>97</sup> As opposed to "pure metaphysics" which treats the universe from a static and eternal perspective.

occupation becomes the study of emerging and disappearing scientific objects with a supposition that reality is a matter of degree, and is determined by the capacity to integrate these objects into scientific practices. Thus, applied metaphysics assumes that the scientific objects can be both present and historical at the same time. Daston supports her argument by highlighting how marvels and monsters as scientific objects emerged in Europe and attracted inquiries from various domains ranging from taxonomists to embryologists.<sup>98</sup> In *Wonders and the Order of Nature*, Lorraine Daston and Katherine Park trace this phenomenon from the High Middle Ages through the Enlightenment and surmise that “[a] history of wonders as objects of natural inquiry is [...] also a history of the orders of the nature.” This critical perspective is based on the historical accounts of “wonders” from the 12th century onward, which highlight a blurred line of distinction between sacred and secular objects of wonder, namely, the “miraculous” and the “marvelous”.<sup>99</sup>

Automata were a typical example of the wonders with their imprecise limits between the secular and profane domains. The makers of automata utilized the “profane” domain of *techne* in order to achieve the mimicry of a “sacred” creation of life. It is based on a vague distinction between the sacred and the secular, humanoid

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<sup>98</sup> Daston, Lorraine, ed. *Biographies of Scientific Objects*. Chicago: University of Chicago Press, 2000.

<sup>99</sup> Daston, Lorraine, and Katharine Park. *Wonders and the Order of Nature*, 1998.

automata were imagined to evoke a fundamental alterity<sup>100</sup> in that they embodied the concept of life due to the animation of a body without a soul. Correspondingly, in the 12th and 13th century European romance literature, the image of automata frequently appears in liminal spaces such as thresholds, bridges or tombs.<sup>101</sup> Automata's crucial situation betwixt and between signifies their literary function of conveying surveillance, discipline and the limits of epistemological legitimacy due to the highly permeable boundary between legitimate and illegitimate knowledge practices that were involved in their production.<sup>102</sup> Among those illegitimate knowledge domains, were "illicit" practices such as necromancy, with its roots in paganism, shamanism, and hermetism all of which evoked the ultimate heresy, that of collaborating with unnatural forces.

During the Middle Ages, the idea of automata was well known in intellectual and court communities through the literary accounts from Byzantium and Muslim knowledge spheres. The technical information for their production, however was not

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<sup>100</sup> Alteration according to Michael Theunissen is a process of depontialization of the I in a negative sense through which "I loses its world-instituting power, in that through Others, it is thrown out of that middle point of the world that it occupies in its transcendental originality." *Theunissen, Michael. The Other: Studies in the Social Ontology of Husserl, Heidegger, Sartre, and Buber. Cambridge, Mass: MIT Press, 1984. , pp.90*

<sup>101</sup> Truitt, E. R. "'Trei poëte, sages dotors, qui mout sorent di nigromance': Knowledge and Automata in Twelfth-Century French Literature." *Configurations: a journal of literature, science, and technology (Soc. for Literature and Science; Georgia Inst. of Technology) (Baltimore, MD) 12.2 (2004): 167.*

<sup>102</sup> *ibid*, 172

yet available nor sought out, partly due to the questions of epistemological legitimacy associated with the practice. Consequently, in medieval Europe the image of the automaton was conceived through the projection onto the outer margins of the cultural universe especially towards the Byzantine and Muslim Orient.<sup>103</sup> This identification of “wondrous” objects of automata with the Oriental cultures and people enabled them to be secure liminal apparatuses for exploring ontological questions such as human/inhuman, life/death; as they would be risky to confront within the traditional local European cultural setting.

By the second half of the 18th century, Europeans used the experimental aspect of automata in a more systemic way for simulating life in order to redefine it.<sup>104</sup> Fueled by mechanistic philosophy, humanoid automata transformed not only cultural attitudes toward living creatures, but also attitudes toward machines, since they literally embodied the idea that mechanisms were also living beings. The reciprocal relationship between the animation of machinery and the mechanization of life was explored through the experimental apparatus of humanoid and animal automata and popularized through the debates instigated by their public exhibition in Europe.

One of the most prominent automata exhibited in European courts, The Writer, was constructed with organic materials such as leather, cork, and papier-

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<sup>103</sup> Daston, Lorraine, and Katharine Park. *Wonders and the Order of Nature, 1150-1750*. New York: Zone Books, 1998. pp.92

<sup>104</sup> Riskin, Jessica. “Eighteenth-Century Wetware.” *Representations* 83 (2003): 97-125.

mâché. Even its skeletal structures were said to be designed with the assistance of a surgeon.<sup>105</sup> The idea behind this creation, it was said to impart an impression of the tenderness of living things. Built by Jacquet Droz, a Swiss watchmaker, The Writer was able to inscribe any message of up to 40 characters. It once wrote Descartes' pronouncement, "I think therefore I am," continuing with "I do not think...do I therefore not exist?"<sup>106</sup>

Von Kempelen's Chess Playing Turk, on the other hand, formulated his question with a different emphasis, "Can I (the mind) exist without the body?" To this question, it gave two answers simultaneously: "yes" and "not yet." The actual answer, of course, was "not yet," as the automaton was indeed controlled by a human operator. However, the deceptive "yes" response was still valuable as a philosophical tactic<sup>107</sup> for engaging with ideas that would later be made technically possible and implemented systematically, by the emergence of self-regulating mechanisms.

In contrast with other automata of the 18<sup>th</sup> century, The Turk's apparatus did not act as mere clockwork. Instead it gave the impression of a self-regulating system

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<sup>105</sup> *ibid.* pp102.

<sup>106</sup> Wood, Gaby. *Living Dolls: A Magical History of the Quest for Mechanical Life*. Faber and Faber, 2003.

<sup>107</sup> "He represented it for merely what it is; a machine, which is not without merit as to its mechanism, but the effects of which appear so wonderful, only from the boldness of the idea, and the fortunate choice of means which he employs to carry on the illusion."

Windisch, Inanimate reason, Letter V

that could counter external actions within the symbolic logic of chess.<sup>108</sup> As Otto Mayr suggests, in contrast to the idea of clockwork universe, which was the political universe of autocratic feudalism, the mechanical, political and economic ideas of self-regulating systems were connected dialectically to Enlightenment ideas of liberal subjects and democracy.<sup>109</sup>

Foucault argues that the automaton is a model apparatus that performs the system of power in multiple levels that eventually integrates the socio-technical realm of the individual subject to the anatomico-metaphysical register. Yet, we need to explain the particular emphasis given by Giorgio Agamben on the term apparatus. In his reading of Foucault's term, Agamben writes,

*anything that has in some way the capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviors, opinions, or discourses of living beings. Not only, therefore, prisons, madhouses, the panopticon, schools, confession, factories, disciplines, judicial measures, and so forth (whose connection with power is in a certain sense evident), but also the pen, writing, literature, philosophy, agriculture, cigarettes, navigation, computers, cellular telephones and--why not--language itself, which is perhaps the most ancient of apparatuses--one in which thousands and thousands of years ago a primate inadvertently let himself be*

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<sup>108</sup> Kempelen was aware of the importance of self-regulating mechanisms and patented a steam turbine, which was very similar to James Watt's famous invention. The governor mechanism of Watt's steam turbine is considered to be the archetype of self-regulating systems.

<sup>109</sup> Mayr, Otto. *The Origins of Feedback Control*. Cambridge: M.I.T. Press, 1970.

*captured, probably without realizing the consequences that he was about to face.*<sup>110</sup>

Agamben's application of Foucault's concept of apparatus is much extensive than what Foucault ever implied about the concept. Clearly, the Foucauldian emphasis on the role of the apparatus in forming the control of the lives of living beings might further explain the popularity of the automata in the 18<sup>th</sup> century when Enlightenment era thinkers and bureaucrats handed the disciplinary role of the religion over to science and technology. The chess-playing automaton, however, was distinct among these models of disciplinary power as it provided a detailed performance of the automatization of intelligence, which as an imminent process posed a significant challenge to the established powers. As a result of the emphasis on the autonomy of Enlightened subject, the disciplinary conditions of the intellectual subject needed to be configured within the European socio-economic system in order to sustain its stability and expansion.

As part of performing the idea of automatized intelligence, Kempelen's chess-playing automaton and its mechanized mindpower had the affordance of inhabiting multiple meanings depending on its spectator's level of access to the inner mechanics of the artifice. For its audience members in the outmost circle, the performance of The Turk played out on the spectrum between the two possible explanations of its intelligence, the metaphysical and the mechanical. A confidante

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<sup>110</sup> Giorgio Agamben, "What is an Apparatus?" in *What is an Apparatus? And Other Essays*. Stanford: Stanford University Press, 2009: p. 14.

of Kempelen, German-Hungarian writer Karl Gottlieb von Windisch, during his long residence in Vienna witnessed multiple performance of the automaton and produced multiple letters about them. During one of these performances he observed that “One old lady, in particular, who had not forgotten the tales she had been told in her youth...went and hid herself in a window seat, as distant as she could from the evil spirit, which she firmly believed possessed the machine.”<sup>111</sup> On the other hand, the idea that this spirit may as well be just a mechanical operator based on mathematical theories was already being discussed among probable explanations. This might explain the wide appeal of the automaton to contemporaneous mathematicians<sup>112</sup>

During, the preceding century, Leibniz proposed a universal symbolic language, or algebra of thought. In fact, since the expansion of the commerce in Leibniz’s time there had been a search for a universal language that would allow European traders to communicate with the people in the new colonies. Leibniz’s universal language could be manipulated by a logical calculation framework, *calculus ratiocinator*, (ca 1680) which was a precursor model of modern

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<sup>111</sup> Windisch, Karl Gottlieb. *Inanimate reason; or a circumstantial account of that astonishing piece of mechanism, M. de Kempelen’s chess-player; now exhibiting at No. 8, Savile-Row, Burlington-Gardens; illustrated with three copper-plates, exhibiting this celebrated automaton, in different points of view: translated from the original letters of M. Charles Gottlieb de Windisch*. Printed for S. Bladon, 1784.

<sup>112</sup> “Mathematicians of all countries have examined the machine, with the most scrupulous attention, without being able to discover the least trace indicative of the manner in which it operates.” *ibid.* Letter IV



computing.<sup>113</sup> Leibniz suggested that the mind was a spiritual automaton operated involuntarily based on a predetermined set of laws: “The operation of spiritual automata, that is of souls, is not mechanical, but it contains in the highest degree all that is beautiful in mechanism.”<sup>114</sup> Moreover, the automaton/self-moving soul does not eliminate agency. For Leibniz the symbolic systems of language play an instrumental role for reasoning. Based on this principle, Leibniz proposed the calculus ratiocinator as an ultimate solution for all conflicts. This perspective finds its expression in Leibniz’s quasi-Machiavellian motto *calculemus* (let us calculate): “[I]f controversies were to arise there would be no more need of disputation between two philosophers than between two accountants. For it would suffice to take their pencils in their hands, and say to each other: *Calculemus*.”<sup>115</sup> Leibniz’s idea of computing different symbols in order to solve sophisticated problems was first proposed in Europe by a 13<sup>th</sup> century alchemist and a later Franciscan convert Raimundus Lullus as *ars combinatoria* (combinatorial arts).<sup>116</sup> Lull’s system of knowledge was primarily devised to show the members of the other monotheistic religions “the undeniable truth” of Christian doctrine as part of a method of religious

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<sup>113</sup> Wiener, Norbert. *Cybernetics: Or, Control and Communications in the Animal and the Machine*. Paris: Hermann, 1948. Print. Actualités scientifiques et industrielles 1053.

<sup>114</sup> Leibniz, Gottfried Wilhelm. *Theodicy Essays on the Goodness of God, the Freedom of Man and the Origin of Evil*. Trans. E. M. Huggard. 2005., pp.365

<sup>115</sup> Gottfried Leibniz, *Dissertio de Arte Combinatoria*, 1666

<sup>116</sup> Klüver, Jürgen, and Christina Klüver. *Social Understanding: On Hermeneutics, Geometrical Models and Artificial Intelligence*. Springer, 2010.

discussion. Lullian circle consisted of two concentric paper discs inscribed with symbols in order to generate ideas through the combination of those symbols that represented elemental truths.<sup>117</sup> Thus, the computation of symbols for solving sophisticated problems had its origins in religious doctrine and evangelism. The symbolic systems that are suitable for such computation therefore were already implicated in an ideological premise. This premise was not limited to religious doctrine, it could also be related to the social order and legitimating hierarchical administrative power. Chess is a perfect example for such computable symbolic systems, because of its portrayal of hierarchical order. When the Turk spoke the language of the symbolic via chess; it entered “the world of the machine.”<sup>118</sup> But that machine denoted a particular type of systemic relationship because of the nature of the actors and their limited set of behaviors are defined within a set of rules in the game of chess. As Deleuze and Guattari states;

[c]hess is a game of State, or of the court: the emperor of China played it. Chess pieces are coded; they have an internal nature and intrinsic properties from which their movements, situations, and confrontations derive. They have qualities; a knight remains a knight, a pawn a pawn, a bishop a bishop. Each is like a subject of the statement endowed with a relative power, and these relative powers combine in a subject of enunciation, that is, the chess player or the game’s form of interiority... Within their milieu of interiority, chess pieces entertain biunivocal relations with one another, and with the adversary’s pieces: their functioning is structural... Chess is indeed a

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<sup>117</sup> Llull, Ramon. *Ramon Llull : a contemporary life*. Barcelona Barcino ;;New York: Tamesis, 2010.

<sup>118</sup> Lacan, Jacques. *The Ego in Freud’s Theory and in the Technique of Psychoanalysis, 1954-1955 (Book II)*. W.W. Norton & Co., 1991. pp.47

war, but an institutionalized, regulated, coded war, with a front, a rear, battles...<sup>119</sup>

Consequently, an automatized chessboard would have represented the ideal Enlightenment universe, where the subjects and their possible actions could be “coded” according to the regulations informed by the power structure of the society. Each subject would be endowed with a relative power, and would not be able to go beyond the roles that he or she qualifies. Particularly, when these intrinsic properties are abstracted into geometric functions, and when combined together with the functions of other subjects, they have the potential to exhibit numerous but finite possibilities for a final outcome. This is another reason that mechanized chess was idealized as a model for imagining a society whose coded subjects articulate a plurality of results. Thus the chess-playing Turk embodied an integration of the self-regulating liberal subject with the mechanical docility of the Oriental, which performed within the “coded” socio-economic universe of the game of chess.

The modeling of a self-regulating system through a mechanical simulation of human mind had a further significance, particularly in relation to the claim that the functions of the mind emerged as a result of the interactions between the parts of the human body. La Mettrie, in particular, conceptualized the human body as a sensing and feeling animal machinery where the functions of the mind integrated with the rest of the body in his work *Man A Machine*. La Mettrie surmised that “if what

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<sup>119</sup> Deleuze, Gilles, and Félix Guattari. *A thousand plateaus: capitalism and schizophrenia*. Trans. Brian Massumi. Continuum International Publishing Group, 2004. p.352

thinks in my brain is not part of that vital organ, and consequently of the whole body, why does my blood heat up when I am lying tranquilly in bed thinking about my work or reasoning abstractly? Why does the fever of my mind pass into my veins?"<sup>120</sup> By subjecting all of the human body, including the mind, to the mechanical laws, the man-machine brought into question morality and religion and consequently all the social order that was dependent upon them.<sup>121</sup> Although the body as a perpetual motion machine, suggestively dispossessed priests of their authority, La Mettrie's man machine needed a different kind of external authority. The man machine was not a mere rigid clockwork but instead a natural body capable of and requiring external discipline.<sup>122</sup> This external discipline was mostly provided by the enlightened military and industrial productions, which were also founded upon the idea of automatism.

It would be wrong to suggest that the new concept of self-regulating body was the original model for the self-regulating liberal social order. There were preceding examples with reversed roles, such as those that used society as a metaphor for the conceptualization of self-regulating human body. The 17<sup>th</sup> century English physician Thomas Willis' concept of nervous government, for example was

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<sup>120</sup> Mettrie, Julien Offray de La. *Man a machine*. Trans. Gertrude Carman Bussey. Open Court, 1912. Print., 63-64

<sup>121</sup> Muri, Allison. *The Enlightenment cyborg: a history of communications and control in the human machine, 1660-1830*. University of Toronto Press, 2007.

<sup>122</sup> Schaffer, Simon. *The sciences in enlightened Europe*. Ed. William Clark. University of Chicago Press, 1999.

a highly influential illustration for a configuration of human body as a self-regulating social order within a political feedback process that responded to external stimuli.<sup>123</sup> Therefore, the idea of self-regulation as a social desire for political autonomy had preceded the models onto which various forms of biological, mechanical and cosmological discursive systems were projected. These discursive formations were essential for the contestations of the idea of the autonomous subject in various cultural realms that were affected by the kind of large-scale transformation pursued by the ideals of Enlightenment.

Willis' man-machine was conceived in the context of civil unrest and political chaos of the 17<sup>th</sup> century England. In *The Anatomy of the Brain and Two Discourses Concerning the Soul of Brutes*, published in 1672, Willis describes a body whose material components sporadically are in conflict with a sovereign in the brain. Willis depicts the brain as a metropolis that provides the vitality for the body by generating animal spirits. The "brain metropolis" is governed by commerce and communications of the animal spirits that it generates. In Willis's man machine, nervous fibers are roadways into the muscles that perform motion. At the level of the muscles and tissues, the paradigm shifts to a military hierarchy. Animal spirits were characterized as troops or companies of soldiers that sit at the watchtower on the junction of nerves and muscles and were in charge of relaying commands from the

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<sup>123</sup> Muri, Allison. *The Enlightenment cyborg: a history of communications and control in the human machine, 1660-1830*. University of Toronto Press, 2007.

brain to muscles and sending back the collected sensory information from the tissues to the brain and cerebellum.

Willis' man-machine appears in a stark contrast to its infamous contemporary counterpart in political philosophy, Thomas Hobbes' *Leviathan*, (1651) one of the founding concepts of rationalist political philosophy. *Leviathan* was based on a mechanistic metaphor that utilized the analogy of the organic body for the social body in order to emphasize hierarchies of social status and function.<sup>124</sup> The state is a body-machine constituted of people as its moving parts, and it is animated by the sovereign who is a divine "Artificiall Soul." This clockwork assembly embodied a strict hierarchy where the sovereign/soul at the head governed its limbs via nerve fibers characterized as public ministers, but without much emphasis on a feedback mechanism.

Hobbes' power hierarchy is based on the Cartesian distinction of the body and the mind but as Gray and Mentor have emphasized, it includes a third element—the text.<sup>125</sup> Hobbes' advice to the sovereign, "Read thy self" implies that one should read the self "as if it were a state with passions that are similar in all men (and all

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<sup>124</sup> Schmitt, Carl, George Schwab, and Tracy B. Strong. *The Leviathan in the State Theory of Thomas Hobbes: Meaning and Failure of a Political Symbol*. University of Chicago Press, 2008.

<sup>125</sup> Gray, Chris Hables, with Steven Mentor and Heidi J. Figueroa-Sarriera "Cyborgology: Constructing the Knowledge of Cybernetic Organisms" in Gray, Mentor, and Figueroa-Sarriera, eds., *The Cyborg Handbook*, New York: Routledge, 1995, pp. 1-15

actual states.)”<sup>126</sup> This understanding of the state as the multitude of body-texts each of which contains a similar multitude that is regulated by their individual passions is also represented in the frontispiece of the book, an essential component of Hobbes’ political philosophy.<sup>127</sup> The sovereign’s body unites his individual subjects, all facing inwards, and transforms their singular utility into an integrated functional structure that emerges from a landscape overlooking a European town.<sup>128</sup>

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<sup>126</sup> *ibid.* pp.464

<sup>127</sup> Bredekamp, Horst. “From Walter Benjamin to Carl Schmitt, via Thomas Hobbes.” Trans. Melissa Thorson Hause & Jackson Bond. *Critical Inquiry* 25.2 (1999): 247-266.

<sup>128</sup> Hobbes’ political iconography uses the sword on his right hand and crosier on the left, as the symbol of the secular and the theological powers respectively. This conceptual division is also mirrored at the lower half of the frontispiece on the corresponding sides of the triptych with the military power and the religious order.



Quelle: Bredekamp, H. 1999: Thomas Hobbes. Visuelle Strategien.

Figure 1.2 The frontispiece of Thomas Hobbes' book *Leviathan* (1651)

As one can see in this image from the frontispiece, Hobbes' political iconography characterizes the social body as a medium of communication, which was substantially influenced by the concurrent developments in media technology. The insight for the visual representation of Leviathan in Hobbes's frontispiece was mainly derived from an optical effect that was produced by a novel device, the anamorphic optical device. Franciscan polymath Jean Francois Niceron's device became popular by the late 1640's, which was based on the principle of distorted



projections of images in order to reconstitute an entirely different final image.<sup>129</sup> After witnessing the operation of Niceron's anamorphic optical device in Paris, Hobbes described it in a personal correspondence as follows: "I beleeve (Sir) you have seene a curious kind of perspective, where, he that lookes through a short hollow pipe, upon a picture conteyning diverse figures, sees none of those that are there paynted, but some one person made up of their partes, conveyed to the eye by the artificall cutting of a glasse."<sup>130</sup> As Simon Schaffer notes, Hobbes found in this optical device a precise illustration of the deductive mode of reasoning that was a crucial component of his political philosophy. *Leviathan*, for Hobbes, was a mechanical deduction of individual wills that constitute the sovereign.<sup>131</sup> As in the game of chess, this deduction would be based on a set of rules that defines the nature of relationships between the institutions and the members of the society.

Niceron's optical device also predicts by three centuries the elements of Walter Benjamin's well known argument on the relationship between technical media and its process of subjectivation.<sup>132</sup> The optical device, and the deductive

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<sup>129</sup> Malcolm, Noel. *Aspects of Hobbes*. Oxford University Press, 2004.

<sup>130</sup> Ibid pp.202

<sup>131</sup> Schaffer, Simon in "Making Things Public: Atmospheres of Democracy." March 20–August 7, 2005. ZKM–Karlsruhe. Ed. by Bruno Latour and Peter Weibel Catalog, MIT Press, 2005

<sup>132</sup> "technology has subjected the human sensorium to a complex kind of training. There came a day when a new and urgent need for stimuli was met by the film. In a film, perception in the form of shocks was established as a formal principle. That which

mode of reasoning that it depicts, reproduce each other as strategies of a dominant socio-technical set of relations. But in order to complete the analysis of this connection to Benjamin the peculiar content used by Niceron in this optical device needs to be carefully considered. During his presentations, Niceron often used images of fifteen Ottoman sultans whose separate sections anamorphically constituted the face of Louis XIII, as the idealized sovereign. In other words, the image of the Turk as the ultimate “Other” was already inscribed in the political concept of Leviathan in the form of a technical and discursive configuration of a perfected image of the sovereign.<sup>133</sup> In that respect, Kempelen’s chess-playing automaton, and Hobbes’s configuration of Leviathan, share the elements of an explicit inversion between a European sovereign and a Turkish sultan. In both cases, the image of the Turk functions as the discursive punctum upon which the message of technical media depends: the state as an authoritarian clockwork system or as a self-regulating intelligent automaton.

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determines the rhythm of production on a conveyor belt is the basis of the rhythm of reception in a film." Benjamin, (Motifs in Baudelaire)

<sup>133</sup> Biddick, Kathleen. “Dead Neighbors Archive” forthcoming in *Points of Departure: Political Theology on the Scenes of Early Modernity*, ed. by Julia Reihard Lupton and Graham Hammill, U. of Chicago Press, 2010



Figure 1. 3 Jean François Nicéron’s optic device combined the images of fifteen Ottoman sultans whose separate sections anamorphically constituted the face of Louis XIII. Plate 24, *La perspective curieuse*, 1638<sup>134</sup>

<sup>134</sup> Nicéron, Jean François. “*La perspective curieuse [...] : Avec L’optique et la catoptrique du R. P. Mersenne , Jean François.*” 1638. Web. 16 Nov. 2011.

### 3. Oriental Automata

In 1964, media theorist Marshall MacLuhan declared that “[t]he ‘content’ of any medium is always another medium”<sup>135</sup> In the same vein, Kempelen’s chess playing automaton was a remediation of Hobbes’s Leviathan apparatus which itself was the remediation of Nicéron’s optical medium that constituted an ideal European self by assembling the images of Oriental sovereigns. The appearance of the image of the Turk in almost every step of this chain of remediation was a reflection of the inseparable relationship between the Oriental subject and the ontological question of what constitutes human subject.

Since the introduction of Byzantine and Muslim clocks and automata during the medieval period, and, up until early modernity, the European conception of *Oriental automata* functioned as a composite alterity by combining the unknown world of automata with the unknown world of the Oriental.<sup>136</sup> Medieval Christian theology utilized this association for a symbolic disproof of Islam by assigning the religion and its subjects to the “mindless” mechanical world of gears.<sup>137</sup> In medieval

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<sup>135</sup> McLuhan, Marshall, and Lewis H. Lapham. *Understanding Media: The Extensions of Man*. First Edition. The MIT Press, 1994. , pp. 23–24

<sup>136</sup> Truitt, E. R. “Trei poëte, sages dotors, qui mout sorent di nigromance”: Knowledge and Automata in Twelfth-Century French Literature.” *Configurations: a journal of literature, science, and technology (Soc. for Literature and Science; Georgia Inst. of Technology) (Baltimore, MD)* 12.2 (2004): 167.

<sup>137</sup> Biddick, Kathleen “Dead Neighbors...” forthcoming in *Points of Departure: Political Theology on the Scenes of Early Modernity*, ed. by Julia Reihard Lupton and Graham Hammill, U. of Chicago Press, 2010

France, for example, monks used the term *mechanicum* in order to describe Muslim practices of sorcery.<sup>138</sup> The Abbot of Cluny, Peter the Venerable, contrasted the Muslim *mechanicum*, with the transformation of Eucharist which was one of the inimitable signs of perpetual miraculous semiosis. This contrast was the basis of his rendering Islam as bereft of miracle making.

The humanoid automata were also referred to as “mammets” whose etymology is traced to Mahomet or Muhammed. The term was later used as a humorous expression to rebuke young women in English Renaissance drama as having marionette-like behavior.<sup>139</sup> Kathleen Biddick in her insightful work considers this association as an integral part of a “theological foreclosure of semiosis” to Islam and its followers. It is very likely that the same association was instrumental in the optical transformation of the Oriental multitude into the European sovereign in Nicéron’s device. The subjects of Islam, devoid of the magic of meaning-making, could only be the initial contents of the Christian politico-

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<sup>138</sup> Iogna-Prat, Dominique. *Order & Exclusion: Cluny and Christendom Face Heresy, Judaism, and Islam, 1000-1150*. Cornell University Press, 2002.

<sup>139</sup> Such as in the words of Lord Capulet, the father of Juliet, after she opposes marrying with Count Paris against her father’s wish:

*And then to have a wretched puling fool,  
A whining **mammet**, in her fortune's tender,  
To answer 'I'll not wed; I cannot love,*

*I am too young; I pray you, pardon me.*—*Romeo and Juliet* Act 3 scene 5, lines 184-188, in Shakespeare, William. *Romeo and Juliet*. Classic Books Company, 2001

theological apparatus that has the privilege of creating the final, ideal, miraculous meaning in the embodiment of a European sovereign.

According to Lewis Mumford, by the 17<sup>th</sup> century, “[m]echanics became the new religion, and it gave to the world a new Messiah: the machine.”<sup>140</sup> However, that messiah first had to engage in a relentless endeavor in purging the Muslim automaton from itself in order to embark its long journey towards a man-machine. In that sense, the Oriental automata constitute the nucleus of the man-machine.<sup>141</sup> In fact this process was part of a systematic discursive formation.

Edward Said, a scholar of literary critique, has explored one of the most elaborate and complex intellectual projects on Western history of epistemic violence. Said describes Orientalism as “a style of thought based upon an ontological and epistemological distinction made between ‘the Orient’ and ‘the Occident.’” Orientalism is an ideological product of the European material civilization and culture, constructing the Orient as a mode of discourse. Especially after the end of the eighteenth century this discourse became a “Western style for dominating, restructuring and having authority over the Orient” by primarily functioning as a geopolitical awareness as well as allocating this awareness into a “whole series of

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<sup>140</sup> Mumford, Lewis. *Technics and Civilization*. Mariner Books, 1963. pp.45

<sup>141</sup> “the sand, the irritant that triggered the secretion in the oyster of chronological time which develops that messianic pearl.” For, Biddick’s fascinating analogy, the European tradition of portraying non-Christians as the irritants of the messianic pearl, see...

interests” including aesthetic, academic, economic and sociological domains.<sup>142</sup> Said explains that one of the crucial means of this domination was to render the Oriental subject impossible to be “a free subject of thought or action.” Another form that imperial desire for domination expressed is through sexualizing and feminizing the dominated: “This cultural, temporal, and geographical distance was expressed in metaphors of depth, secrecy, and sexual promise: phrases like “the veils of an Eastern bride” or “the inscrutable Orient” passed into common language.”<sup>143</sup> Thus it is important to consider the gendered nature of Orientalism which as a neglect on Said’s part is emphasized by many feminist scholars including Gayatri Spivak, Anne McClintock and Ann Stoler.

Orientalism historically coincides with the European colonial expansion period that takes place between 1815 and 1914. Similarly, Foucault locates the epistemic violence through the redefinition of sanity within the emerging institutions of modernity at the end of the eighteenth century and the beginning of the nineteenth century.<sup>144</sup> From this crucial overlap, postcolonial scholar Gayatri Spivak has

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<sup>142</sup> Said, Edward W. *Orientalism*. New York: Vintage Books, 1994. Pp. 3

<sup>143</sup> *ibid* p. 222.

<sup>144</sup> Foucault, M. 1965, *Madness and Civilization: A history of insanity in the Age of Reason*. Pantheon.

deduced the existence of a “two-handed engine,” the epistemic renovation that redefines historical narrative both in Europe and in colonies.<sup>145</sup>

Thus, Oriental automata represent a crucial link in this two-handed engine: On one hand the automaton performs the docility for the Western subject in the image of the Oriental. On the other, it casts the Oriental subject *outside* of the norms of being human by subjecting them to the world of the machines. However these technico-political assumptions that were active in the Oriental automata’s performance also carried a transformative power through their act of simulation.

The simulation of the idea of the self-regulating system by means of the symbolic universe of the chess game was partly enabled by the cultural alterity performed by the image of the Turk. Until the 19<sup>th</sup> century, in Europe, the term “Turk” was used interchangeably with “Muslim,” referring to the subjects of Ottoman Empire, while the Ottomans never considered themselves as Turks. The Ottoman elite used the term in order to disparage the nomadic tribes in Anatolia. On the other hand, in the European imagination, chess as the proto-war simulator was introduced and mastered by the Orientals and epitomized their military power, until the spectacular halt of the Ottoman army in the Battle of Vienna. (1683) Therefore,

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<sup>145</sup> Spivak, Gayatri Chakravorty. "Can the Subaltern Speak?" *Marxism and the Interpretation of Culture*. Eds. Cary Nelson and Lawrence Grossberg. Urbana: U of Illinois P, 1988. 271-313.



the simulation<sup>146</sup> of the simulator in the example of the chess-playing automaton had a double significance in the articulation of the ideas of the self-regulating system and autonomous mind. First, the material manifestation of an autonomous mind by means of self-regulating machinery brings the mind down to the same universe as the body that is the so-called “profane” nature of the physical world. Consequently, this materiality rendered the mind manipulable towards the imperialist wishes of the sovereign. Within the history of imperialist projects designed to subdue nature, this moment signifies a crucial recognition that nature is now nothing but a series of clockworks that has also subsumed human mind within its mechanics.

However, the simulation of the automated mind via the performance of the Oriental alterity was also related to the unsettling evocations of the autonomous mind for the 18<sup>th</sup> century European subject. The most crucial change that caused these uncanny evocations was middle class, emerging in major urban centers as a result of industrialization.<sup>147</sup> This emerging middle class was differentiated from the masses of manual labor by means of their involvement in the prolific print culture of

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<sup>146</sup> Here, I consider the concept of simulation not as mere imitation “but rather the act by which the very idea of a model or privileged position is challenged and overturned” as defined by Deleuze. In other words, the simulation of automata inheres in its materialization a crucial volatility, a perpetual effort to test the perceived stability of the present status of the known universe.

<sup>147</sup> Cook, James W. “From the Age of Reason to the Age of Barnum: The Great Automaton Chess-Player and the Emergence of Victorian Cultural Illusionism.” *Winterthur Portfolio* 30.4 (1995): 231-257.

newspapers, pamphlets, booklets and broadsheets. This differentiation was further highlighted with the moral authority ascribed to the recognition of a so-called higher-order, refined intellect as distinct from that of the lower-order, mechanical intellect.<sup>148</sup>

In this milieu, the idea of the automatization of intelligence created a crisis in this distinction and undermined the moral authority associated with the intellectual labor. The immense mechanization, commercialization, and expansion of the print culture in the late seventeenth century and throughout the eighteenth were also meant as a deterioration of the traditional authority associated with the literary “authorship.” Indeed, the mechanized writing styles performed by the highly professionalized authors of these texts mirrored the mechanized production of textual material. This fact was clearly visible in the production of the pamphlets that depict demonstrations of android automata that perform mechanized writing, such as The Writer built by Jacques Droz.<sup>149</sup> These mass-produced texts were mostly reproduced from one prototype and reflected a moral apathy and intellectual indifference to the topic at hand by their professionalized authors. Their textual craftsmanship on the mechanized writing of The Writer automaton resembled the subject of their works.

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<sup>148</sup> Muri, Allison. *The Enlightenment cyborg: a history of communications and control in the human machine, 1660-1830*. University of Toronto Press, 2007.

<sup>149</sup> Voskuhl, Adelheid. “Producing objects, producing texts: accounts of android automata in late eighteenth-century Europe.” *Studies In History and Philosophy of Science Part A* 38.2 (2007): 422-444.

The decline of the moral authority of literary authorship as a result of the mechanization of intellectual labor, one could argue, might also be related to the docility associated with work that was previously associated with man-machine of the manual labor. The degree of the perceived docility of an intellectual worker was directly correlated with that worker's position in the intellectual hierarchy.<sup>150</sup> The chess-playing Turk, for example was useful to perform this intellectual hierarchical order because it included various levels of expertise distributed across its participant operators. During Kempelen's performance, the intelligent automaton was subjected to the mastery of its impresario, the state engineer who belonged to the class of managerial analysts, who stood clearly above in the cognitive hierarchy. As Simon Schaffer explains this was the era when "the science of calculation became the supreme legislative discipline, just as the calculating engines provided both legislative and executive coordination."<sup>151</sup> Kempelen as a leading figure of the bureaucratic revolution of the Habsburg State clearly embodied this supreme legislative role.

In actuality, Kempelen did not occupy the highest position in the intellectual hierarchy. As a managerial analyst and an engineer of bureaucratic processes, he had to rely on mathematicians for laying out the principles for solving the puzzles. One

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<sup>150</sup> Cook, James W. "From the Age of Reason to the Age of Barnum: The Great Automaton Chess-Player and the Emergence of Victorian Cultural Illusionism." *Winterthur Portfolio* 30.4 (1995): 231-257.

<sup>151</sup> Simon Schaffer. "Babbage's Intelligence: Calculating Engines and the Factory System." *Critical Inquiry* 21.1 (1994): 203-227. Print. 22 July 2011, pp.210

of the most significant examples of the Turk's performance that used varied levels of intellectual participation was called the Knight's Tour. That problem is based on the premise that a knight would visit all the squares (black and white) of the board, starting from any square on the board, and completing its move by landing on each square only once.<sup>152</sup> The Knight's Tour was inherently a mathematical puzzle that was solved by Swiss mathematician Leonhard Euler in 1758 when chess started to be in fashion in European courts.<sup>153</sup> Euler's problem was an example of Hamiltonian path problem. Today, it is widely known in graph theory as a special case of a traveling salesman problem that appears in multitude of contemporary computer science applications, including semantic networks, genetic algorithms, social network analysis and artificial intelligence. The demonstration of this puzzle highlights the role of another actor in Kempelen's chess playing automaton, the mathematician who represents a higher cognitive status whose contribution was considered as "a cynosure of rational skill."<sup>154</sup> The distribution of roles in Turk's performances involved a clear division of mental labor, which would later become a significant subject matter in the development of mechanical calculators.

Adelheid Voskuhl argues that the "information revolution" of the 18<sup>th</sup> century did not occur "on the basis of technical means but on the basis of consciousness and

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<sup>153</sup> Sandifer, C. Edward. *How Euler Did it*. The Mathematical Association of America, 2007.

<sup>154</sup> Schaffer, Simon. *The sciences in enlightened Europe*. Ed. William Clark. University of Chicago Press, 1999. pp.155

self-understanding of people in public communication.”<sup>155</sup> One could argue that this revolution was influenced at least in part by the public demonstrations of intelligent automata. These models made visible impending technico-political reconfigurations, and secured docility for the intellectual labor within self-regulating social order. In other words, the development of technical means for intelligent automata was an imbricated element of the public contestation for its political ends. The division of mental labor was one of the most crucial aspects of the politico-technological register due to its direct effect in the developments of the technologies of rationalism.

#### 4. Division of Mental Labor

While the Turk was demonstrating the potential of the idea of intelligent automaton during its tours across Europe, the actual implementation of such an idea was born through the invisible hands of Adam Smith’s self-regulating market economy. In *The Wealth of Nations* Adam Smith expounded an economic theory for the impending Industrial Revolution by attributing a significant role to the division of labor. In his seminal work, Smith writes:

... that the invention of all those machines by which labor is to be much facilitated and abridged, seems to have been originally owing to the division of labor. .... In the first fire-engines, a boy was constantly employed to open and shut alternately the communication between

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<sup>155</sup> Voskuhl, Adelheid. “Producing objects, producing texts: accounts of android automata in late eighteenth-century Europe.” *Studies In History and Philosophy of Science Part A* 38.2 (2007): 422-444. pp. 441

the boiler and the cylinder, according as the piston either ascended or descended. One of those boys, who loved to play with his companions, observed that, by tying a string from the handle of the valve which opened this communication to another part of the machine, the valve would open and shut without his assistance, and leave him at liberty to divert himself with his playfellows. One of the greatest improvements that has been made upon this machine, since it was first invented, was in this manner the discovery of a boy who wanted to save his own labor.<sup>156</sup>

Smith observes that a division of labor not only enables higher levels of automation but also eventually renders human labor obsolete in an increasing rate. It is crucial to read this observation in relation to the capitalist desire to hide the value of the labor in the production of commodities by emphasizing the role of the machinery as a materialized form of capital. The invisible hands of the market economy were in fact the hands of the workers that were hidden behind the sublimated but highly material artifice of the machine.

Smith's ideas inspired Charles Babbage who initially implemented the idea of "division of mental labor"<sup>157</sup> for calculation of a set of mathematical tables that would enhance British Nautical Almanac. This project was sponsored by Astronomical Society of London, whose colonial traders were mostly interested in astronomy and naval navigation as part of their commercial enterprises.<sup>158</sup> Babbage

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<sup>156</sup> Smith, Adam. *An inquiry into the nature and causes of the wealth of nations*. Printed for Oliver D. Cooke, 1804. pp.16

<sup>157</sup> Babbage borrowed the term from a French engineer, Gaspar deProny, who used it as the basis of a three tiered hierarchical computing system for producing logarithmic tables. Grier, David Alan. *When Computers Were Human*. Princeton University Press, 2005.

<sup>158</sup> Grier, David Alan. *When Computers Were Human*. Princeton University Press, 2005.

wanted to increase the accuracy of these initial calculations through the design of a calculating machine that would transform the human “division of mental labor” into the separate functions of the machine. In his design, Babbage was influenced from the three-tiered organizational design of human calculators conceived by France’s leading civil engineer, Gaspard de Prony. This work was commissioned by French government in order to create calculating tables for facilitating the adoption of metric system. In de Prony’s design, the high level abstract mathematical work of creating the necessary formulae was the responsibility of several prominent mathematicians that constituted the first section of the organization, which had nothing in fact to do actual calculation. In the second section, seven or eight people with a “considerable acquaintance with mathematics”<sup>159</sup> were responsible from converting formulae into numbers. The third section consisted of sixty to eighty people who were the least skilled workers of the process and they were called “computers.” Babbage imagined that this form of division of cognitive labor inherently meant fragmentation of human reasoning and their eventual delegation to technical media, following from Adam Smith’s postulation on the mechanization as a consequence of the division of labor in industry.

Before this project, Babbage had seen one of the performances of the chess-playing Turk in London in 1819 and about a year after he went to see the automaton

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<sup>159</sup> Babbage, Charles. *On the Economy of Machinery and Manufactures*. 4th ed. New York: A. M. Kelley, 1963. , pp.156

again at St. James Street and challenged it to a game.<sup>160</sup> Around this time the chess-playing automaton was bought by Johann Nopemuk Maelzel, the Viennese engineer, inventor and impresario of automata. Babbage lost the game in an hour. He later considered the thought of building a chess-playing machine and exhibit it for a stable income source in order to fund his other ambitious projects, but he never realized this idea.

In 1825, Maelzel brought the chess-playing Turk to several Northern and Southern American cities. The Turk's crossing of the Atlantic was also meant to show the need for an adaptation to the demands of the middle class audience in emerging urban centers such as Boston, New York, and Philadelphia. In addition to an artificial voice through which The Turk could announce his victory ("Echec!"), Maelzel introduced elements of surprise and drama in the show. Occasionally, the automaton would accept defeat from its least expected opponents such as young chess amateurs who were not part of the elite. Because of the relatively high price of the tickets of these shows, having someone other than merchants and aristocrats in the audience was already a rare occurrence. James W. Cook suggests that Maelzel had engineered these "strategic" defeats in order to reflect the shifting power relations within the urban middle class by offering opportunities for transgressing

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<sup>160</sup> Standage, Tom. *The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine*. 1st ed. Walker & Company, 2002. pp140



early 19<sup>th</sup> century North American social boundaries.<sup>161</sup> The press was an important element in these endeavors because Maelzel believed that “[n]obody helps the showmans like the type and inks”<sup>162</sup> This emphasis on the press eventually helped him expand the audience, which participated in these public queries to try to solve the automaton’s puzzle.

Not long after, however, a major challenge to the chess-playing automaton’s coveted secret of *modus operandi* took place. Based on a thorough comparison between Babbage’s calculating machine and The Turk’s performance, the young editor of a Virginia based periodical, named Edgar Allan Poe argued that the chess-playing automaton could not operate without the manipulation of a human agent. In his essay, “Maelzel’s Chess Player” Poe concluded that “(t)here is then no analogy whatever between the operations of the Chess-Player, and those of the calculating machine of Mr. Babbage, and if we choose to call the former a ‘pure machine’ we must be prepared to admit that it is, beyond all comparison, the most wonderful of the inventions of mankind.”<sup>163</sup> Poe had in fact relied on earlier sources without a citation in his analysis such as David Brewster’s *Letters on Natural Magic* (1832),

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<sup>161</sup> Cook, James W. “From the Age of Reason to the Age of Barnum: The Great Automaton Chess-Player and the Emergence of Victorian Cultural Illusionism.” *Winterthur Portfolio* 30.4 (1995): 231-257.

<sup>162</sup> Barnum, P T. *The Life of P. T. Barnum, Written by Himself*. University of Illinois Press, 2000.

<sup>163</sup> Poe, Edgar Allan. *Maelzel’s Chess-Player*. Dodo Press, 2009.

and *Edinburgh Encyclopedia*, published in 1830.<sup>164</sup> In a sense, Poe hid the true source of his analytical intelligence just as the automaton did.

Poe's later analytical literary works embodied a particular kind of predicament that concerned his intellectual labor. The very possibility of chess automaton as a "pure machine" must have posed an uncanny prospect to Poe as an intellectual worker. Following Adam Smith, Babbage thought that the initial process of division of mental labor would serve for the eventual goal of transferring the functions of the human cognitive labor to the operations of a machine. Babbage as the designer of the actual calculating machine, implicitly implicated Poe's skill and labor as part of the mechanization and division of cognitive labor system in his use of newspapers as an example

of a manufactory in which the division of labor, both mentally and bodily, is admirably illustrated, and in which also the effect of the domestic economy is well exemplified. It is scarcely imagined, by the thousands who read that paper in various quarters of the globe, what a scene of organized activity the factory presents during the whole night, or what a quantity of talent and mechanical skill put in action for their amusement and information.<sup>165</sup>

Thus, for Poe, the chess-playing automaton, with its allusions to such a "manufactory of information" processing, must have posed an uncanny puzzle also for its implications about the value of the intellectual labor including his own. In one

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<sup>164</sup> Carroll, Charles Michael. *The Great Chess Automaton*. Dover Publications, 1975. pp. 82-84

<sup>165</sup> Babbage, Charles. *On the Economy of Machinery and Manufactures*. 4th ed. New York: A. M. Kelley, 1963. Pp.216

of his later speculative narratives, Poe depicted von Kempelen as an alchemist who transforms lead into gold, resulting in a reduced value of gold and an increase in the price of lead in international markets.<sup>166</sup> This could be read as an allusion to the expected reduction of the intellectual labor as an outcome of the mechanization of reason. Poe later reflected this anxiety in a systemic way, through his *tales of ratiocination*, a series of detective stories, including infamous *Purloined Letters*, which became a literary genre of its own.

The new impresario of the chess-playing automaton experienced the anxiety related to the intellectual labor differently. Maelzel, as the owner of the automaton, was also the employer of a cognitive worker, the chess master hidden inside the machine. This particular type of dependence on the chess master for the trick of the Turk posed a constant risk for Maelzel's business. Maelzel's solution for this conundrum mainly hinged upon abstracting the cognitive process of the individual worker through standardizing the tasks involved in playing chess.

In a sense, Maelzel's solution to this problem was similar to the Babbage's design of the calculation of the mathematical tables for British Nautical Almanac, which was based on the abstraction of the complex process of chess play into a standard table of moves that would guarantee victory for whichever player moved

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<sup>166</sup> Poe published "Von Kempelen and His Discovery" in 1849

first<sup>167</sup>. Maelzel compiled a *Green Book* of endgames<sup>168</sup> by the help of William Lewis, a very promising young chess player who operated the automaton in London.<sup>169</sup> When Maelzel departed for the Americas at the end of 1825 in haste without a chess operator, he relied on this *Green Book* of endgames to teach a young Frenchwoman he met during his voyage across the Atlantic, how to operate the automaton and play the endgames. She operated the automaton for the first show in New York with a great success and defeated two enthusiastic amateurs. But when the audience suspected that she might be the brain behind the automaton, Maelzel replaced her with a young man for the next show.<sup>170</sup> It is possible that at some point, Maelzel might have contemplated on the question whether it was the Frenchwoman who actually won these two games or the whole apparatus-including the *Green Book*. As one of the most critical questions in the history of artificial reason, it would garner immense attention in the next century in the context of postwar Anglo-American Cybernetics. For example, the Turing Test, an abstract machine that was inherently an illustration of the above question devised by computer scientist Alan

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<sup>167</sup> “The Automaton always has the first move, but we can easily excuse this incivility, and allow this slight advantage to an antagonist made of wood.” Windisch, *Inanimate Reason*, Letter IV

<sup>168</sup> Endgames are the final phase of a game when there are few chess pieces left on the board.

<sup>169</sup> Ernest Wittenberg, “Échec!,” *American Heritage Magazine*, 1960.

<sup>170</sup> Standage, Tom. *The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine*. 1st ed. Walker & Company, 2002.

Turing in the 1940s became a central topic in the evolving meaning of machine intelligence.

Poe's rejection of the possibility of a "pure machine" enabled him to imagine that the solution to this puzzle included a very particular type of human machine assemblage, which was also a direct challenge to the idea of autonomous subject. Poe's essay is particularly significant as a reflection on a prominent theme in the American psyche, especially with the evocation of terror and anxiety caused by the emergence of new forms of subjectivity in relation to the mechanization of the mind. As James Berkley argues, Poe's "vision of subjectivity hence implied a quite different relationship between organism and environment than had the subject of liberal humanism"<sup>171</sup> Berkley's reading of Poe's essay suggests that becoming 'post human' is a function of both mimesis and the sublime through the formation of a particular relationship between self and alterity that enables transcending the conventional limits of the individualized human subject.<sup>172</sup> However, in assessing the process of this mimetic transfer in Poe's essay, Berkley directs his attention mainly on the alterity of the technological sublime and does not mention the role of the image of the Oriental subject as one of the key interfaces of this mimetic transfer in

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<sup>171</sup> Berkley, James. "Post-Human Mimesis and the Debunked Machine: Reading Environmental Appropriation in Poe's 'Maelzel's Chess-Player' and 'The Man That Was Used Up'." *Comparative Literature Studies* 41.3 (2004): 356-376. (p. 357).

<sup>172</sup> *ibid* p. 358

the context of the relationship between the technological sublime and what came to be known as American Orientalism.

The racialized “victory of the mechanical philosophy”<sup>173</sup> was an important aspect of “Manifest Destiny,” the 19<sup>th</sup> century North American discourse of expansionism. Coupled with religious revivalism, this view was instrumental in shaping North American attitudes toward other cultures, and especially the native ones. The Orient attracted a particular interest through missionary activities in the Ottoman lands and the biblical archaeology of the “Holy Land.”<sup>174</sup> This interest was also reflected in various media works such as Frederick Catherwood’s Holy Land Panorama<sup>175</sup> exhibited in Philadelphia in 1836, which shared the public interest along with *The Turk* as another lucrative popular entertainment. These 19<sup>th</sup> century panoramas, according to Benjamin, “foreshadowed, via photography, the moving picture and the talking picture.”<sup>176</sup>

Jerusalem was among the most common subjects chosen for panorama shows because of its appeal to paying audience who experienced the visual illusion of the

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<sup>173</sup> Nye, David E. *American Technological Sublime*. The MIT Press, 1996. pp.38

<sup>174</sup> Nance, Susan. *How the Arabian Nights Inspired the American Dream, 1790-1935*. Chapel Hill: University of North Carolina Press, 2009.

<sup>175</sup> Panorama as a technical medium resembled Bentham’s panopticon where the observation tower was used for the main site for the audience to view the paintings displayed on the walls that surrounds the viewing room.

<sup>176</sup> Benjamin, Charles Baudelaire, 161

city as a site of pilgrimage.<sup>177</sup> Although these panoramas focused on the depiction of the landscape, their representation of the Orient was complemented by the depiction of Oriental subjects in popular literary works published in journals such as the *Southern Literary Messenger* where Poe worked as the editor. “The Vision of Agib,” for example a 1837 essay written by an anonymous author as an imitation of an “Eastern Tale,” is saturated by mystery, lavish excess, and “wondrous” beings.<sup>178</sup> These stories were in fact a mimicry of *The Arabian Nights*, one of the literary sources through which the discourse of the Oriental automata had entered into the European culture in Middle Ages. In American Orientalism, the excess and magic produced by the wondrous objects also reflected the consumption fantasies of the emerging American middle class as a result of the colonial expansion of American trade activities. As Susan Nance suggests, “[t]he story of the Arabian Nights as American art form was ultimately the story of the creative lives of all Americans who engaged in performed Oriental tales through the expressive use of objects in the nineteenth century.”<sup>179</sup> The chess-playing automaton as a performative object

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<sup>177</sup> Wharton, Annabel Jane. *Selling Jerusalem: Relics, Replicas, Theme Parks*. University Of Chicago Press, 2006.

<sup>178</sup> It would be interesting to speculate for a moment that the author of this piece could possibly be Poe whose contribution to Orientalist literature included poems, Tamerlene (1827), Al Araaf (1829) and Israfel (1831)

<sup>179</sup> Nance, Susan. *How the Arabian nights inspired the American dream, 1790-1935*. UNC Press Books, 2009. Pp. 50

exploited this consumer fantasy for its transformative effect based on the anxiety caused by the emergence of a new form of embodiment and subjectivity.

It is within this Orientalist consumer fantasy world that the figure of the Turk, by functioning as the mimetic surrogate for the alterity of the machine, enabled the transformative effect articulated by Poe. The Turk essentially transferred the tension of mechanization of the mind by allowing its enactment to be mediated by a rationalized and tamed alterity that eventually humanized the uncanny premise of automated cognition. This mediation is the key to understanding how the self-regulating 19<sup>th</sup> century liberal subject relieved its anxiety of the mechanization of the mind by means of the assurance of the cultural difference it had already established through the fantasies and desires projected onto the Oriental.

## 5. The Machine Speaks up

The materialist-mechanist understanding of intelligence operated as its most literal in the widespread consideration of speech, the defining function of human intelligence, as an essentially physiological process.<sup>180</sup>

The chess-playing Turk and the other 18<sup>th</sup> century automata were instrumental in popularizing the idea of the autonomous intellectual machine in Europe. However, these performances also opened the way for the mechanization of major industries and influenced the first designs of the imprisonment of the human labor as embedded in the specter in the machine. This continuity could not be better

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<sup>180</sup> Riskin, Jessica. "Eighteenth-Century Wetware." *Representations* 83 (2003): 97-125. Pp. 105



expressed than the illustrious appointment of French automata inventor Jacques de Vaucanson as the chief inspector of silk manufacture in France. Vaucanson became famous with his Digesting Duck automaton, which was created in 1739 and give the impression to have the ability to digest grains and defecate. Through a mechanical trickery Vaucanson imitated life via a performance of internal biological processes.<sup>181</sup> His attempts to integrate another one of his inventions, the automated loom, into the silk manufacturing process caused a big riot in the French textile industry.

In addition to the riot of French silk manufacturers, The Turk's extended European tour coincided with the publication of Mary Shelley's novel *Frankenstein* (1818), a cautionary tale that was written against the background of the Luddite riots of the Manchester textile workers.<sup>182</sup> As the Luddite riots brought the industrial labor rights to public's attention, Shelley's novel centered around the emancipatory struggle of a biological automaton. Shelley in her novel juxtaposes the process of comprehension of Frankenstein's monster of his exploitation as a free-labor automaton with the process of liberation of an Oriental character. Safie, is a refugee from oppressive Ottoman lands who escaped from her father to be with her lover. At first, as the submissive Oriental woman becomes independent, rebelling against the

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<sup>181</sup> Riskin, J. "The defecating duck, or, the ambiguous origins of artificial life." *Critical Inquiry* (2003): 599–633.

<sup>182</sup> Shelley, Mary Wollstonecraft. *Frankenstein*. W. W. Norton & Company, 1995.

patriarchy and traveling in a foreign land with a single women companion, Shelley establishes a sharp contrast between Safie and monster, who wishes to be obedient to its creator and offers his free labor for approval. However, their desires for autonomy start to resemble one another, when the monster gradually emerges from his infantile state and develops the ability of producing spoken and written language while watching Safie during her literacy studies. After their respective education, however the outsider Safie gains acceptance from her lover's family, but the autonomy seeking monster remains alienated. Although it is hard to compare which one was more anxiety-producing for the 19<sup>th</sup> century British social imagination - the autonomy of a woman or the autonomy of the labor animal- it is certain that the subplot of the Muslim Safie's liberation was instrumental in questioning the similarities between the two. This literary juxtaposition in effect re-humanizes the free-labor monster, which is often considered as a symbol for the growing masses of industrial labor whose rising struggle was one of the main transformative social factors in 19<sup>th</sup> century Europe. The key moment in the awakening of Frankenstein's monster is his speech, which becomes the irrepressible expression of the biological machine. Through speech, he is able to oppose his master's interpretation for the reason of his misery: "Oh it is not thus... not thus."<sup>183</sup>

Mechanical speech syntheses were in fact an important domain of focus in the 18<sup>th</sup> and the 19<sup>th</sup> centuries, led by Kempelen's speaking machine. The synthesis

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<sup>183</sup> Shelley, Mary Wollstonecraft. *Frankenstein*. W. W. Norton & Company, 1995, pp. 273

of voice was a crucial stage in the mechanization of human senses because it signified the externalization of the defining function of human intelligence.<sup>184</sup> It was also the most critical one since it linked human cognitive processes to their ultimate articulation, one that conditioned the agency- or lack thereof - of the subjects involved in the process. After his tour with the chess-playing automaton, for example, Kempelen focused on a speaking machine. His main influence in linguistic studies was German philosopher Johann Gottfried Herder, who rejected the possibilities of a divine linguistic source or a primordial language for an explanation in natural terms.<sup>185</sup> Kempelen's speaking machine was a response to a call by the Royal Academy of Sciences in St. Petersburg, which issued a prize in 1780 for the first inventor who could construct a machine that could reproduce vowels. Kempelen described his invention in in a book, *Mechanismus der menschlichen Sprache nebst der Beschreibung seiner sprechenden Maschine* ("The mechanism of the human speech, with a description of a speaking machine")<sup>186</sup> (1791), which established him as the founder of the field of experimental phonetics. The book included theoretical principles of the mechanism of the human speech and guidelines for their practical application.

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<sup>184</sup> Riskin, Jessica. "Eighteenth-Century Wetware." *Representations* 83 (2003): 97-125.

<sup>185</sup> Hankins, Thomas L., and Robert J. Silverman. *Instruments and the imagination*. Princeton University Press, 1999.

<sup>186</sup> Translation of title from Standage, Tom. *The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine*. 1st ed. Walker & Company, 2002. pp.79

The final version of the machine consisted of bellows that replicated the function of the lungs; a box that synthesized the vowels by means of a series of air valves and ventricles manipulated by an operator, and at the end a rubber funnel, which served as the mouth. Kempelen believed that the construction of the speaking machine and his formal study of speech were a parallel and interactive process. He describes this process as follows; “In order to continue my experiments it was necessary, above all, that I should have a perfect knowledge of what I wanted to imitate. I had to make a formal study of speech and continually consult nature as I conducted my experiments. In this way my talking machine and my theory concerning speech made equal progress, the one serving as guide to the other.”<sup>187</sup> Speaking Machine was Kempelen’s last project and the one he devoted the longest period of time, and Kempelen died soon after its exhibition in 1804. However, his machine continued to influence the later studies of synthesis of human voice through various replicas produced and exhibited by enthusiasts and inventors.<sup>188</sup>

One of the most prominent replicas of Kempelen’s Speaking Machine was built by German inventor Joseph Faber. He exhibited the Talking Machine in 1845 in Philadelphia and controlled it by foot pedals and a keyboard. After its debut in Philadelphia wearing Turkish attire, The Talking Machine had gone through a

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<sup>187</sup> Linggard, R. *Electronic Synthesis of Speech*. First Edition. Cambridge University Press, 1985. Pp. 4-9

<sup>188</sup> Young Alexander Graham Bell saw one of those replicas at an exposition and with the support of his father started an extensive endeavor to construct his own speaking machine which led to his invention of telephone in 1879. Standage, 2002, pp. 76-81

bizarre series of transformation and reintroduced in London with a different gender and name: Euphonia. According to David Lindsay, “From its perch on a small table, the Turk, now swaddled in crimson and (despite its feminine features) sporting a full growth of beard, began by addressing the audience. ‘Please excuse my slow pronunciation,’ said the voice.”<sup>189</sup> The uncanny effect of Euphonia’s appearance was further accentuated by the peculiar texture of its voice. The Turk/Euphonia “produced words which slowly and deliberately in a hoarse sepulchral voice came from the mouth of the figure, as if from the depths of a tomb” according to one observer who referred to the figure as one of “unmeasurable sorrow.”<sup>190</sup>

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<sup>189</sup> Lindsay, Davis. *Talking Head*, American Heritage, Summer 1997 Volume 13, Issue 1

[http://www.americanheritage.com/articles/magazine/it/1997/1/1997\\_1\\_56.shtml](http://www.americanheritage.com/articles/magazine/it/1997/1/1997_1_56.shtml)

<sup>190</sup> Hankins, Thomas L., and Robert J. Silverman. *Instruments and the imagination*. Princeton University Press, 1999. , pp. 214



Figure 1. 4 Faber's Euphonia. From "The Euphonia," *Illustrated London News* 9 (1846):96. University of Washington Libraries<sup>191</sup>

The "unmeasurable sorrow" of the voice automaton immediately calls to mind the Frankenstein monster and its uncanny expression of desire for recognition. With its Oriental image, The Turk/Euphonia integrates Shelley's talking monster Frankenstein with Safie, the autonomous woman character into a single automaton, and re-discipline them by the technology, which had initially instigated their disobedience. The disciplining of the Western subject via the performative automata

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<sup>191</sup> *ibid.* pp.215

is inherently achieved through the central anxiety related to the emergence of a machinic agency as it is based on the distortion of the fundamental death/life distinction. The Freudian concept of uncanny, is its psychoanalytical expression, the analysis of which is embedded in the 19<sup>th</sup> century anxiety of mechanization of human senses. Sigmund Freud's analysis of the *uncanny (unheimlich)*<sup>192</sup> focuses on E.T.A. Hoffman's fantasy and horror literature, which is scattered with living dolls, waxwork figures and automata. One of the most striking examples among those automata is the one depicted in his short story *Die Automate (Automaton, 1814)* whose source of inspiration was Kempelen's automaton. The main figure in the story is an automaton called the Talking Turk, which responds to questions from audience members by offering wise or precognitive answers eventually revealed disconcerting secrets.

In his description of the exhibition scene, Hoffmann relies almost entirely on the manner of the demonstration of the chess automaton:

The Talking Turk was attracting universal attention, and setting the town in commotion. The hall where this automaton was exhibited was thronged by a continual stream of visitors, of all sorts and conditions,

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<sup>192</sup> Freud, referring to the semantic content of the German word *unheimlich* stated that the *unheimlich* (unfamiliar, unhomely) is not in a mutual contradiction with the *heimlich* (familiar, homely). In support of his conclusion that the *unheimlich* is somehow in the same realm with the *heimlich*, he emphasized one of the entries in a German dictionary, which refers to a remark of Schelling, "Uncanny is what one calls everything that was meant to remain secret and hidden and has come into the open." Freud, Sigmund. *The Uncanny*, 2003 pp.132

from morning till night, all eager to listen to the oracular utterances which were whispered to them by the motionless lips of this wonderful quasi-human figure. The manner of the construction and arrangement of this automaton distinguished it very much from ordinary mechanical figures. It was, in fact, a very remarkable automaton. In the center of a room of moderate size, containing only a few indispensable articles of furniture, sat this figure, about the size of a human being, handsomely formed, dressed in a rich and tasteful Turkish costume, on a low seat shaped like a tripod. The exhibitor would move this seat if desired, to show that there was no means of communication between it and the ground... From time to time, after a few answers had been given, the exhibitor would apply a key to the Turk's left side, and wind up some clockwork with a good deal of noise. Here, also, he would, if desired, open a sort of lid, so that inside the figure you could see a complicated mechanism consisting of a number of wheels; and although you might not think it probable that this had anything to do with the automaton's speech, it was still evident that it occupied so much space that no human being could possibly be concealed inside, even if he were no bigger than Augustus's dwarf who was served up in a pasty. Besides the movement of the head, which always took place before an answer was given, the Turk would sometimes also raise his right hand, and either make a warning gesture with a finger, or, as it were, brush the question aside with his whole hand. Whenever this happened, nothing but repeated urging by the questioner could extract an answer, which was then generally ambiguous or angry. It might have been that the wheelwork was connected with, or answerable for, those motions of the head and hands although even in this the agency of a sentient being seemed essential. People wearied themselves with conjectures concerning the source and agent of this marvellous intelligence.<sup>193</sup>

Freud surmises that, in Hoffman's literature, the prominent theme that creates the uncanny effect is the idea of the double (*Doppelgänger*). Freud's account of the motif concludes that *the double* was originally an insurance for survival and an energetic denial of the death reflecting the animistic view of the universe that was

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<sup>193</sup> Hoffmann, E. T. A. Automata, *The Best Tales of Hoffmann*. New York: Dover Publications, 1967.



populated by spirits, magic and human's overvaluation of his/her own mental processes. However, after the disappearance of animism the meaning of *the double* was transformed into the uncanny indication of death. Freud's concept of the uncanny was founded upon the liminal zone of animate/inanimate distinction expressed in humanoid automata, which were an integral part of the Western cultural configuration of human senses through technical media.

The frequent deployment of the Oriental figure in this process seems to have remnants of the pre-modern function of Oriental automata as the guardian of the liminal zone between animate and inanimate. In the context of the industrialization, the Enlightenment Oriental automata remediate its predecessor responding to new layers of *technico-political* predicament activated by the mechanization of human cognition and speech.

In this context, the presentation of the speaking machine during Maelzel's tour prepared the audience for the coming performance of the chess playing Turk. Mladen Dolar has suggested that this sequence creates a teleological link between the mechanical voice and the chess-playing automaton such that the automaton became the fulfillment of the promise given by the voice synthesizer.<sup>194</sup> The voice synthesizer's promise as expressed in its minimal vocabulary such as, "papa—mama—Romanum Imperator semper Augustus"<sup>195</sup> was a mixture of love and the

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<sup>194</sup> Dolar, Mladen. *A Voice and Nothing More*. The MIT Press, 2006.

<sup>195</sup> Hankins, Thomas L., and Robert J. Silverman. *Instruments and the imagination*. Princeton University Press, 1999. pp.196

praise for the sovereign. In the mechanized voice, Dolar sees a subjectifying effect that provides interiority for a machine that cannot be reduced to its mechanical functioning. The first use of this subjectivity, as seen in the example of Euphonia, was to throw itself at the mercy of the “Other”, an act that could only be done with voice, the communicatory function of human intelligence.

In this configuration, the voice of the self-regulating automaton could only speak what was programmed by its designer, which consequently renders the cognitive machine devoid of meaning-making abilities. This ultimate restriction of semiosis is an inherent condition of the liberal subject conditioned by its primary mode of production, the division of cognitive labor. That conditioning effect initially performed by The Turk was one that acted as the cultural scaffolding that made visible the process through which intellectual labor was prevented from speaking for itself.

Chapter 1, in parts, is reprint of materials as they appear in; Ayteş, Ayhan "Cognitive Labor, Crowdsourcing, and Cultural History of the Mechanization of the Mind" Leonardo Electronic Almanac, Volume 17, (2011) Issue: 1. and, Ayteş, Ayhan "Return of The Crowds: Mechanical Turk and Neoliberal States of Exception" in Unthinking Digital Labor. Ed. Trebor Scholz, Routledge NY 2012 (forthcoming)

## Chapter 2.

### Predicaments of Modern Automaton

In contrast to its Enlightenment predecessors, the 20<sup>th</sup> century automaton did not perform by means of its external appearance but mainly by its internal functions in accordance with its utilitarian role in the military and industrial applications for highly automatized decision-making and production conditions. It was mainly through the novel postwar field of Cybernetics that automation became a systematized social and economic idea. Cybernetics, as a culminating point of post-war socio-technical discourse, expanded its terminology to include everything from control systems to biological sciences. This expansion allowed

the transfer of Cybernetics research programs into other disciplines, which consequently supported Cybernetics in its claim to become a universal science.<sup>196</sup>

As we have discussed in Chapter 1, the Enlightenment paradigm that sought out artificial reason, was inhabited unresolvable tensions, contradictions, and paradoxes for the Western subject that needed to be constantly addressed. Some of these challenges could only be confronted through their projection to the outer cultural limits of what constituted Western subject-that is the “Other.” In this chapter, I argue that the Cybernetics was instrumental in establishing a new type of relationship between the Western subject and its “Other.” This stems from Cybernetics’ claim of a universal science of control, which implied a universal administrative apparatus that relied on the idea of automated decision-making systems. Through this apparatus, one could integrate various domains of life into a system of feedback loops between individual subjects and administrative organizations.

Before Cybernetics claimed its status of universal science with its methods of “human use of human beings” however, its conceptual precedents enacted similar desires. The performative model of the technico-political methods of Enlightenment ideals, for example, had long been a perfect conceptual apparatus for exploring the possibility of automated decision making. Any halt in its

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<sup>196</sup> Bowker, Geof. “How to be Universal: Some Cybernetic Strategies, 1943-70.” *Social Studies of Science* 23.1 (1993): 107 -127.

demonstrative work, or the clogging of its wheels, carried importance because the modern automaton as the *perfect philosophical machine*<sup>197</sup> signified the contingencies of the material progress and rationality of the Enlightenment ideals. Due to this critical function played by the modern automaton, it was frequently utilized as a thought experiment for political theories and their failures in the first part of the 20<sup>th</sup> century. Despite their premises of rationalism, these conceptualizations of modern political apparatuses could borrow themes from theology, in order to articulate issues relevant to socio-economic crisis of progress.

Debates between two German intellectuals Carl Schmitt and Walter Benjamin epitomize the utilization of automata as philosophical machines in the first half of the 20<sup>th</sup> century. Schmitt and Benjamin considered how machines could provide paradigms for talking about alternative political temporalities. By employing metaphors of automata and their instant states of cessation from different political iconographies, Schmitt and Benjamin articulated two alternative positions, particularly, the clockwork universe of totalitarian Leviathan versus the secular messianism of the automaton chess-player.

One needs to consider this discussion between Benjamin and Schmitt in the context of the disillusionment of European intellectuals from the Enlightenment ideals. This was expressed succinctly by two exiles of Nazi

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<sup>197</sup> The term appears in John Johnston's *Allure of Machinic Life* pp.30, cited from Beaune, Jean-Claude. 1980. *L'automate et ses mobiles*. Paris: Flammarion.

Germany, Theodor Adorno and Max Horkheimer; "Enlightenment, understood in the widest sense as the advance of thought, has always aimed at liberating human beings from fear and installing them as masters. Yet the wholly enlightened earth radiates under the sign of disaster triumphant."<sup>198</sup> Their main question was, how a social system based on pure reason could become irrational. Their answer was that the Enlightenment was never purely rational and free from the influence of myths and religions. "Myth is already enlightenment, and enlightenment reverts to mythology"<sup>199</sup>

Walter Benjamin's utilization of an 18<sup>th</sup> century automaton for an assessment of "historical materialism" can be seen as a critique of Enlightenment. However, in order to present a comprehensive picture in relation to this question, it is critical to explore the role of Orientalism in Benjamin's configuration of temporality. Although it is one of the most cited texts of philosophy of history, it is particularly fascinating that the discursive implications of the peculiar role of the Oriental figure in this central work have not been extensively studied. In this chapter I will address this gap by analyzing the elements of this debate within the historical context of the theological, political and technological configurations of Oriental automata, which I discussed in the previous chapter. This gap becomes more critical because of its further implications in the post-war interests in

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<sup>198</sup> Horkheimer, Max, and Theodor W Adorno. *Dialectic of Enlightenment*. New York: Continuum, 2000. Pp.1

<sup>199</sup> *ibid* pp. xviii

formulizing a universal system of administration and socio-economic progress through Cybernetics that is itself a theory of automata.<sup>200</sup> The link between Benjamin's deployment of the chess-playing automaton in his theory of historical materialism and the central problem of post-War Cybernetics reveals distinct continuity of the Orientalism embedded in Enlightenment ideals in the context of progress and the universal science of control in the 20<sup>th</sup> century.

Furthermore, the particular form of temporal medium that Benjamin established between the various elements of his philosophical apparatus prefigures the temporality constructed by the imminent field of post-war Cybernetics as a universal science. Thus, this chapter explores the temporal aspect of Benjamin's version of the Chess-Playing Turk in relation to its utilizations in the claims of universality advocated by the proponents of Cybernetics.

## 1. Alternative States of Exception

The evolution of the debate between Schmitt and Benjamin mirrors the evolution of the idea of the progress modeled in a constant interaction with the technomythical idea of artificial reasoning systems. In fact, the debate refers to both registers of Enlightenment automata: the anatomico-metaphysical, and technico-political. The automata in this debate, model different notions of society,

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<sup>200</sup> Wiener, Norbert. *The Human Use of Human Beings: Cybernetics and Society*. Boston: Houghton Mifflin, 1950.



thereby reflecting the shift in 20<sup>th</sup> century thinking, as the mechanization of the functions of the socio-economic system became a reality.<sup>201</sup> Large-scale industrial automation, thus transformed the anxiety around becoming machine from that of the individual human subject to the whole society.

In his book, *The Leviathan in the State Theory of Thomas Hobbes* (1938), German political theorist Carl Schmitt relied heavily on the Newtonian mechanistic paradigm for the conceptualization of his political philosophy.<sup>202</sup> In this mechanistic system of governance, the sovereign, situated at the center of social structure, was enabled with an extraordinary power of halting the temporal flow of events. The sovereign's power to create a temporal exception eventually formed the basis of Schmitt's political theory of "the state of exception." As explained in Chapter 1, Thomas Hobbes' *Leviathan*, one of the founding concepts of rationalist political philosophy, was based on a mechanistic metaphor that utilizes the analogy of the organic body for the social body in order to emphasize hierarchies of social status and function. The state is a body-machine constituted of people as its moving parts, and the sovereign who is a divine "Artificiall Soul" animates it. This clockwork type assembly embodied a strict hierarchy where the

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<sup>201</sup> Giedion, Sigfried. *Mechanization takes command: a contribution to anonymous history*. Oxford University Press, 1948. Print.

<sup>202</sup> Schmitt, Carl. *The Leviathan In the State Theory Of Thomas Hobbes: Meaning and Failure Of a Political Symbol*. 1938

sovereign/soul at the head governed its limbs via nerve fibers characterized as public ministers, without much emphasis on a feedback mechanism.

Schmitt often refers to the image in the frontispiece of Hobbes' book, *Leviathan*, for explaining his political iconography.<sup>203</sup> He particularly used the clockwork universe of Leviathan to characterize the moment during which the sovereignty corresponded to an abnormal state due to an endowed potential power, which thus enabled him interrupt the legal and political continuity in any given moment. According to Schmitt, sovereignty required the fulfillment of two criteria: to suspend the law to produce the state of emergency; and to name the enemy. In Schmitt's political theology, a state of exception defined the very character of regular time and even generated it by the quality of being outside of time. In his conceptualization of the temporal halt, Schmitt often utilizes mechanistic metaphors: "in the time of exception, the power of true life breaks through the crust of a mechanism that has become torpid by repetition."<sup>204</sup> Schmitt's theory of "state of exception" later became one of the political pillars of the totalitarian regime of German Nazi party and its domination of executive over legislative power, which began by the suspension of the Weimar Constitution.

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<sup>203</sup> Bredekamp, Horst. "From Walter Benjamin To Carl Schmitt, Via Thomas Hobbes." *Critical Inquiry* 25.2 (1999) : 247-266.

<sup>204</sup> Schmitt, Carl. *Political Theology: Four Chapters On the Concept Of Sovereignty*. 1st ed. University Of Chicago Press, 2006. pp.15

According to Giorgio Agamben, Schmitt's "state of exception" was a response to Walter Benjamin's concept of *pure or revolutionary violence*.<sup>205</sup> Schmitt's attempt in his conception of the state of exception was to subsume all violence under the power of the sovereign. Yet these two opposite positions were also based on two distinct concepts of time; Benjamin's revolutionary violence had a potential to change the course of history for the emancipation of the oppressed masses. According to Agamben, "[t]he proper characteristics of this violence it neither makes nor preserves law, but deposes it, and thus inaugurates a new historical epoch."<sup>206</sup>

In his *Trauerspiels* book (1928), Benjamin makes multiple references to Schmitt's concepts of the sovereignty and the state of exception. Benjamin in contrast with Schmitt's formulation considers the primary role of the sovereign as avoidance of the state of exception.<sup>207</sup> Schmitt later explained that his seminal book on Hobbes was partly intended to be an answer to Benjamin's *Trauerspiels* book.<sup>208</sup> Although Schmitt assumed that this response went unnoticed, Benjamin's one of the last works, *Theses on the Philosophy of History*, was in fact written partly in reply to Carl Schmitt's work, according to Horst Brederkamp.

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<sup>205</sup> Agamben, Giorgio. *State Of Exception*. University of Chicago Press, 2005. pp 53

<sup>206</sup> *ibid.* pp.53

<sup>207</sup> Benjamin, Walter. *The Origin of German Tragic Drama*. Verso, 1998. Print.

<sup>208</sup> Bredekamp, Horst. "From Walter Benjamin To Carl Schmitt, Via Thomas Hobbes." *Critical Inquiry* 25.2 (1999) : 247-266. Pp. 261

In his *Theses on the Philosophy of History*, Benjamin counters Schmitt's propositions as follows: "The tradition of the oppressed teaches us that the "state of exception" in which we live is not the exception but the rule. We must attain to a conception of history that is in keeping with this insight. Then we shall clearly realize that it is our task to bring about a real state of exception, and this will improve our position in the struggle against Fascism." Benjamin's "real state of exception" or "messianic cessation of activity" refers to the transformative temporality of Judaism, *Jetzt-Zeit*.<sup>209</sup> Benjamin's first thesis in this work, which is a dialectical formulation of a relationship between historical materialism and theology, reads as follows:

The story is told of an automaton constructed in such a way that it could play a winning game of chess, answering each move of an opponent with a countermove. A puppet in Turkish attire and with a hookah in its mouth sat before a chessboard placed on a large table. A system of mirrors created the illusion that this table was transparent from all sides. Actually, a little hunchback who was an expert chess player sat inside and guided the puppet's hand by means of strings. One can imagine a philosophical counterpart to this device. The puppet called "historical materialism" is to win all the time. It can easily be a match for anyone if it enlists the services of theology, which today, as we know, is wizened and has to keep out of sight.<sup>210</sup>

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<sup>209</sup> Benjamin describes the term in his last theses as follows: [Actuality, which, as a model of messianic time, comprises the entire history of mankind in an enormous abridgment, coincides exactly with that figure, which the history of the mankind has in the universe.] translation from, Agamben, Giorgio. *The Time That Remains: A Commentary On the Letter To the Romans*. Stanford University Press, 2005. pp.143

<sup>210</sup> Walter Benjamin, "Theses on the Philosophy of History," in *Illuminations*, ed. Hannah Arendt (New York: Schocken, 1968), 253-264; citation, 253.

As discussed in Chapter 1, Kempelen's chess playing automaton was a remediation of Hobbes's Leviathan apparatus, which itself was the remediation of Nicéron's optical medium that constituted an ideal European self by assembling the images of Oriental sovereigns. The reappearance of the image of the Turk in almost every step of this chain of remediation is a reflection of the inseparable relationship between the Oriental subject and the ontological question of what constitutes an autonomous human for the Western subject. But before going into the discussion of the role of the Oriental figure in this discussion I want to turn to a discussion of the alternative states of exception suggested by these two apparatuses.

According to Agamben, creating a temporal order outside of the mechanical flow of time was the point both Schmitt's and Benjamin's theories concur. As Giorgio Agamben writes, "From the juridico-political perspective, messianism is therefore a theory of the state of exception – except for the fact that in messianism there is no authority in force to proclaim the state of exception; instead, there is the Messiah to subvert its power"<sup>211</sup> In Benjamin's chess playing automaton, the iconography of "messianic cessation of happening" would be fulfilled by the theological element that was symbolized as the chess

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Benjamin read the story of the Turk from Edgar Allan Poe's account, which was translated into French by Charles Baudelaire.

<sup>211</sup>Agamben, Giorgio. *Homo Sacer: Sovereign Power and Bare Life*. 1st ed. Stanford University Press, 1998. Pp. 37-8

master hidden inside the homogenous temporality of historical materialism. The “puppet” called historical materialism, in other words, needs to enlist the services of theology to bring in a messianic temporality that “comprises the entire history of the mankind in an enormous abridgement” in order to win all the time. The miracle of the theologian comes from outside of the homogenous time of the mechanistic repetition and transforms it. Although conceived for an entirely different outcome, Schmitt’s state of exception also enters into the relationship between humans and the regular time from outside “like the miracle for the theologian.”<sup>212</sup>

As previously noted, Schmitt’s and Benjamin’s contrasting theories of “state of exception” rely on mechanistic metaphors: the former belongs to the political universe of autocratic feudalism, and the latter belongs to the chess playing automaton and consequently to the technical, political and economic ideas of self-regulating systems that influenced the Enlightenment ideas of liberal subjects and democracy. As employed by Schmitt and Benjamin, these two abstract machines of political iconography share similar visual elements mapped onto their tripartite structures. In both systems, the sovereign is placed at the visible center and stands above the two lower components that constitute the primary elements of his power. (Figure 1.) In the Leviathan frontispiece, the left side of the lower panel consists of elements representing worldly sources of

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<sup>212</sup> Bredekamp, Horst. “From Walter Benjamin To Carl Schmitt, Via Thomas Hobbes.” *Critical Inquiry* 25.2 (1999) : 247-266. Pp. 252

power, while the opposite side inhabits series of symbols that represent the church as the religious institution supporting sovereign's authority. Schmitt describes and interprets the significance of these elements as follows:

... a gigantic man, composed of innumerable midgets, holding in his right hand a sword and in the left a crosier, guarding a peaceful city. Under each arm, the secular as well as the spiritual, there is a column of five drawings: under the sword a castle, a crown, a cannon; then rifles, lances and banners, and finally a battle; to these correspond, under the spiritual arm: a church, a mitre, thunderbolts; symbols for sharpened distinctions, syllogisms, and dilemmas; and finally a council. These illustrations represent the characteristic means of using authority and power to wage secular-spiritual disputes. The political battle, with its inevitable and incessant friend-enemy disputes that embrace every sphere of human activity, brings to the fore on both sides specific weapons. The fortresses and cannons correspond to the contrivances and intellectual methods of the other side, whose fighting ability is by no means inferior.

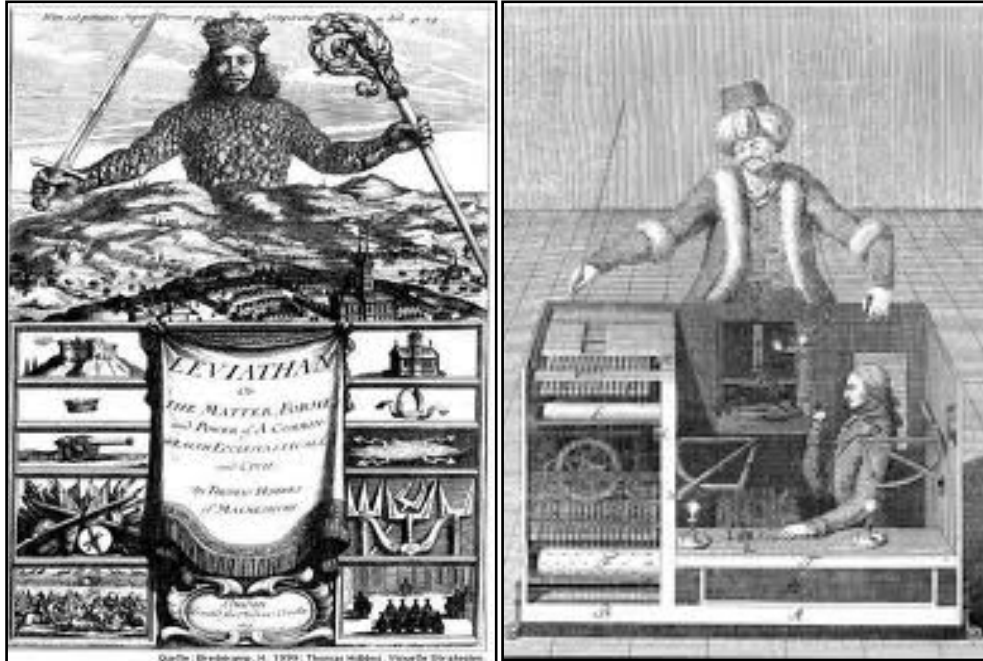


Figure 2. 1 Leviathan, as represented in the frontispiece of Thomas Hobbes' book (1651), and Joseph Friedrich Freiherr zu Racknitz's illustration of the Mechanical Turk (1789)

Similarly, Benjamin associated the main source of power for his abstract machine with the chess-master, who represents theology, hidden under the cabinet on the left side of the Turk. In addition, the worldly but obsolete gears and levers are placed in the cabinet compartment that correspond to the right side of the apparatus.

I believe this parallel iconographic structure is more than a coincidence. Both Schmitt and Benjamin employed visual metaphors for their political and aesthetic works, in order to demonstrate their arguments visually and symbolically. Both of the abstract socio-temporal mechanisms that these authors deploy use symbolic imagery, that are from Judaism or Christianity in order to



emphasize the corresponding political configurations of time.<sup>213</sup> Since this particular use of political iconography is concerned with the social system through the politicization of time, the components of the clockworks that affect the nature of resultant temporality is key to understand the constitutive subjectivities of their corresponding political apparatuses. Therefore it is critical to consider the relationship between the components of Benjamin's conceptualization of the chess-playing automaton for the configuration of subjectivity that is suggested by this temporal-political apparatus.

With the Chess-Playing Automaton, Benjamin assigns the most significant role to the labor of the chess-master. By assigning the messianic role to a worker who needs to control the means of production in order to effect revolutionary change, Benjamin mirrors the key condition for revolution according to Marxism, that a proletarian revolution is the first step towards abolishing exploitation brought about by industrial capitalism. Young Marx was primarily influenced by Hegel's teleological consideration of the goal of the history as the emancipation of human. Benjamin by bringing the messianic aspect into his concept of history makes his teleological interpretation of communist revolution explicit. In fact, an automaton as a teleological device is a perfect conceptual model for expressing

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<sup>213</sup> In Chapter 1, I demonstrated some of the ideological aspects of the Leviathan as it is constructed as an idealized Western sovereign opposite to the Eastern by means of a perfection image of Ottoman sultans through a technique of optical media introduced by Dutch inventor Niceron.

such a conception of history. But this configuration also embodies a peculiar paradox: How can a puppet enlist the services of a human? And if a puppet can control a human in the first place, how can the role of the actuator be handed back to the puppeteer? This transformation, which clearly signifies a transformation in the relations of production, also entails a transformation in the subjectivity of the worker. Although initially it is the puppet of the machinery who enlists the services of the human actor, the “messianic flash in time” puts the chess-master back in charge of the puppet and the game.<sup>214</sup>

The transformation of the human - from being an operative element of the machine to being an effector of change - is the key for Benjamin’s messianic premise. However, this flash of messianic transformation is not permanent. Its effect is similar to a movement of a piece in the game of chess which may entirely alter the state of the game for a moment but may also require ingenuity on the part of the opponent’s next move in order for the game to proceed. Moreover, in this configuration, regardless of how the game ends, both the puppet and the puppeteer are on the same side, so their actions need to be coordinated. This constant coordination suggests the existence of a constant feedback loop between the chess-player and the puppet. The feedback loop between the puppet and the puppeteer, or the human and the machine, is the critical element of the temporality of the whole human-machine assemblage that Benjamin constructs. I

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<sup>214</sup> Leslie, Esther. *Walter Benjamin: Overpowering Conformism*. London ; Sterling, Va: Pluto Press, 2000.

believe in order to have a comprehensive account of this unique temporal relationship between the worker and the machine, or the puppet and the puppeteer, one needs to consider the proto-Cybernetic research that was underway in Germany before World War II.

## 2. Cybernetic Messiah

In Benjamin's configuration of the chess-player automaton there are clear hints to the imminent field of Cybernetics that systematized the human machine feedback loop into a whole socio-economic system. When animated by the hunchbacked dwarf of theology, the puppet of historical materialism reads the chess game not only to comprehend its current state but also in order to intervene, to alter its course by writing back into the historical text of progress. One could argue that this interactive intervention anticipates the feedback loops of the imminent information paradigm developed by post-war Cybernetics. For Benjamin, this act of writing requires the arrest of thoughts in order to give a shock to the configuration of tensions in the game of historical progress. Thus, Schmitt's "state of exception" is replaced in Benjamin's formulation by "a Messianic cessation of happening, or put differently, a revolutionary chance in the fight of the oppressed past."<sup>215</sup> As a result, Schmitt's use of Hobbes' political iconography, which joins the discourses of the totalitarian state, Christian eschatology and the Cartesian subject, was countered by Benjamin through

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<sup>215</sup> Benjamin, Walter. *Illuminations*. New York: Schocken Books, 1969. Pp.254

another intersection of discourses including historical materialism, secularized Messianism and proto-Cybernetics.

The problem of automation and control preoccupied a wide spectrum of scholars in pre-war Germany including Hermann Schmidt regarded as one of the founders of the field of Cybernetics preceding the North-American scholars.<sup>216</sup> Schmidt developed a general control theory independently of Norbert Wiener, which he claimed was applicable to areas such as biology, physiology, and economics. For Schmidt, feedback loops of information and communication flows in mechanical, biological and social systems were highly important. Although Schmidt had a critical view on the idea of scientific management following German humanist tradition, he also saw automation and control as a “distinct break with the past and a perfection and completion (Vollendung) of technological progress.”<sup>217</sup> He believed these technologies freed the worker from being “slave of the machine.”<sup>218</sup> Schmidt’s proto-Cybernetic ideas were preceded by a number of German zoologists and physiologists such as Von Uexku’ll (1864–1944) and Wagner (1893–1970) who studied the role of feedback loops in biological control processes, and applied them to systems of social relationships.

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<sup>216</sup> Bissell, Christopher Charles. “Hermann Schmidt and German ‘Proto-Cybernetics’.” *Information, Communication & Society* 14 (2011): 156-171.

<sup>217</sup> Ibid pp.165

<sup>218</sup> Ibid pp.166

But, for Schmidt, this new field was clearly the solution to all the social problems of the Enlightenment:

The machine created the social question of the European nations; control engineering solves it. There are two solutions: to remain behind with craft and hand tools, which leave the subject spiritually unscathed [ . . . ] or to push on, with every application of vigour and creative intellect, to the solution of the technical problem by automation, liberating the subject from technical operations. [...]<sup>219</sup>

For Schmidt, feedback loops within circuits of information flow was vital.

In the field of control engineering, automation of many tasks require a control process called negative feedback loop which is also the foundational concept of Cybernetics. In a typical negative feedback loop, the relationship between the system and the environment is subjected to a constant check of the difference between the actual and the desired state of the system, which is minimized by the control apparatus according to the initially set parameters. A typical example for a negative feedback loop can be found in thermostats. On a winter day, in order to warm up a room to a desired temperature, the heater runs until the set temperature is reached. Meanwhile the thermostat constantly measures the difference between the actual and the desired temperatures, and when the aimed temperature is reached it stops the heater, or when the actual temperature drops below the desired temperature it starts the heater. The information circuit between the heater, the environment, and the thermostat constitutes a negative feedback loop

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<sup>219</sup> *ibid* pp.161

as the heater and the environment have opposite effects on the room temperature which could be stabilized by the overall control process.

The critical aspect of the negative feedback loop is its applicability to variety of systems ranging from thermodynamics to economics. Schmidt emphasizes this point as follows:

If we are convinced that technical and non-technical feedback systems are closely related, these relationships are not to be distinguished by their specific forms in anatomy or technology, but rather in their analogous modes of operation – that is, the control dynamics. The state, too, can be viewed schematically in some of its activities as the regulator of free forces – for example, by the setting of prices in a controlled economy, which eliminates the fluctuations caused by supply and demand through the intervention of the state.<sup>220</sup>

The extensive gamut of the applications of feedback control from an individual cell to human being and to the whole society suggests an understanding of human subject being part of these constant information flows in multiple levels. It is perhaps for that reason the transformation of human sensorium in parallel with the integration of technical media into social relationships became a critical question during the 1930s, the time these proto-Cybernetic ideas found extensive implementations in industrial production.

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<sup>220</sup> *ibid* pp.160

### 3. Human Sensorium in Transformation

Automation of human reason through mechanization mainly focuses on the delegation of three key human senses into three separate modalities that perceive discretely mechanized image, sound, and the text. According to media historian Friedrich Kittler, technologies that synthesized these senses had a direct effect of technical media on modern human subjectivity. (Kittler, 1990) Kittler claims that this point can be further explained by the fact that these three technologies correspond to the constituent elements of Lacan's tripartite psychoanalytic system of the real, the symbolic and the imaginary. Kittler suggests that with the introduction of typewriters, writing is associated with the symbolic, as the linguistic signs are stripped to their "materiality and technicity" in a finite set. Kittler links the imaginary with the film, as the flow of individual images project a continuous wholeness, which corresponds to Lacan's mirror stage. In mirror stage child sees an imagined composition of his/her perfect reflection in the mirror in contrast with his/her imperfect motor skills. Kittler associate the real with phonography, as it records voices independent of their signifying function and materiality. For Kittler, Lacanian psychoanalysis was a "historical effect" of technological media, as he "reasoned only as far as the information machines of his era-no more no less."<sup>221</sup> In this analysis, Kittler relies on the commodified technical devices of gramophone, film and typewriter instead

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<sup>221</sup> Kittler, Friedrich A. "The World of the Symbolic- A World of the Machine." *Literature, media, information systems: essays*. Ed. John Johnston. Psychology Press, 1997. Pp.134

of sociotechnical discourses that preceded these technical media and previously performed by Enlightenment automata, such as those designed by Wolfgang von Kempelen.<sup>222</sup> Yet, Kittler's focus on the technical media commodities inherently privileges congealed states of technological objects over the preceding social contestations that influenced their realization as popular media. (Not to mention those that exclude blind and deaf subjects.) However, Kittler's insight is still valuable as it associates the information machines to psychoanalytic theories of Lacan, which situates his tripartite structure within a specific sociocultural context.

Thinking about technical media as extensions of human senses has been central for the project of artificial mind since antiquity. Since Plato's discussion on how writing affects memorization, many tools were considered in relation to this question. Descartes, Diderot, Condilliac and many others used the perennial analogy of blind person's cane, in order to explain the relationship between objects, senses and human subjects.<sup>223</sup> Similarly, one of the most systemic

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<sup>222</sup> Kempelen's works reflect a unique combination of interests in the mechanization of human senses that prefigure the later technological developments. If we follow Kittler's emphasis on the three technologies that are critical in the mechanization of the human senses that point becomes more apparent. Particularly when we add a third device he invented, the typewriter for the blind, Kempelen's experiments represent a critical juncture in the history of the automation of human reason through mechanization of human senses.

<sup>223</sup> Jessica Riskin's *Science in the Age of Sensibility* (2002) has a very detailed historical account on this general topic with a focus on the French Enlightenment and empiricism.



responses to thinking about the relationship between objects and humans senses was formulated in the 20<sup>th</sup> century with the Cybernetic formulation of symbiosis between humans and machines. Preceding this systematization for universal control, many scholars approached the question in terms of its significance for cultural production. In Walter Benjamin's larger corpus, for example the concepts of the technical media, mechanical reproduction and the transformation of human sensory system play a significant role. In "The Work of Art in the Age of Mechanical Reproduction," (1936) Benjamin argues for the interaction between the economic modes of production, the nature of art, and the categories of perception. The argument expands the interaction between the technology and the human into a larger social cultural realm through the changes in the sensory system. "During long periods of history, the mode of human sense perception changes with humanity's entire mode of existence."<sup>224</sup> With the assembly line and the division of labor in mass manufacturing as its dominant mode of production, industrial society extends this relationship into the realm of art and human perception.

According to Benjamin, mechanical reproduction challenges the concept of "the original" by enabling mass production of the copies of cultural artifacts and sensory experiences. Technical mediation and reproduction of human sensory experiences, as exemplified by film, is a cultural manifestation of industrial

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<sup>224</sup> Benjamin, Walter. "Art in the Age of Mechanical Reproduction." *Illuminations*. New York: Schocken Books, 1969. 217-251. Pp. 222

capitalism and is not only ideological but also deeply transformative. This transformation was partly informed by the escape of the human senses from the body through their mechanization that has intensified by the turn of the 20<sup>th</sup> century. Benjamin was in fact one of the most prominent critical observers of this process, and emphasized the link between the new forms of human perception and industrial modes of production; “[T]echnology has subjected the human sensorium to a complex kind of training. There came a day when a new and urgent need for stimuli was met by the film. In a film, perception in the form of shocks was established as a formal principle. That which determines the rhythm of production on a conveyor belt is the basis of the rhythm of reception in a film.”<sup>225</sup>

Benjamin proposes that “at the turning point of history” the goal must be to master these changes “gradually by habit, under the guidance of tactile appropriation” because “the tasks which face the human apparatus of perception...cannot be solved by optical means, that is, by contemplation alone.”<sup>226</sup> The only alternative presented by Benjamin is to train the sensibilities to disassemble and reconstruct reality in an emancipatory form. These new ways of sensing involve new forms of social organizations and a new form of

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<sup>225</sup> Benjamin, Walter. “On Some Motifs in Baudelaire.” *Illuminations*. New York: Schocken Books, 1969. 155-200. Pp.175

<sup>226</sup> Benjamin, Walter. “The Work of Art in the Age of Mechanical Reproduction.” *Illuminations*. New York: Schocken Books, 1969. 217-242. Pp. 240

temporality that encompasses all aspects of life. It is at this juncture of transforming the “human apparatus of perception” that one needs to reconsider the peculiar relationship proposed between the machine and the human in the dialectic imagery of the chess-playing automaton as a proto-Cybernetic apparatus.

The distinctive relationship that Benjamin establishes between the elements of the chess-playing automaton hinges upon a transformed sensory system with a unique temporal configuration. This unique temporality enables the paradoxical relationship between the puppet and the puppeteer and helps answer our initial question: How can a puppet enlist the services of the human being that controls it? The paradigmatic shift from the Cartesian body-machine to Cybernetic human-machine symbiosis is central for explaining the paradox in the analogy. The act that seems impossible within the paradigm of Newtonian mechanistic causality becomes possible within the new paradigm of the information circuits in probabilistic continuity.

Military control systems were the proponents of erasing the operational difference between a human and a machine by putting them in information circuits that transcend their distinct status.<sup>227</sup> This synchronic structure of

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<sup>227</sup> In one of the founding texts of Cybernetics, Wiener et.al define their concept of teleological behavior as follows: “We have restricted the connotation of teleological behavior by applying this designation only to purposeful reactions which are controlled by the error of the reaction-i.e., by the difference between the state of the behaving object at any

information was enabled partly by the probabilistic models that these systems were based on. American mathematician and the originator of the term Cybernetics, MIT professor Norbert Wiener was one of the most prominent figures of Cybernetics. He expounded on this shift as follows: “One interesting change that has taken place is that in a probabilistic world we no longer deal with quantities and statements which concern a specific, real universe as a whole but ask instead questions which may find their answers in a large number of universes.”<sup>228</sup> In this probabilistic paradigm, the production of the new became a function of an “incomplete determinism”<sup>229</sup> within a pluralistic universe. With its primary objective of predicting the future states of information systems, Cybernetics<sup>230</sup> became a science of control of future action. With its emphases on an irreversible and probabilistic time, Cybernetics became a technocratic reflection on the temporality of technically mediated human perception, as anticipated by Benjamin. The question that begs to be posed in Benjamin’s

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time and the final state interpreted as the purpose. Teleological behavior thus becomes synonymous with behavior controlled by negative feed-back, and gains therefore in precision by a sufficiently restricted connotation.”

Rosenblueth, Arturo, Norbert Wiener, and Julian Bigelow. “Behavior, Purpose and Teleology.” *Philosophy of Science* 10.1 (1943): 18-24.

<sup>228</sup> Wiener, Norbert. *The Human Use of Human Beings: Cybernetics and Society*. Boston: Houghton Mifflin, 1950. pp.7

<sup>229</sup> *ibid*, pp. 11

<sup>230</sup> Cybernetics is derived from Greek *kubernetes* or steersman, a term of navigation or piloting.

puppet/puppeteer configuration can find its answer only within this type of probabilistic synchronic temporality. Probabilistic time melts future and past into a single plane of homogenous, empty time.

One last question remains to be answered; how did the concept of Messianism performed by the hunchback chess-master figure bring change into these probabilistic parallel universes? The hunchback figure plays a very significant role in German romanticism as soul of an inanimate object or structure<sup>231</sup>. The hunchback figure has also significance in Benjamin's life as Hannah Arendt traces its first appearance to Benjamin's childhood, particularly to a German fairy tale figure from folk poetry. "The mother referred to the 'little hunchback,' who caused the objects to play their mischievous tricks upon children; it was he who had tripped you up when you fell and knocked the thing out of your hand when it went into pieces"<sup>232</sup> Apparently for Benjamin, these unexpected tricks of objects on humans, the mischievous accidents caused by the little hunchback signified an initial experience of a child of the instant changes in the time of endless possibilities. Similar to the accidental happenings that bring instant change to a child's experience with objects, the hunchback of theology

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<sup>231</sup> Löwy, Michael, and Chris Turner. *Fire alarm: reading Walter Benjamin's On the concept of history*. Verso, 2005. Pp.26

<sup>232</sup> Arendt, Hannah. "Introduction." *Illuminations*. Ed. Hannah Arendt. New York: Schocken Books, 1969. 1-55., pp6.

activates change and brings “now-time” into the homogenous empty time of historical materialism.

The critical aspect of this formulation is that the sole participant of these historical changes is always imagined to be the Western subject. The Oriental figure by contrast is cast aside within the temporality of the meaningless mechanistic repetition.

In Benjamin’s allegory, the empty homogenous time of progress is represented with the image of the Turk, which is enabled by the medieval association of the Oriental as a lifeless mechanism. As Kathleen Biddick notes, medieval Christian theologians conflated the terms Muslim, and mechanicum in order to propagate their message that Muslim subjects are incapable of embodying “true” life. As a result of this recursive mechanical temporality, they are seen outside of time, without a past and a meaningful future.<sup>233</sup>

Johannes Fabian identifies the act of casting the “Other” “outside of Western historical time as a systemic discourse in Western anthropology and the Western intellectual tradition. According to Fabian, allochronic discourse is a vehicle for maintaining of global inequalities and domination.<sup>234</sup> In Benjamin’s dialectic image of the relation between historical materialism and the theology,

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<sup>233</sup> Biddick, Kathleen. “Dead Neighbors Archive” forthcoming in *Points of Departure: Political Theology on the Scenes of Early Modernity*, ed. by Julia Reihard Lupton and Graham Hammill, U. of Chicago Press, 2010

<sup>234</sup> Fabian, Johannes. *Time and the Other: How Anthropology Makes Its Object*. Columbia University Press, 2002.

the Turk is materially configured within the repetitive, empty homogenous time that could only be activated by the wizened theology in order to fuel the revolutionary progress that characterizes Western temporality. Similarly, in Benjamin's configuration, in line with the medieval formulation, only the messianic interruption could provide the required magic that would eventually bring meaningful change into this homogenous empty time. In other words, Benjamin consigns the western allochronic discourse in the form of temporal foreclosure as an apparatus of "state of exception." Since for him, the state of exception relies on the exclusion of the "Other" from the meaningful process of revolutionary change.

In the theologico-political contestation of the states of exceptions, both Schmitt's and Benjamin's apparatuses eventually require the Oriental either as an abstract image or the ultimate subject of their conceptualizations. While Benjamin's conception of the Oriental subject performed its role in the imagined automation of the sociopolitical system in the form of an abstract apparatus, Schmitt's idea of the state of exception went to an extreme. The concentration/labor camp as the ultimate expression of Schmitt's totalitarian "state of exception" produced the idea of the "Musselman", the term used by the inmates of concentration camps to describe the last stage of life before death in the camps, mostly characterized by minimal living conditions, or "bare life."<sup>235</sup>

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<sup>235</sup> Agamben, Giorgio. *Remnants of Auschwitz : The Witness and the Archive*. New York: Zone Books, 2000.

Bare life, as discussed by Giorgio Agamben neither belongs to a messianic time nor to the time of historical progress, as it represents the ultimate decision of the sovereign, who is endowed with a presumed metaphysical ordinance. As an instance of bare life, Musselman is the being outside of the realm of the human, and serves as the guardian of the threshold between life and death, human and non-human.<sup>236</sup>

Primo Levi describes Musselman as follows: “Non-men who march and labor in silence, the divine spark dead within them.”<sup>237</sup> But the description given by Austrian writer Jean Amery who was once an inmate of Auschwitz and Buchenwald concentration camps, also reflects the lack of moral distinction as one of the attributes of Musselman; “The so-called Musselman, as the camp language termed the prisoner who was giving up and was given up by his comrades, no longer had room in his consciousness for the contrasts good or bad, noble or base, intellectual or unintellectual. He was a staggering corpse, a bundle of physical functions in its last convulsions. As hard as it may be for us to do so, we must exclude him from our considerations.”<sup>238</sup> According to Agamben, production of Musselman is the decisive function of the camps; “they are not merely the place of death and extermination, they are also, and above all the site

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<sup>236</sup> Ibid. pp.47

<sup>237</sup> ibid. pp.55

<sup>238</sup> *At the Mind's Limits: Contemplations by a Survivor of Auschwitz and Its Realities*. Trans. Sidney and Stella P. Rosenfeld. Bloomington: Indiana University Press, 1980 Amery 1980:9 from Agamben, 2000, 41



of the production of the Musselman, the final biopolitical substance to be isolated in the biological continuum.” Agamben surmises that the term “Musselman” is related to the word Muslim; “the one who submits unconditionally to the will of God.”<sup>239</sup> According to Agamben, “It is this meaning that lies at the origin of the legends concerning Islam’s supposed fatalism, legends which are found in European culture starting with the Middle Ages.”<sup>240</sup>

In the tradition of these medieval conceptions, the Musselman of the 20<sup>th</sup> century concentration camp referred as “little more than a machine,” “monstrous biological machine” or “vegetative machine.”<sup>241</sup> Thus, as “the core of the camp,” the Musselman represents the ultimate product of Schmitt’s state of exception, which was a modern systematization of Hobbes’ autocratic technico-political order. Since the concept camp is also a site of material production; and productive labor is an essential activity of the camp, it is also the site of the production of Musselman. The subjectivity of the Musselman is the culmination point of these disciplinary societies, whose function is to organize production and administer life.<sup>242</sup> However, WWII brought the scientific management of the Enlightenment project into a new phase, in which the human-machine symbiosis was configured for universal control that ranged on a continuum from an

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<sup>239</sup> Agamben, *Remnants...* p, 45

<sup>240</sup> *ibid*, p,45

<sup>241</sup> *ibid*. pp. 57-58

<sup>242</sup> Deleuze, Gilles. “Postscript on the Societies of Control.” *October* 59 (1992): 3-7.

individual cell to a whole society, all of which were integrated in a series of feedback loops.

#### 4. The Human Use of Human Beings

The steps between my original suggestion of the chess playing machine, Mr. Shannon's move to realize it in the metal, the use of computing machines to plan the necessities of war, and the colossal state machine of Pere Dubarle, are in short clear and terrifying... The mechanical control of man cannot succeed unless we know man's built-in purposes, and why we want to control him.<sup>243</sup>

Norbert Wiener, *The Human Use of Human Beings*, (1950)

Gilles Deleuze suggests that the societies of control replaced the disciplinary society of the 19<sup>th</sup> century after WWI, corresponding with the mutation of capitalism in parallel with the evolution of technology, characterized by the larger influence of computers in the latter.<sup>244</sup> As devices of control, computers were conceived during the WWII in military applications where the principles of operation were later systematically formulated by Cybernetics, the 20<sup>th</sup> century version of the mechanization of the mind discourse. One could see the Cybernetic project as a particular iteration of the Enlightenment project of scientific management, which was already systematized in the industrial production by the turn of the century in the forms of Taylorism and Fordism.

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<sup>243</sup> Wiener, Norbert. *The Human Use of Human Beings: Cybernetics and Society*. Boston: Houghton Mifflin, 1950. Pp. 244

<sup>244</sup> Deleuze, Gilles. "Postscript on the Societies of Control." *October* 59 (1992): 3-7.

While industrial capitalism's primary object of production is the commodity, Cybernetics takes information as its central product. The problems articulated by Cybernetics became relevant not only for material production but also for modes of governance, bureaucracy and political theories. The view that the Cybernetic ideas are applicable to the social problems was presented by Norbert Wiener, who was one of the most prominent figures of the new field, as follows:

“Homeostasis,” he argued, “whether for the individual or the whole race, is something of which the very basis must sooner or later be considered. This means [...] that although science is an important contribution to the homeostasis of the community, it is a contribution the basis of which must be assessed anew every generation or so.”<sup>245</sup> Homeostasis is the concept Wiener used to describe for an internal balance of a biological or a technical system that is maintained by means of a control process. It is one of the key concepts that entered into the Cybernetic discourse via biology.

Wiener's application of the homeostatic balance to a social framework is a typical occurrence in Cybernetic discourse that finds a universal importance in the idea of machines with feedback. Alan Newell, who associates the origins of Cybernetics to the seminal paper published by Wiener, Bigelow and Rosenblueth in 1943, emphasizes its importance,<sup>246</sup> “If a specific event is needed, it is [this]

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<sup>245</sup> Wiener, Norbert. *God and Golem, Inc.: A Comment on Certain Points where Cybernetics Impinges on Religion*. First Edition. The MIT Press, 1966. pp. 82-83

<sup>246</sup> N. Wiener, J. Bigelow and A. Rosenblueth, 'Behavior, Purpose and Teleology',

paper ... which puts forth the Cybernetic thesis that purpose could be formed in machines by feedback. The instant rise to prominence of Cybernetics occurred because of the universal perception of the importance of this thesis.”<sup>247</sup> This paper expanded on the wartime work of Wiener and Bigelow, which aimed at predicting missile behavior by using feedback loops, developed an integrated account of behavior, purpose and teleology in biological and technical systems. The wartime military systems heavily involved the problem of human-machine symbiosis within a self-adaptive environment. Following these requirements, the paper focused on classification of behaviors that could be found in animals and machines in order to establish symbiotic systems with the assumption that these two types of systems are similar in terms of the problem of modeling different types of behaviors, such as purposeful, predictive, active, passive or in a feedback loop.

With the application of this mechanistic paradigm to biological systems, Cyberneticists claimed the emergence of a new era by appropriating both religious and political discourses.<sup>248</sup> The ultimate goal of this integration was often presented to be an artificial construction of a human being and entailed the

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Philosophy of Science, Vol. 10 (1943), 18-24.

<sup>247</sup> Newell, Allen, ed. “Intellectual Issues in the History of Artificial Intelligence.” *The study of information: interdisciplinary messages*. New York, NY, USA: John Wiley & Sons, Inc., 1983. 187–294. pp. 192

<sup>248</sup> Bowker, Geof. “How to be Universal: Some Cybernetic Strategies, 1943-70.” *Social Studies of Science* 23.1 (1993): 107 -127.

ethical and pragmatic discussions of the role of human as God. According to one of the Cyberneticist C.A Muses:

What has become historically evident as man's dominating aim is thus the replication of himself by himself by technological means. The form of this dominating aim becomes hence a super-machine, self-operating, self-instructing, and man-controlled, though this latter process may be reduced to a minimum in the sense of metalinguistic program information initially imported or in-built. Although the technical form of man's fundamental historical aim is a machine, the psychological and human content of that aim is control, mastery, the ability to impose his whims at will upon as much of the rest of the material universe as possible.<sup>249</sup>

The critical shift in the Cybernetic discourse of the mechanization of mind is the emphasis on control. This is different than the emphases of its Enlightenment predecessors, in which the aim was to discipline as we saw in Chapter 1. The control of individuals within society became a technical problem in Cybernetics as a result of the abolishment of dichotomies between mind and matter, human and non-human. In order to demonstrate the central issues within these universalistic interests of control, the prominent figures of Cybernetics applied the chess-playing automaton numerous times as a model. Mathematician Claude Shannon was among the first to suggest using automatic chess player for computation modeling because

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<sup>249</sup> International Symposium on Biosimulation, and Charles Musès. "The Logic of Biosimulation." *Aspects of the theory of artificial intelligence proceedings of the First International Symposium on Biosimulation, Locarno, June 29-July 5, 1960*. New York: Plenum Press, 1962. 115-164. pp. 116.

since: (1) the problem is sharply defined both in allowed operations (the moves) and in the ultimate goal (checkmate); (2) it is neither so simple as to be trivial nor too difficult for satisfactory solution; (3) chess is generally considered to require "thinking" for skillful play; a solution of this problem will force us either to admit the possibility of a mechanized thinking or to further restrict our concept of "thinking"; (4) the discrete structure of chess fits well into the digital nature of modern computers.<sup>250</sup>

Shannon's list of possible uses of such machine includes "Machines for performing symbolic mathematical operations [...]Machines capable of translating from one language to another [...]Machines for making strategic decisions in simplified military operations."<sup>251</sup> Wiener also highlights these militaristic "sinister possibilities"<sup>252</sup> behind the project of the automatic chess machine by quoting from a critique published in *le Monde* in 1948 written by Pere Dubarle who suggests that,

One of the most fascinating prospects thus opened is that of the rational conduct of human affairs, and in particular of those which interest communities and seem to present a certain statistical regularity, such as the human phenomena of the development of opinion. Can't one imagine a machine to collect this or that type of information [...] and then to determine as a function of the average psychology of human beings [...] what the most probable development of the situation might be? Can't one even consider a State apparatus covering all systems of political decisions, either under a regime of many states distributed over the earth, or under the apparently much more simple regime of a human government of this planet? At present nothing prevents our thinking of this. We

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<sup>250</sup> Shannon, C. E. "Programming a computer to play chess." *Philosophy Magazine* 41 (1950): 256–275. pp.257

<sup>251</sup> *ibid*, pp. 256

<sup>252</sup> Wiener, Norbert. *The Human Use of Human Beings: Cybernetics and Society*. Boston: Houghton Mifflin, 1950. pp.239

may dream of the time when the *machine a gouverner* may come to supply - whether for good or evil - the present obvious inadequacy of the brain when the latter is concerned with the customary machinery of politics. [...]

Perhaps fortunately, the *machine a gouverner* is not ready for a very near tomorrow. For outside of the very serious problems which the volume of information to be collected and to be treated rapidly still put, the problems of stability of prediction remain beyond what we can seriously dream of controlling. For human processes are assimilable to games with incompletely designed rules, and above all, with the rules themselves functions of the time. The variation of the rules depends both on the effective detail of the situations engendered by the game itself, and on the system of psychological reactions of the players in the face of the results obtained at each instant. [...]

All of this not only tends to complicate the degree of the factors which influence prediction, but perhaps to make radically sterile the mechanical manipulation of human situations. As far as one can judge, only two conditions here can guarantee stabilization in the mathematical sense of the term. There are, on the one hand, a sufficient ignorance on the part of the mass of players exploited by a skilled player, who moreover may plan a method of paralyzing the consciousness of the masses; or on the other, sufficient goodwill to allow one, for the sake of the stability of the game, to refer his decisions to one or a few players of the game who have arbitrary privileges. This is a hard lesson of cold mathematics, but it throws a certain light on the adventure of our century: hesitation between an indefinite turbulence of human affairs and the rise of a prodigious Leviathan. In comparison with this, Hobbes' Leviathan was nothing but a pleasant joke.

Wiener responds to this critique with an affirmation of the possible uses of such a machine by human beings for a control over the rest of the world. He particularly highlights the introduction of the new concepts of war, economic conflict and propaganda based on Von Neumann's Theory of Games to be carried

out by a “beneficent bureaucracy.”<sup>253</sup> In the same vein, Wiener cheerfully reappropriates Dubarle’s suggestion for including scholars from social sciences and humanities. Instead of alerting the technicians of Cybernetics for the risk of creating a prodigious Leviathan, Wiener’s appropriation is aimed towards expanding the reach of its control abilities: “Pere Dubarle is right –many times more than right- in his emphasis on the need for the anthropologist and the philosopher. In other words, the mechanical control of man cannot succeed unless we know man’s built in purposes.”<sup>254</sup> In fact the incorporation of these disciplines were central for the Cybernetics to speak a universal scientific language, which was mainly reflected during a series of conferences sponsored by Josiah Macy Jr. Foundation. According to Geoffrey Bowker, one of the strands of imperialistic rhetoric that the Cyberneticists employed was the suggestion that the new universal discipline should subsume all others. This idea was reflected in the Macy conferences through the consistent interest in the organization of other disciplines’ research programs. The implicit aim in this overhaul of all the disciplines by means of the rhetorical strategies devised for the universality of Cybernetics was to *know man’s built in purposes* in order to solve the ultimate problem of *the mechanical control of man*.

At this point it is critical to identify the primary subject that the Cybernetics aims to control: the white-collar worker confined to windowless

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<sup>253</sup> *ibid* pp.209

<sup>254</sup> This statement disappeared in the later editions of this book.



cubicles that dominated the post war corporate and bureaucratic landscape. Such a target of Cybernetics control focused on understanding the built in purposes of the liberal subject, which involved the boundary between human and machine for the ultimate purpose of the mechanical control of the society. The key in this economic transformation was the emergence of information as the main commodity that defined the economic conditions of social transformations. One of the ways to establish this socio-economic transformation was to expand the division of cognitive labor by rendering the information independent of the corporeal conditions of the human, which was mainly enabled by the human-machine analogy of Cybernetics discourse.

## 5. Chinese Room: What Have They Built You to Do?

*It is not difficult to devise a paper machine which will play a not very bad game of chess. Now get three men as subjects for the experiment. A, B and C. A and C are to be rather poor chess players, B is the operator who works the paper machine. ... Two rooms are used with some arrangement for communicating moves, and a game is played between C and either A or the paper machine. C may find it quite difficult to tell which he is playing.*<sup>255</sup>

In one of the earliest versions of the Turing Test, a proposal for a test of a machine's ability to demonstrate intelligence, Turing writes.

In its later versions, Turing replaced the game of chess with natural language ability. Alan Turing introduced the test in his 1950 paper with the following words: "I propose to consider the question, 'Can machines think?'" Based

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<sup>255</sup> Turing, Alan (1948), "Machine Intelligence", in Copeland, B. Jack, *The Essential Turing: The ideas that gave birth to the computer age*, Oxford: Oxford University Press

on the premise that the precise definitions of both terms machine and thinking were almost impossible, Turing proposed the “imitation game.” In this game, a man and a woman go into two separate rooms and try to deceive the interrogators who try to tell them apart by means of typewritten answers to their questions. By replacing one of the players by a paper machine/computer Turing proposed reformulating the question of this game. *“Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, Can machines think?”* Katherine Hayles asserts that in this version of the Turing test, inclusion of gender conveys the question of distinguishing between the enacted body, present in flesh behind the machine, and the represented body produced through semiotic markers that appear on the interface.<sup>256</sup> Thus, in Turing’s apparatus the implication is that the enacted and the represented body of the liberal subject do not necessarily coincide without the mediation of the technology that has made the question of “what can think” inevitable in the first place.

However, such a question needs to be considered within the context of the post-war industrialization that established white-collar information workers as the new dominant middle-class subject. In 1951, Sociologist C. Wright Mills

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<sup>256</sup> Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago, Ill: University of Chicago Press, 1999.

published *White Collar*, in which he explained social alienation as the characterizing aspect of white-collar workers as a result of the conditions of their work, which turned personality into the main commodity to be marketed. In Mills' words:

In a society of employees dominated by the marketing mentality, it is inevitable that a personality market should arise. For in the great shift from manual skills to the art of 'handling', selling and servicing people, personal or even intimate traits of employees are drawn into the sphere of exchange and become commodities in the labor market [...] Kindness and friendliness become aspects of personalized service or of public relations of big firms, rationalized to further the sale of something. With anonymous insincerity, the successful person thus makes an instrument of his own appearance and personality [...] Men are estranged from one another as each secretly tries to make an instrument of the other, and in time a full circle is made: one makes an instrument of himself, and is estranged from it also.<sup>257</sup>

One of the results of this social alienation that turned the white-collar worker into an instrument involved the erasure of the corporeal differences in order to expand the market for the product at hand. Therefore, what is really at stake in the question posed by Turing's test was the sociotechnical viability of the division of cognitive labor for post-war industrial capitalism, which sought to render corporeal differences irrelevant in order to tap into a larger pool of human brainpower, not unlike Maelzel's employment of (the nameless) Frenchwoman who operated the Turk in New York according to a codebook, that we discussed

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<sup>257</sup> *White Collar: The American Middle Classes*. C. Wright Mills. pg. 182-187. Publisher: Oxford University Press. 1951

in Chapter 1. Thus, it is necessary to remind ourselves that the disjuncture between enacted and represented bodies through the disembodiment of information has been an intentional design choice built into the technical mediation and maintenance of cognitive labor within the self-regulating liberal market economy. In this context, the Turing test was merely a discursive tool for the assessment of this behavioral prototype by blurring the boundaries between human computers and the digital computers, which consequently reflected the condition faced by white-collar information workers, including Turing himself.

According to Andrew Hodges “the discrete state machine, communicating by teleprinter alone, was like an ideal for [Turing’s] own life, in which he would be left alone in a room of his own, to deal with the outside world solely by rational argument. It was the embodiment of a perfect J.S. Mill liberal, concentrating upon the free will and free speech of the individual.”<sup>258</sup> The disembodiment of information therefore operated simultaneously on two registers: the socio-economic realization of the automated human-machine computer, and the appropriation of the idea of the self-regulating liberal subject within the socio-economic milieu made possible by this new configuration. The key criteria in this configuration, as Hodges highlights, is to maintain the free will and the free speech of the liberal subject while isolating them in neatly classified cubicles according to division of cognitive labor. Thus what the Turing

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<sup>258</sup> Hodges, Andrew. *Alan Turing: The Enigma*. First Edition. Walker & Company, 2000. Pp. xii

test essentially performs is the disembodied expression of free will across the mediation of the Cybernetic human-machine feedback circuit. The disembodied subject operating inside the computer, however, was still based on the reinscriptions of the rationalistic Western identity.<sup>259</sup> In the context of the post-war scientific and technical vision that imagined the whole world as one unified sociotechnical system, identified by Paul N. Edwards as the “closed world”, the Turing machine was also a metaphor for that political subjectivity. Shaped around this kernel of the “closed world,” the computer-as-metaphor for mind also represent a second self, since it has become part of our social and psychological lives.<sup>260</sup> This relationship between humans and computers means “the experience of the computer as a second self is the experience of the closed world of a rule-based game.”<sup>261</sup>

As a computational metaphor that models the processes of human mind, the Turing machine has become an archetypal member of the Western genealogy along with Kempelen’s automaton. Similar to the 18<sup>th</sup> century automaton, the Turing machine was not just a metaphor for the mechanized mind, but also for the conflicts that can not be resolved without directly facing the “Other” in the machine. John Searle gave one of the most elaborate responses to Turing’s question

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<sup>259</sup> Edwards, Paul N. *The Closed World: Computers and the Politics of Discourse in Cold War America*. Cambridge, Mass: MIT Press, 1996.

<sup>260</sup> Turkle, Sherry. *The Second Self: Computers and the Human Spirit*. 1st ed. Simon & Schuster, 1984.

<sup>261</sup> *ibid*, pp 172

of whether machines can think, through another abstract machine, Chinese Room, presented in 1980.<sup>262</sup> Searle explains his thought experiment as follows:

Suppose that I'm locked in a room and given a large batch of Chinese writing. Suppose furthermore (as is indeed the case) that I know no Chinese, either written or spoken, and that I'm not even confident that I could recognize Chinese writing as Chinese writing distinct from, say, Japanese writing or meaningless squiggles. To me, Chinese writing is just so many meaningless squiggles. Now suppose further that after this first batch of Chinese writing I am given a second batch of Chinese script together with a set of rules for correlating the second batch with the first batch. The rules are in English, and I understand these rules as well as any other native speaker of English. They enable me to correlate one set of formal symbols with another set of formal symbols, and all that "formal" means here is that I can identify the symbols entirely by their shapes. Now suppose also that I am given a third batch of Chinese symbols together with some instructions, again in English, that enable me to correlate elements of this third batch with the first two batches, and these rules instruct me how to give back certain Chinese symbols with certain sorts of shapes in response to certain sorts of shapes given me in the third batch. Unknown to me, the people who are giving me all of these symbols call the first batch a "script," they call the second batch a "story," and they call the third batch "questions." Furthermore, they call the symbols I give them back in response to the third batch "answers to the questions," and the set of rules in English that they gave me, they call the "program." [...]. As far as the Chinese is concerned, I simply behave like a computer; I perform computational operations on formally specified elements. For the purposes of the Chinese, I am simply an instantiation of the computer program.

Searle then answers possible replies to his point. The mere exchange of data according to a rulebook, he argues, does not constitute thinking, since it is a system of formal symbol manipulation that has been the main paradigm for building digital computers after the conceptual archetype of the automatic chess player. Ed Hutchins,

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<sup>262</sup> Searle, John (1980), "Minds, Brains and Programs", Behavioral and Brain Sciences 3 (3): 417–457

who argues that it is not Searle in the room but the whole room knows Chinese, in fact raises one of the possible responses that Searle predicted.<sup>263</sup> Searle's response to that reply is to establish different subsystems within the room, the subsystem that processes Chinese and the subsystem that knows English- that is Searle himself:

So there are really two subsystems in the man; one understands English, the other Chinese, and "it's just that the two systems have little to do with each other." But, I want to reply, not only do they have little to do with each other, they are not even remotely alike. The subsystem that understands English (assuming we allow ourselves to talk in this jargon of "subsystems" for a moment) knows that the stories are about restaurants and eating hamburgers, he knows that he is being asked questions about restaurants and that he is answering questions as best he can by making various inferences from the content of the story, and so on. But the Chinese system knows none of this. Whereas the English subsystem knows that "hamburgers" refers to hamburgers, the Chinese subsystem knows only that "squiggle squiggle" is followed by "squoggle squoggle." All he knows is that various formal symbols are being introduced at one end and manipulated according to rules written in English, and other symbols are going out at the other end. The whole point of the original example was to argue that such symbol manipulation by itself couldn't be sufficient for understanding Chinese in any literal sense because the man could write "squoggle squoggle" after "squiggle squiggle" without understanding anything in Chinese. And it doesn't meet that argument to postulate subsystems within the man, because the subsystems are no better off than the man was in the first place; they still don't have anything even remotely like what the English-speaking man (or subsystem) has. Indeed, in the case as described, the Chinese subsystem is simply a part of the English subsystem, a part that engages in meaningless symbol manipulation according to rules in English.

Searle's main opposition is based on the idea that the symbol manipulation involves only syntactic processes thus cannot signify semantic intentionality:

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<sup>263</sup> Hutchins, Edwin. *Cognition in the Wild*. MIT Press, 1995. , pp. 361-62

“Because the formal symbol manipulations by themselves don't have any intentionality; they are quite meaningless; they aren't even symbol manipulations, since the symbols don't symbolize anything. In the linguistic jargon, they have only a syntax but no semantics. Such intentionality as computers appear to have is solely in the minds of those who program them and those who use them, those who send in the input and those who interpret the output.”<sup>264</sup>

In proving the idea that the liberal subject cannot produce meaning through this apparatus, Searle relies on a setup similar to Kempelen's chess playing automaton. For Searle's thought experiment the implicit assumption is already embodied through the Enlightenment formula of the Western man animating the machine for performing the Oriental subject, this time only to be delegated to the Chinese subject.

It would be critical to emphasize the difference between the 18<sup>th</sup> century chess-playing Turk and the 20<sup>th</sup> century Chinese Room in terms of the Orientalist discourse on which they operate. The Chinese Room belongs to the Cold War era socio-political context when the United States replaced France and Britain as global powers and adopted their Orientalist discourse. As Said observes, for Americans, Orient is much more likely to be associated with the Far East due to a relative intensity in political and economic interests in regions such as Japan, China, Korea and Indochina. In fact US Orientalism has its own history with

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<sup>264</sup> Searle, John (1980), "Minds, Brains and Programs", *Behavioral and Brain Sciences* 3 (3): pp.417



changing discourses about the peoples of these countries informed by the changes in the nature of its interests. The Korean War was a definitive event for the relationship between the United States and China, as they become enemies at proxy wars that extended until the mid 70s with the Vietnam War.

In the post-war context, Hollywood films reproduced and reflected these Orientalist discourses in line with the US global imaginaries. *The Manchurian Candidate* (dir. John Frankenheimer, MGM, 1962) is a prime example of these films. Its protagonist Raymond Shaw is a Korean war veteran and the son of a right-wing political family. He has been brainwashed or mentally programmed for an assassination by Chinese agents after he was captured as a war prisoner during the war. The film portrays Asian characters in the stereotypical images of “corrupt,” “duplicitous,” “treacherous,” and “double-dealing” “Orientals” who also conform to the feminized role of an exemplary ethnic group. The film depicts brainwashing as a distinctly “Oriental” practice<sup>265</sup>, which was a very powerful image of the Chinese during the cold war.

Hwang Junghyun in a brilliant reading of the film interprets the plot as a Freudian drama “in which cold war liberal sons struggle to obtain national-historical subjectivity but end up regressing to narcissism by splitting the idealized self-image

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<sup>265</sup> Jacobson, Matthew Frye, and Gaspar González. *What Have They Built You to Do?: The Manchurian Candidate and Cold War America*. Minneapolis: University of Minnesota Press, 2006. Pp119

from the intervening principle of reality.”<sup>266</sup> In this splitting Junghyun sees Raymond character as a neutral mechanism that projects the self-image of the cold-war liberal, similar to the function performed by E.T.A. Hoffman’s automata that inspired Freud for his concept of uncanny. In *Scratches on our minds*, (1958) Harold Robert Isaacs explains the dilemma of the cold war American liberals expressed through this neutral mechanism as ”becoming the subject of governmental, medical, social scientific and literary inquiry.”<sup>267</sup> According to Frye and González the film’s key plot line “What have they built you to do?” articulates a similar set of “fears and anxieties of a political culture in which some nearly omnipotent ‘they’ are presumed to be both encircling from without and gnawing from within.”<sup>268</sup> This encircling might be a reflection of the “closed world” paradigm of the cold war sociocultural environment that includes the Cybernetic formulation of computers, the primary medium of information production for white-collar workers, as a closed world of a rule-based game. The premise of the programmable mind supported by strong AI project was based on a similar conception of computers, which Searle aimed to debunk.

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<sup>266</sup> Hwang, Junghyun. “From the End of History to Nostalgia: The Manchurian Candidate, Then and Now.” *Journal of Transnational American Studies* 2.1 (2010): n. pag.

<sup>267</sup> Isaacs, Harold Robert. *Scratches on our minds: American views of China and India*. M.E. Sharpe, 1958.

<sup>268</sup> Jacobson, Matthew Frye, and Gaspar González. *What Have They Built You to Do?: The Manchurian Candidate and Cold War America*. Minneapolis: University of Minnesota Press, 2006. Pp. ix

One can see Searle's Chinese Room as a response to the anxieties of the cold war US liberal subjects presented through the neutral automaton in the Manchurian Candidate: It is possible to linguistically emulate syntax but this would not be sufficient for a semantic modeling of language, a direct challenge to the program of strong Artificial Intelligence. However, this anxiety is resolved through a contrast between the enacted body, present in flesh behind the machine performed by English speaking Searle, and the represented subjectivity of the Oriental produced through linear processing of symbols that appear on the interface. While the problematic aspects of performing the language of the Oriental can be reduced to its linguistic elements-let alone the problematic assumption of Chinese language as a structure that is frozen in time,- the subjectivity of English speaking Searle stands for the argument of sophisticated nature of knowing. In other words, while the embodied Western subject performs the complexity of knowing, the technical foreclosure of semiosis is performed through the represented Oriental subject.

As we have seen throughout this chapter the modern intelligent automata informed a certain idea of progress that rendered the non-western cultures outside of that mode by procuring the temporal zone of progress solely for the Western subject. This act of exception not only borrowed its methods from earlier cultural forms in framing the Oriental subject confined within a frozen time; it also transformed it by a re-articulation of a sociotechnical "Other" in response to the emerging set of tensions, contradictions, and anxieties within the emergent 20<sup>th</sup>

century industrialized society. The consequence of casting the “Other” outside of the chess game of historical progress is more than a rhetorical peculiarity. In fact it has never been. So, the “Musselman” was just one instance of this temporal state of exception.

The 20<sup>th</sup> century brought the issue of the free expression of the liberal subject in relation to the socio-economic conditions of information work and the cultural conditions of the saturation of all aspects of life with technical media. The 20<sup>th</sup> century Western desire for designing a universal governing machine via mechanization of the mind cast the Oriental image in the role of the subject for whom the semiosis is foreclosed as one of the consequences of this temporal state of exception. For the enactment of the emergent tensions of these new conditions, the trick of the chess playing automaton needed to be re-staged according to the revitalized desire of universal control via Cybernetic discourse.

The alternative presented to this closed world paradigm by distributed cognition could also be seen as an indication of transforming conditions of capitalism. In the context of the imminent developments of global networks right after Searle reconfigured the Turing test, considering division of cognitive labor across a network of computers could not be ignored. Consequently, the understanding that the act of knowing is distributed across people, objects and the networks would be the expression of the division of the cognitive labor across global corporate networks in late-capitalism. However, this particular form of

knowing and producing information created new anxieties for the neoliberal subject, which I will address in Chapter 3.

## Chapter 3.

### Return of the Crowds:

### Crowdsourcing and the Digital States of Exception

As we have seen in the previous chapters, the idea of the automatic chess-player has been a key conceptual apparatus for imagining the automatization of the operations of the human mind since the Enlightenment era. This metaphor was also highly central, as seen in Chapter 2, for the idealization of Cybernetic discourse as the universal control system during the first half of the 20<sup>th</sup> century, where it was embodied in the post-war symbol processor, which later became the architectural basis of contemporary computer.<sup>269, 270</sup> In this chapter, I will study a 21<sup>st</sup> Century reincarnation of the chess playing automaton, in the form of Amazon.com's Mechanical Turk, especially in the light of its early-modern legacy of configuring the

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<sup>269</sup> Bowker, Geoffrey "How to be Universal: Some Cybernetic Strategies, 1943-70." *Social Studies of Science* 23.1 (1993): 107 -127.

<sup>270</sup> Shannon, C. E. "Programming a computer to play chess." *Philosophy Magazine* 41 (1950): 256–275.

relationship between divisions of cognitive labor and automatic systems of computing and control.

Throughout this evolution, from 18<sup>th</sup> to the 21<sup>st</sup> Century, in varying degrees and methods, the labor performance of intellectual workers appears as integral to the disciplinary structure of the corresponding socio-economic apparatus. In the current configuration, this cognitive labor apparatus is situated within the neoliberal “system of exception” facilitated by the digital networks, which take advantage of legislative gray zones in the international labor regulations in order to maximize profits for multinational corporations.<sup>271</sup> So-called “crowdsourcing” is one of the most significant elements of this configuration that expands the reach of the neoliberal economy through cognitive capitalism<sup>272</sup>, in which immaterial labor plays a key, structural role.<sup>273</sup> Not surprisingly, this configuration also embodies significant economic and political conflicts, the seeds of which were sown during the early modern conceptualizations of the mechanization of cognitive labor, hundreds of

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<sup>271</sup> Ong, Aihwa. *Neoliberalism as Exception: Mutations in Citizenship and Sovereignty*. Duke University Press Books, 2006.

<sup>272</sup> In its various uses by Nick Dyer-Witheford, Paolo Virno and Yann Moulier Boulang, the term cognitive capitalism refers to the accumulation of capital primarily characterized by post-Fordist modes of production and consumption of information in the network society.

<sup>273</sup> “Today, immaterial labor is ‘hegemonic’ in the precise sense in which Marx proclaimed that, in the 19<sup>th</sup> century capitalism, large industrial production is hegemonic, as the specific color giving its tone to the totality- not quantitatively, but playing the key, emblematic structural role..” Zizek, *Objet a as Inherent Limit to Capitalism: On Michael Hardt and Antonio Negri*, Lacan.com, Fall 2005, accessed on 8.21.2011

years ago under the sign of the Mechanical Turk. Similarly, in the current formation of digital crowdsourcing platforms, the micro-division of cognitive labor, which is enabled by the fragmented processes of cognitive tasks, appears to be a key technique for shaping the productive energy of global crowds into a useful information commodity. In this chapter, I will analyze the crowdsourcing paradigm, as exemplified by the Mechanical Turk, in the context of this historical process of the mechanization of cognitive labor. In order to situate the critical socio-cultural role of the crowdsourcing paradigm, I will assess “the return of the crowds” into the social theory as explained in a recent essay by William Mazzarella.<sup>274</sup> Finally I will direct my focus towards the inquiry into the methods of discipline and control that are inhabited in the crowdsourcing paradigm as exemplified by Amazon Mechanical Turk by supplementing it with an interface analysis of the digital labor platform and a case study of an application of crowdsourcing for a machine learning project.

## 1. artificial Artificial Intelligence

One of the most ubiquitous examples of crowdsourcing application is a human authentication tool called *captcha*.<sup>275</sup> This application could be described as a

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<sup>274</sup> Mazzarella, W. “The Myth of the Multitude, or, Who’s Afraid of the Crowd?” *Critical Inquiry* 36.4 (2010) : 697–727.

<sup>275</sup> von Ahn, Luis et al. “CAPTCHA: Using Hard AI Problems For Security.” *In Proceedings of Eurocrypt*. Vol. 2656. 2003. 294-311.



kind of reverse Turing test, in which humans convince the machine that they are indeed humans and not a software robot, crawling the web and filling out random forms for spam dissemination.



Figure 3.1 A typical re-captcha task

Most of the time, the task required for a captcha authentication consists of reading a word that is provided as an image file and then typing it into a text box. On the other hand, re-captcha, a particular type of captcha, uses two sets of texts, one for the assessment purpose and the other for transcribing garbled words that were captured during optical character recognition (OCR) scans. As a result, re-captcha functions not only as a human authentication tool but also as a cognitive labor platform.

The crucial aspect of this process is that no single individual who completes a captcha will ever be able to know the overall meaning of the text that was transcribed because of its fragmentation into single words. In most crowdsourcing platforms, fragmentation of tasks disenfranchises cognitive workers by disconnecting them from the final intellectual work. In addition, most crowdsourcing systems maintain a transient, task-based and limited-time relationship between the worker and the

requester, and they do not support a direct communication between the parties, further erasing the connection between the cognitive labor and the resultant work.

A similar type of disconnect characterizes Amazon.com's digital labor market, which goes by the name Amazon Mechanical Turk (hereafter AMT.) In November 2005, Amazon Web Services established its digital labor market where workers from across the world and around the clock, browse, choose and complete human intelligence tasks (hereafter HITs) that are designed by corporate or individual contractors. The kind of labor required for each HIT varies, but it includes tasks such as, finding information and images about products and services, translating text from/to English, transcribing audio, tagging images with descriptive text, or answering surveys on various topics. The products of this labor might serve many purposes ranging from spam generation to training machine learning algorithms that will eventually assume some of these human roles in the future. The payment amount per HIT ranges from zero to several US dollars, depending on the required time or difficulty of the task.

Amazon.com's initial motivation to build AMT emerged after the failure of its artificial intelligence (hereafter AI) programs in the task of finding duplicate product pages on its retail website.<sup>276</sup> After a series of futile and expensive attempts, the project engineers turned to humans to work behind computers within a streamlined web-based system. Later, AMT made this cognitive labor platform

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<sup>276</sup> Pontin, Jason. "Artificial Intelligence, With Help From the Humans." *The New York Times* 25 Mar. 2007.

available to private contractors in return for a commission for each completed HIT. AMT's digital workshop emulates artificial intelligence systems by replacing computing with human brainpower. Driven by what AMT calls "artificial artificial intelligence," this socio-technical system represents a crucial formation on a global scale as it facilitates the supply of cognitive labor needs of mainly Western Information and Communication Technologies (ICT) industries from a global workforce.<sup>277</sup> AMT's value proposition for its digital labor market to the software industry as follows: "With Amazon Mechanical Turk, it may seem to your customers that your application is somehow using advanced artificial intelligence to accomplish tasks, but in reality it is the 'Artificial Artificial Intelligence' of the Mechanical Turk workforce that is helping you effectively achieve your business objectives."<sup>278</sup>

According to Panos Iperiotis, approximately half of the AMT workers— or "Turkers" as some of them prefer to call themselves—are from the U.S. The other half is from 66 different countries. A majority of the non-U.S. Turkers is from India, representing 33% of the overall workforce.<sup>279</sup> Ross et.al. have demonstrated that the

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<sup>277</sup> Non-U.S. workers do not need to pay tax to U.S. government for their income. Incomes of the U.S.-based workers are taxed if the total annual amount earned from a requester exceeds the IRS tax-reporting threshold.

<sup>278</sup> "Amazon.com Help: Mechanical Turk."  
<http://www.amazon.com/gp/help/customer/display.html?nodeId=16465291>. Captured on August 25, 2011

<sup>279</sup> Ipeirotis, Panagiotis G., Demographics of Mechanical Turk (March 2010). NYU Working Paper No. ;CEDER-10-01. Available at SSRN: <http://ssrn.com/abstract=1585030>

demographics of AMT workers is becoming increasingly international, highlighted by an expanding group of young, male, Indian workers who make less than USD 10,000 a year. About a third of Indian workers reported that they partly rely on AMT “to make basic ends meet.”<sup>280</sup> Amazon.com branded its micro-task-micro-payment based crowdsourcing platform as the Mechanical Turk, borrowing one of the names of the 18th century Automaton Chess Player as a shorthand for the relationship that the system establishes between the cognitive labor force and the seemingly automated complex tasks. In both cases, the performance of the workers who animate the artifice is obscured by the spectacle of the machine.

## 2. Interface Analysis: Inside Amazon Mechanical Turk

Figure 3.2 Amazon Mechanical Turk home page.

<sup>280</sup> Ross, J. et al. “Who are the crowdworkers?: shifting demographics in mechanical turk.” *Proceedings of the 28th of the international conference extended abstracts on Human factors in computing systems*. 2010. 2863–2872.

There are two separate access points for the AMT, either for workers or requesters. These access points indicate a stark difference between the worker and the requester interfaces in terms of color scheme and the level of refinement. While the worker site is designed for mere function and quickly directs users into choosing a Human Intelligence Task, (HIT) the requester site includes more graphical tools and nicely nested information chunks that include an interactive tour, case studies, applications, and instructions on different solution providers. In addition, there are different pages for corresponding stages of a task production represented by tabs labeled with “Design,” “Publish,” and “Manage.” Under a separate tab, a number of developer resources are presented including API (Application Programming Interface) resources for directly incorporating answers collected from Turkers into developer software and Command Line Resources for mixing and matching ready made command templates into building task designs, sample code and libraries.

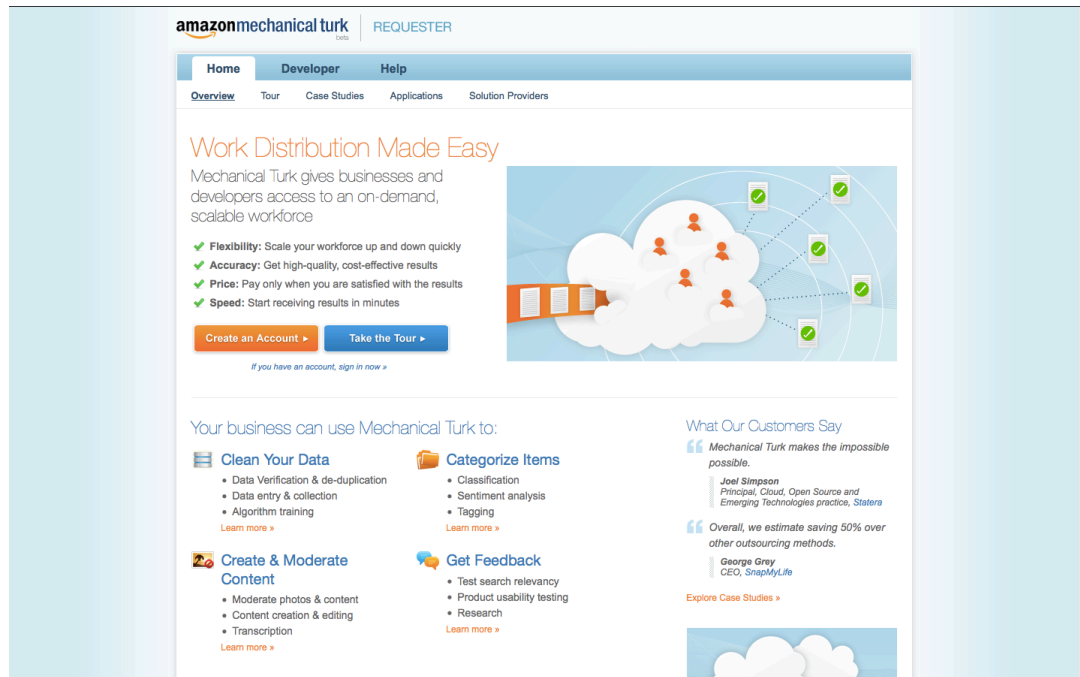


Figure 3.3 Amazon Mechanical Turk Requester portal

By contrast, the worker portal has only one intermediate screen for instructions before accessing the page that lists available HITs which is only accessible through a link placed under a prominently placed button in orange labeled “Find HITS Now.” The instructions are highly simple and presented in three steps: “Find work”, “Work on your HIT” and “Get paid for your work.” If the worker misses that link placed in the home page, the only other way to get instructions about how the system works is through a text based and hard-to-navigate FAQ page. There are no graphical tools available on the worker portal for explaining how the system works. Other than instructions provided within each HIT focusing on the requirements of the task, the worker portal does not include any interactive tour, case studies or information on different type of tasks or requesters.

The lack of detailed and legible general information presented before HITs is significantly problematic for a first time worker especially because the details of the method of payments can influence a worker’s initial decision on working for the Turk. This is because, other than Indian workers, non-US workers can only be paid in credits for Amazon retail shop purchases. US based workers can receive direct deposit into their bank accounts once they set up a banking profile with AMT.

The screenshot displays the Amazon Mechanical Turk interface. At the top, the logo 'amazonmechanicalturk' is visible, along with navigation tabs for 'Your Account', 'HITS', and 'Qualifications'. The main content area is titled 'Working on HITs' and is organized into three sequential steps:

- Step 1: Find work**: Instructs users to search or browse through HITs. It lists three example HITs:
  - Evaluate Search Results**: Requester: PowerSet, HIT Expiration Date: April 1, 2008, Reward: \$0.02, Time Allotted: 10 minutes, HITs Available: 1114.
  - Select the Best Category For a Product**: Requester: Channel Intelligence, HIT Expiration Date: April 24, 2008, Reward: \$0.01, Time Allotted: 10 minutes, HITs Available: 425.
  - Expedited Podcast Transcription**: Requester: Casting Words, HIT Expiration Date: March 30, 2008, Reward: \$4.95, Time Allotted: 4 Hrs 30 minutes, HITs Available: 2.
- Step 2: Work on your HIT**: Instructs users to accept the HIT and follow instructions. It includes a flow diagram with 'Accept HIT' and 'Submit HIT' buttons.
- Step 3: Get paid for your work**: Explains that after requester approval, money is deposited into the worker's Amazon Payments account, accompanied by a dollar sign icon.

On the right side, the 'Examples' section provides a list of sample HIT tasks such as 'Select the correct spelling for these search terms' and 'Is this website suitable for a general audience?'. A 'Find HITs Now' button is present at the bottom of this section, along with the text 'Currently 109,894 HITs available.' The footer contains links for FAQ, Contact Us, Careers at Amazon, Developers, Press, Policies, and Blog, along with the copyright notice '©2005-2011 Amazon.com, Inc. or its Affiliates' and the 'An amazon.com company' logo.

Figure 3.4 Workers instructions page

The main worker portal is divided into three separate groups of activities presented with tabs labeled as “Your Account” where workers can keep track of their earnings and change account settings, “HITS” where workers can find and work on HITs, and “Qualifications” where workers request or keep track of their qualifications required for specialized tasks. AMT provides a brief explanation on this page about how qualification system works:

Some HITs are available only to Amazon Mechanical Turk users with

certain Qualifications. Requesters can use Qualifications to make sure their HITs are completed by users that have demonstrated their ability to give high quality answers. You can obtain a Qualification by browsing or searching through the available Qualifications and requesting ones that appeal to you. Qualifications related to your performance completing HITs are assigned automatically and cannot be requested. Some Qualifications may require you to complete a test before they are granted. Qualifications requiring you to complete a test must be completed within the specified time.<sup>281</sup>

On June 27, 2011 AMT introduced a new worker categorization system that enabled the workers who are qualified in certain tasks to be ranked as Mechanical Turk Masters. AMT describes the process of achieving a master status was given as follows:

Masters are an elite group of Workers, who have demonstrated superior performance while completing thousands of HITs for a variety of Requesters across the Mechanical Turk Marketplace. Masters must maintain this high level of performance or risk losing this distinction. Mechanical Turk has built technology, which analyzes Worker performance, identifies high performing Workers and monitors their performance over time. Today, two types of Masters are available – Photo Moderation Masters and Categorization Masters.<sup>282</sup>

Having the title of Mechanical Turk Master increases the number of available tasks that generally pay more than other tasks, which do not require any qualification. Available HITs is the central page of AMT's worker portal, where a listing of all the HITs can be found. There are generally over a thousand available HITs at any given time at the workers portal; here is a quick sample list given by AMT in its introduction page:

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<sup>281</sup> <https://www.mturk.com/mturk/findquals> accessed on August 14, 2011

<sup>282</sup> From a marketing email sent by AMT on July 27, 2011



- Select the correct spelling for these search terms
- Is this website suitable for a general audience?
- Find the item number for the product in this image
- Rate the search results for these keywords
- Are these two products the same?
- Choose the appropriate category for products
- Categorize the tone of this article
- Translate a paragraph from English to French

The screenshot displays the Amazon Mechanical Turk interface for HITs. At the top, there's a navigation bar with 'Your Account', 'HITs', and 'Qualifications' tabs. A search bar is present with filters for 'HITs Available To You' and 'HITs Assigned To You'. Below the search bar, there are options to filter by 'that pay at least \$ 0.00' and 'require Master Qualification'. The main content area shows a list of HITs under the heading 'All HITs' and '1-10 of 1887 Results'. The list is sorted by 'HITs Available (most first)'. Each HIT entry includes a 'Requester' link, 'HIT Expiration Date', 'Time Allotted', 'Reward', and 'HITs Available'. A 'View a HIT in this group' link is provided for each entry.

Requester	HIT Expiration Date	Time Allotted	Reward	HITs Available
rob@t0d	Sep 6, 2011 (3 weeks 1 day)	12 hours	\$0.00	28655
Dolores Labs	Aug 20, 2011 (6 days 7 hours)	60 minutes	\$0.08	8564
E L	Aug 21, 2011 (6 days 19 hours)	10 minutes	\$0.02	8202
Nicolas Kakkalis	Aug 16, 2011 (1 day 23 hours)	60 minutes	\$0.01	5879
Dolores Labs	Aug 21, 2011 (6 days 19 hours)	60 minutes	\$0.04	5083
Rachel Tova Rott	Aug 17, 2011 (2 days 11 hours)	60 seconds	\$0.02	3810
Ted	Aug 21, 2011 (6 days 17 hours)	15 minutes	\$0.03	3371
James Hays Lab	Aug 20, 2011 (6 days 4 hours)	15 minutes	\$0.05	2910

Figure 3.5 HITs page at AMT workers portal

On the HITs page each HIT is presented with a brief description including, the name of the requester, expiration date, time allotted for completion of the task, the amount of pay and the number of HITs available in that category. Upon clicking the link that is labeled as “View HIT in this group” the user is directed to the HIT page. A typical HIT starts with a preview or a training page that includes the

description of the task and a sample HIT in that particular group of HITs. Upon agreeing to work on the HIT, the user is directed to the actual work page.

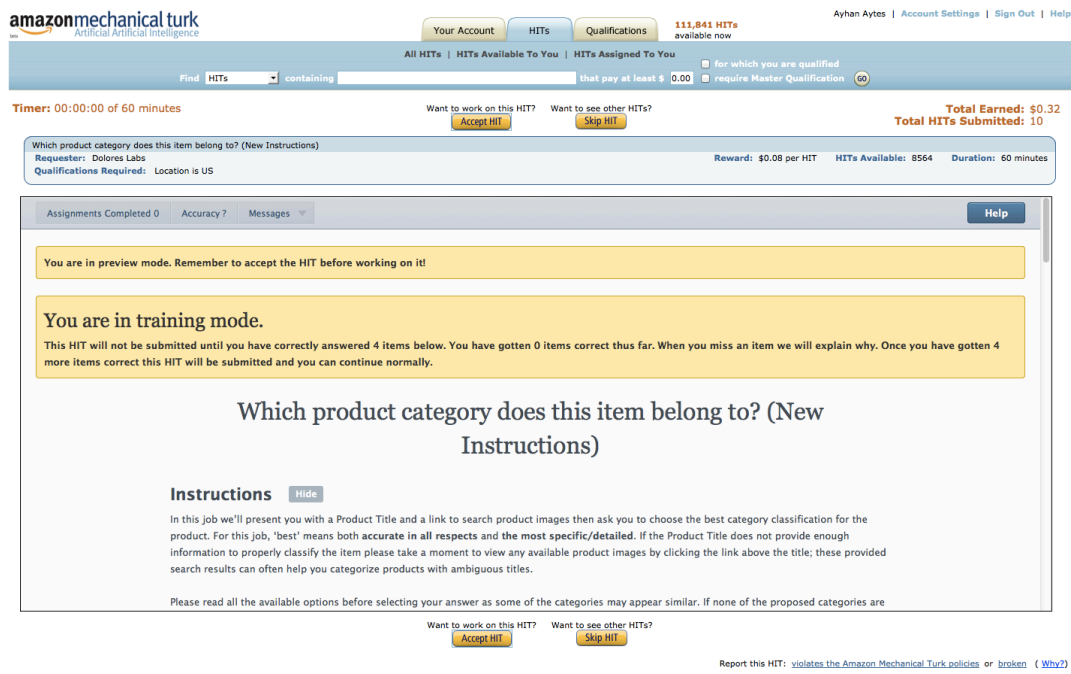


Figure 3.6 A HIT preview page on AMT worker portal.

Once in the actual HIT page, a worker has a choice of working on the HIT or skipping it. Skipping or abandoning a HIT does not change a worker's approval rate. However, once a task is submitted, the ability to either approve or reject the work is entirely dependent on the requester's judgment and it is not possible for a worker of the task to contest that judgment. This is one of the most contentious issues of AMT from workers' point of view but AMT has not yet responded to it. On the requesters portal this policy is explained in the FAQ section as follows:

### **What happens when I reject work?**

When you reject an assignment, the Worker who performed the assignment does not get paid, and you are not charged the standard

Mechanical Turk fee for the HIT. The rejection affects your Requester statistics and the statistics of the Worker who submitted the results.

From a business point of view it might appear as if AMT is losing money because of unpaid fees whenever a requester unfairly rejects a work. But such a system actually benefits from enabling the requesters to be the sole authority in disputes with their workers. This point is also listed as one of the four main advantages of AMT on the requester portal;

**Price:** Pay only when you are satisfied with the results.

Here is the breakdown of fees collected by AMT from requesters:  
“Amazon Mechanical Turk collects a 10% commission on top of the reward amount you set for Workers. For example, if a HIT reward is set to \$0.20, Amazon Mechanical Turk collects \$0.02. The minimum commission charged is \$0.005 per HIT. When a bonus is granted, Amazon Mechanical Turk collects 10% of the bonus amount, or a minimum of \$0.005 per bonus payment. If you choose to send HITs exclusively to Photo Moderation or Categorization Masters an additional 20% fee applies.

Workers can see an updated earnings report on their dashboard which includes information on total earnings; the HIT status that lists pending, approved and rejected HITs; and total HITs that provides details about the worker’s approval rate. The only possible communication after the completion of the work between the worker and the requester can be done through a page that is accessed from here, which might include an optional feedback that would be provided by the requester.

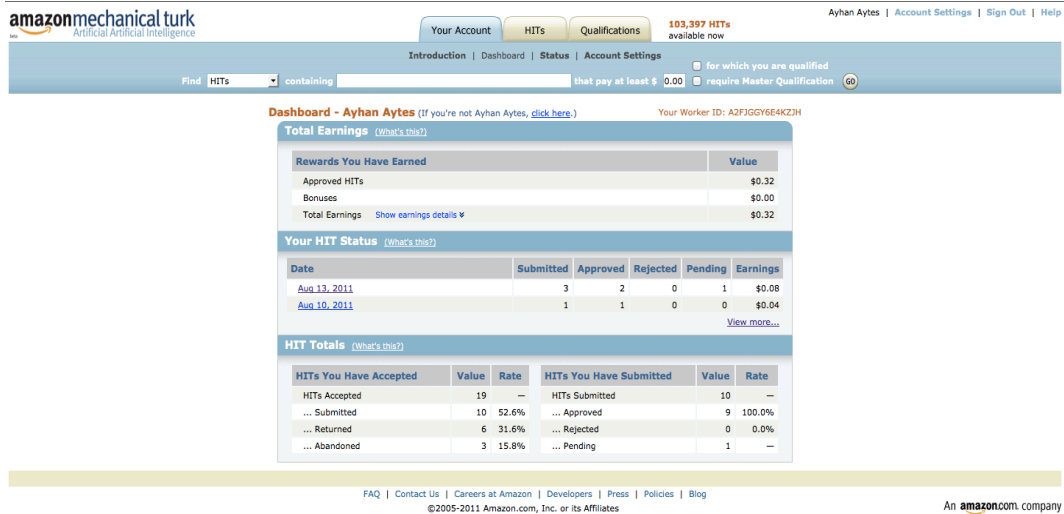


Figure 3.7 Worker's earning report on AMT

### 3. Return of the Crowds

Amazon Mechanical Turk is a typical example for crowdsourcing applications, which represents a new stage in the mechanization of the mind. Crowdsourcing is a hybrid concept that merges the neoliberal outsourcing paradigm with the crowds on the digital networks. In the June 2006 issue of the *Wired* magazine, Jeff Howe evangelized the concept to its technologically savvy neoliberal audience as follows:

Technological advances in everything from product design software to digital video cameras are breaking down the cost barriers that once separated amateurs from professionals. Hobbyists, part-timers, and dabblers suddenly have a market for their efforts, as smart companies in industries as disparate as pharmaceuticals and television discover ways to tap the latent talent of the crowd. The labor isn't always free, but it costs a lot less than paying traditional employees. It's not outsourcing; it's crowdsourcing.<sup>283</sup>

<sup>283</sup> Howe, Jeff. "Wired 14.06: The Rise of Crowdsourcing." June 2006. Web. 1 Sept. 2011.

Howe's emphasis on the immense potential tapped by the crowdsourcing platform is in fact a crucial instance of the larger neoliberal trend of "labor arbitrage", which has been a critical method for radically lowering the cost of labor for multinational corporations by taking advantage of enormous gaps in labor costs across the globe.

Crowdsourcing as an alternative to traditional employment methods also signifies an unexpected return of the concept of the crowds to neoliberal agenda. This time, however, its discursive signification is limited within the communities of the global South rather than those of industrial West. As William Mazzarella expounds; "[c]rowds, supposedly, belong to the past of the neoliberal democracies of the global North. By the same token, they also mark the present of non- or insufficiently liberal polities in the global South. [...]crowds are the dark matter that pull the liberal subject from its past, whereas multitudes occupy the emergent horizon of a postliberal politics."<sup>284</sup> Mazzarella argues that the crowd theory is based on the idea of the autonomous liberal subject of the early modernity and is mainly used to convey the anxieties of mass democratization. On the other hand, the theory of the multitude, as proposed by Michael Hardt and Antonio Negri, offers a postliberal alternative, by taking the collective—rather than the individual—as its site of freedom and autonomy. Mazzarella finds the distinction between crowds and

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<sup>284</sup> Mazzarella, W. "The Myth of the Multitude, or, Who's Afraid of the Crowd?" *Critical Inquiry* 36.4 (2010): 697–727. Pp.698

multitudes as parallel to the one between Foucault's "society of discipline"<sup>285</sup> and Gilles Deleuze's postindustrial "control society."<sup>286</sup> While crowds correspond to the industrial discipline, multitudes can only be considered within the context of the postindustrial control society where command by control is "fractal and aims to integrate conflicts not by imposing a coherent social apparatus but by controlling differences."<sup>287</sup> Command by control also characterizes the mode of production with full integration of computers and digital networks in postindustrial service economy.

According to Mazzarella, this periodization of crowds is partly established by its *allochronic quality*, a term borrowed from Johannes Fabian for the description of a particular discourse built in Western anthropology and intellectual tradition in order to cast the "Other" outside of the Western historical time, and is a vehicle for maintaining domination and global inequalities.<sup>288</sup> In order to support this point, Mazzarella brings an early twentieth century French social psychologist Gustave Le Bon to the witness bench, who states that the crowd is "like a savage [,] not prepared to admit that anything can come between its desire and the realization of its

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<sup>285</sup> Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. London: Allen Lane, 1977.

<sup>286</sup> Deleuze, Gilles. "Postscript on the Societies of Control." *October* 59 (1992): 3-7.

<sup>287</sup> Hardt, Michael, and Antonio Negri. *Empire*. Cambridge, Mass: Harvard University Press, 2000. Pp.340

<sup>288</sup> Fabian, Johannes. *Time and the Other: How Anthropology Makes Its Object*. Columbia University Press, 2002.

desire.”<sup>289</sup> The savagery attributed to crowds is further accompanied by its lack of reasoning and logic; “[a] crowd thinks in images, and the image itself immediately calls up a series of other images, having no logical connection with the first.”<sup>290</sup>

Furthermore, Mazzarella considers this *image-thinking* as a form of *thinking with the body* and provides another example from Jose Ortega y Gasset who writes that “the mass-man has not attention to spare for reasoning, he learns only in flesh.”<sup>291</sup> The abject status of the body attributed to the particular type of reasoning of crowds also points to its relation to the Enlightenment hierarchy formed between the different parts of the human body, which places the operations of the mind higher than the rest of the body.

In the era of postindustrial capitalism, however, crowds have become eligible for cognitive work through a particular type of command mechanism that transformed them into multitudes. In his critical reading of Hardt and Negri’s account on the differences between the crowds and the multitude, for example Mazzarella sees the implication that crowds belong to the era when the *élan vital*<sup>292</sup>

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<sup>289</sup> Bon, Gustave Le. *The Crowd: A Study of the Popular Mind*. 2nd ed. Cherokee Publishing Company, Atlanta, GA 1982, 1994. p.6

<sup>290</sup> *ibid.* p.15

<sup>291</sup> Gasset, José Ortega y. *The Revolt of the Masses*. W. W. Norton & Company, 1994. p.92

<sup>292</sup> Henri Bergson’s term is translated to English as *vital impulse*

of collective energy was external to the industrial discipline.<sup>293</sup> In the control society of postindustrial capitalism, *élan vital* has “become constitutive of the reproduction of the ruling order.”<sup>294</sup> This is because, in the most recent phase of modernity, the assembly line of industrial capitalism has been replaced by “network organizations that displace authority in collaborative relationships.”<sup>295</sup> This is one of the reasons why Hardt and Negri see the multitude as a collective social system of “control society” by following Gilles Deleuze’s rereading of Michel Foucault. Mediated by the network organizations “mechanisms of command become ever more ‘democratic,’ ever more immanent to the social field, distributed through the brains and bodies of the citizens”<sup>296</sup>

It would be useful to look at the prominent activity that gives its characteristics to the multitude, immaterial labor. According to Hardt and Negri, the transformation of multitude is characterized by “the hegemony of immaterial labor and the forms of decision making based on network structures.”<sup>297</sup> Italian Sociologist Maurizio Lazzarato describes immaterial labor as “the labor that produces the

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<sup>293</sup> Mazzarella, W. “The Myth of the Multitude, or, Who’s Afraid of the Crowd?” *Critical Inquiry* 36.4 (2010): 697–727. p.700

<sup>294</sup> *ibid*, pp.700

<sup>295</sup> Hardt, Michael, and Antonio Negri. *Multitude: War and Democracy in the Age of Empire*. Penguin (Non-Classics), 2005. p. xvi

<sup>296</sup> Hardt, Michael, and Antonio Negri. *Empire*. Cambridge, Mass: Harvard University Press, 2000. , p.23

<sup>297</sup> Hardt, Michael, and Antonio Negri. *Multitude: War and Democracy in the Age of Empire*. Penguin (Non-Classics), 2005. Pp.68



informational and cultural content of the commodity.”<sup>298</sup> Its most salient examples can be seen in advertising, fashion, marketing, television and digital media industries. According to Lazzarato, immaterial labor is “a synthesis of different types of knowhow: intellectual skills, manual skills, and entrepreneurial skills.” Because of its reliance on the commodification of communication, which inherently forms social relationships, immaterial labor also denotes the process through which “social” becomes “economic.” Hardt and Negri classify immaterial labor into three distinct types;

[T]he first is involved in an industrial production that has been informationalized and has incorporated communication technologies in a way that transforms the production process itself. Manufacturing is regarded as a service, and the material labor of the production of durable goods mixes with and tends toward immaterial labor. Second is the immaterial labor of analytical and symbolic tasks, which itself breaks down into creative and intelligent manipulation on the one hand and routine symbolic tasks on the other. Finally, a third type of immaterial labor involves the production and manipulation of affect and requires (virtual or actual) human contact, labor in the bodily mode.<sup>299</sup>

According to Lazzarato, as an extension of the commodification of social relationships, the subjectivity becomes the “raw material” of immaterial labor.<sup>300</sup> This is partly because “production today is directly the production of a social

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<sup>298</sup> Lazzarato, Maurizio. “Immaterial Labor.” *Radical Thought in Italy: A Potential Politics*. Ed. Paolo Virno & Michael Hardt. U of Minnesota Press, 2006. 133-147.

<sup>299</sup> Hardt, Michael, and Antonio Negri. *Empire*. Cambridge, Mass: Harvard University Press, 2000. Pp.293

<sup>300</sup> Lazzarato, Maurizio. “Immaterial Labor.” *Radical Thought in Italy: A Potential Politics*. Ed. Paolo Virno & Michael Hardt. U of Minnesota Press, 2006. 133-147.

relation.”<sup>301</sup> However, crowdsourcing platforms as exemplified by Amazon Mechanical Turk undermine some of this assessment because of the fragmentation of the information production tasks and the atomization of cognitive workers.

The production of subjectivity as a productive process for monetary value (valorization) represents a critical stage in the configuration of the subjectivity of information worker through division of cognitive labor. Here, the main disciplinary force is not solely related to the process of production but can also be found in the consumption of the very product that the information worker produces. Despite its similarity to the postindustrial cycles of commodity consumption/production cycles as explained by David Harvey<sup>302</sup>, the information production cycles are different in terms of their effects on postmodern subjectivity, since their immediate domain of effect is in the information and communication industry that forms the cultural fabric of the society by constructing active consumer/communicator subjects. As a result “[t]he production of subjectivity ceases to be only an instrument of social control and becomes directly productive [...]”<sup>303</sup> But, as exemplified by Amazon Mechanical Turk, how would this process still be valid when the communicator is no more a consumer as a result of both the fragmentation of intellectual work and the global

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<sup>301</sup> Mazzarella, W. “The Myth of the Multitude, or, Who’s Afraid of the Crowd?” *Critical Inquiry* 36.4 (2010): 697–727. Pp.700

<sup>302</sup> Harvey, David. *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change*. Wiley-Blackwell, 1991.

<sup>303</sup> Lazzarato, Maurizio. “Immaterial Labor.” *Radical Thought in Italy: A Potential Politics*. Ed. Paolo Virno & Michael Hardt. U of Minnesota Press, 2006. 133-147. Pp.141

income gaps between the producers and the consumers of information commodities, or between the multitude and the crowd?

A similar set of assumptions characterizes Hardt and Negri's concept of the multitude, which expands the characteristics, by positioning postindustrial production within the multitude and claims that "[w]hat the multitude produces is not just goods or services; the multitude also and most importantly produces cooperation, communication, forms of life, and social relationships."<sup>304</sup> Further, Hardt and Negri ascribe an autonomous character to the subjectivities that are produced through cognitive labor mainly due to its assumed collective nature. "Such new forms of labor /.../ present new possibilities for economic self-management, since the mechanisms of cooperation necessary for production are contained in the labor itself."<sup>305</sup> This point appears as a distinct contrast to the industrial notion of the labor power, which is considered as "variable capital" in Marxist terms of political economy, since it can be activated and formed as a productive force only by capital.

However, one could argue that the crowdsourcing apparatus with its unique configuration challenges this assumption about the autonomy of network organizations. In fact, it essentially negates the general distinction between the crowds and multitudes. In digital labor markets maintained by crowdsourcing protocols, crowds are subjected to a form of division of labor that reproduces the

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<sup>304</sup> Hardt, Michael, and Antonio Negri. *Multitude: War and Democracy in the Age of Empire*. Penguin (Non-Classics), 2005.

<sup>305</sup> *ibid.* pp.336

disciplinary forms that are reminiscent of industrial production. On the other hand, this division of labor is different than the industrial division of labor not only in terms of the subjectivities it produces, but also its relation to the neoliberal socioeconomic formations that constitute a distinct condition for the workers of the global South. The set of distinct conditions or “state of exception” as Aihwa Ong conceptualizes, could broadly be described as the gray zones of international laws clearly designed by neoliberal policies in order to take advantage of stark regional differences in labor costs. However, one needs to consider serious effects of these conditions in terms of expansion of the command by control apparatus over the protocols of the digital networks.

#### 4. Mechanical Turk as a Neoliberal Exception Apparatus

Aihwa Ong describes neoliberalism as a global system of exception borrowing a term from German political theorist, Carl Schmitt. As discussed in the previous chapter, state of exception, in Schmittian sense defines a political liminality that is established outside of the juridical order, created by the sovereign rule. Ong, similar to Schmitt, emphasizes inclusive as well as exclusive aspects of neoliberal political formations, as these exceptions primarily work for making decisions outside of a consistent legislative framework. Ong formulates the neoliberal exception in relation to "the interplay among technologies of governing and of disciplining, of

inclusion and exclusion, of giving value or denying value to human conduct."<sup>306</sup> A significant example to these technologies of exclusion is *labor arbitrage*.

According to Ong, *labor arbitrage* is one of the strategies that inform the conditions of governing and disciplining in that it breaks apart the traditional relationship between the national labor legislations and the worker-as-citizen. Aihwa Ong describes labor arbitrage as “the latest technique to exploit time-space coordinates in order to accumulate profits, putting into play a new kind of flexibility [...]”<sup>307</sup>

Cognitive labor is particularly susceptible to labor arbitrage technologies because, computerized division of labor enables the fragmentation of tasks into smaller and standardizable units enabling the completion of a specific task by an assembly of workers across the globe.<sup>308</sup> In this sense, crowdsourcing could be considered an apparatus of neoliberal state of exception, since it signifies a novel instance of labor arbitrage where online cognitive labor markets are established as aggregation platforms. These platforms simultaneously act as a technoimmigration system without an immigration of the bodies that enact the cognitive labor.

These exploitative aspects of cognitive labor arbitrage are clearly exemplified by Amazon.com’s Mechanical Turk crowdsourcing system. Indeed, the Turker

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<sup>306</sup> Ong, Aihwa. *Neoliberalism as Exception: Mutations in Citizenship and Sovereignty*. Duke University Press Books, 2006., pp.5

<sup>307</sup> *ibid.* pp.174

<sup>308</sup> *ibid.*, pp.161

community seems to have varied responses to the claims of exploitation. Some U.S. based Turkers state that their interest in Mechanical Turk is solely motivated by the novelty of the experience. This could be explained by the negligible nature of income that could be earned through AMT for a U.S. based worker. However, this assumption may not always reflect entire reality, especially following the 2007 economic crisis, and through the aired stories by people who work for the Mechanical Turk. Although the kind of income that could be produced in Mechanical Turk may not completely compensate for an income lost from a traditional full-time job for a US worker, many Turkers still see it as a convenient and flexible work that could pay \$8-\$15 a day. For example, Tamara Wilhite, a technical writer and science fiction novelist living near Dallas, Texas, started working on Mechanical Turk after her husband lost his job. In a radio interview<sup>309</sup>, she says that the Mechanical Turk “(...) is very useful as a supplemental income. That’s something that I do after I put my own children to bed, who are 3 and 6 years old. I would not use this as a replacement to a job.”<sup>310</sup> Mark King of Manchester, N.Y. also uses Mechanical Turk for an extra income while looking for a full-time job in construction: “Most people sit and play around on the computer, play different games all day long, and they get nothing for it. At least this, you get a little bit in return.”<sup>311</sup>

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<sup>309</sup> This interview was conducted by Marketplace (produced by American Public Media)

<sup>310</sup> [http://marketplace.publicradio.org/display/web/2009/06/30/pm\\_turking/](http://marketplace.publicradio.org/display/web/2009/06/30/pm_turking/)

<sup>311</sup> *ibid.*

By contrast, AMT workers from countries such as India or China appear to be mostly interested in the technology as a means of providing a primary income source, although some of them find that the Mechanical Turk undervalues their labor. For example, Rajesh Mago, a computer freelancer from New Delhi, criticizes Mechanical Turk in his blog as follows: “[T]hey call the assignments posted by their requester as HITs (Human Intelligence Tasks). So, is the human intelligence worth cents only? LOL! I know no one is forcing anyone to do these assignments but yet it doesn’t justify the usage word ‘intelligence’— a mockery of human brain.”<sup>312</sup> Mago states that he completed more than 10,000 HITs working for a few hours a day for Mechanical Turk through 2008. For his labor, he earned \$572.62. His HIT approval rate was 98.2%; in other words, the requesters he worked for rejected about 2% of his completed tasks for which he was not compensated at all. According to Mago, requesters do not give any credible reason for their rejection. In addition, even the payments for accepted works are most of the time delayed, a matter that appears to affect many other Indian Turkers. As of 2011, Mago does not work for Mechanical Turk anymore and, in retrospect, he concludes “Mechanical Turking was kind of addictive as I always challenged myself to test and experiment and work for low-paying HITs thinking that I will be able to make decent money. But, Mechanical

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<sup>312</sup> Mago, Rajesh. “Review of Amazon MTURK After Working With Them As A Worker For a Few Months.” Web. 21 Dec. 2010.

Turk requesters are pretty smart; they had done more R&D than me and were sure that they would get the work done at the lowest rates or for free!”<sup>313</sup>

Mago’s case highlights the unregulated nature of the emerging global cognitive labor market and evokes the *Gastarbeiter* (guest worker) program of the economic wonder years of postwar Germany. In the long-term historical interest of Western industries in labor arbitrage, the German *Gastarbeiter* program was seen as a prominent model for establishing immigration *without rights* legislative system. Indeed it has inspired U.S. lawmakers in the recent and fiery political debate about the value of the immigrant worker program (H-1 visa) for the U.S. Information Technology (IT) industry.<sup>314</sup> The German *Gastarbeiter* program initially allowed only male workers from Yugoslavia, Greece, Spain, and Turkey on a temporary immigration status. These men were required to work up to 80 hours a week, supplying the labor needs of the booming postwar German industry at a much lower minimum wage than that of the domestic labor, exploited in a state of exception outside of the normal legislations, rights and union protections. Unlike the immediate postwar era, however, neoliberal state of exception advances this industrial form of labor arbitrage by the help of digital networks.

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<sup>313</sup> *ibid.*

<sup>314</sup> Jacoby, Tamar. “Tamar Jacoby—“Guest Workers Won’t Work.” *The Washington Post*. washingtonpost.com. Web. Nov. 21, 2009.



The acceleration of digital labor processes serves as an extension of the general acceleration of the pace of life by digital networks. According to Manuel Castells, digital networks replace the clock time of industrial age with what he calls timeless time, which is “defined by the use of new information/communication technologies in a relentless effort to annihilate time, to compress years in seconds, seconds in split seconds. Furthermore, the most fundamental aim is to eliminate sequencing of time, including past, present and future in the same hypertext...” In addition, Castells characterizes the network time as “the time of the dominant functions and powerful social actors in the network society.” In addition to the immense geographic expansion, activation of “timeless time,” on digital networks creates a unique zone through which the *time arbitrage* further magnifies labor arbitrage. As Shehzad Nadeem argues, “[t]ime arbitrage can be defined as the exploitation of time discrepancies between geographical labor markets to make a profit. This operates on two scales. At the geographical scale, many companies exploit time zone differences to achieve a 24-hour business cycle. At the labor process scale, time arbitrage can mean the extension of work hours or the acceleration of the labor process.”<sup>315</sup>

In the context of these sociocultural premises of the network society, it is possible to consider time arbitrage as an actualization of the allochronic temporality

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<sup>315</sup> Nadeem, Shehzad, “The uses and abuses of time: globalization and time arbitrage in India’s outsourcing industries.” *Global Networks* 9, 1 (2009) 20–40

of the Western anthropological discourse. Clearly, time arbitrage over the networks casts the “Other” within an always-on machinic zone of temporality. This quality also characterizes the Amazon Mechanical Turk platform, where the crowds of the global South are materially configured within the machinic always-on time of the networks through their cognitive labor. In other words, the western allochronic discourse has been reified in the form of temporal arbitrage as an apparatus of neoliberal system of exception through crowdsourcing. Thus, Mechanical Turk represents a critical stage in the process of the mechanization of mind due to the composite effect of the temporal and geographical detachments of the cognitive worker from the immediate cultural products of his/her labor.

The disconnect between the cognitive worker’s immediate social relations and the produced information that informs social relations somewhere else in the world represents another layer of exception—a cultural state of exception. As a result of this detachment, the cultural and the informational content of the produced commodity is consumed outside of the cultural context of the cognitive worker thus, does not directly alter his/her sociocultural conditions as a consumer/communicator. This disconnect can be considered in terms of a difference between the cultural experience of the multitude and the crowd in that the crowd produces the cultural bits that are consumed by the “multitude.” But one needs to look closely into the mechanisms of that production in order to understand the concept of cultural state of exception. I choose a case that reflects an extreme point in terms of technical

sophistication as well as its cultural potential which I will address at the end of the following case study.

## 5. Crowdsourced Machine Learning

One of the most unique uses of crowdsourcing platforms is training artificial intelligence algorithms by the solutions provided by human crowds to particular problems. Among those artificial intelligence algorithms, natural language processors seem to be the leading applications that use the “wisdom of the crowds” for machine learning purposes. Natural language processing is a subfield of artificial intelligence and is concerned with the question of automation of natural language processes such as machine translation, which could also be seen as an application of the problem posed by Turing test we saw in Chapter 2. The contemporary focus on natural language processing is characterized by machine learning methods that approach Turing’s question through learning algorithms that are based on statistical inference- instead of direct coding of large sets of rules, which characterized the classical approach. A machine learning approach requires large scale annotation datasets<sup>316</sup> that are constructed by expert annotators and these can be very expensive to build. It is no question that AMT provides a cheaper alternative to the expert annotators, but the variety of responses from a global crowd poses a particular type

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<sup>316</sup> Most notable annotation projects are TreeBank (Marcus et al., 1993), PropBank (Palmer et al., 2005), TimeBank (Pustejovsky et al., 2003), FrameNet (Baker et al., 1998) and SemCor (Miller et al., 1993)

of challenge to the builders of such systems, because their response generally do not match with the ones provided by expert annotators.

In the below case study I will take a look one of the machine learning projects that used Mechanical Turk for collecting annotations for natural language processing tasks. Because of its focus on an analysis of affective aspects of news headlines the following project also carries significant implications for the question of the cultural arbitrage.

### 5.1. Case Study: Culture Producing Algorithms

The study titled, *Cheap and Fast –But is it Good?*<sup>317</sup> was conducted in 2008 by a San Francisco based company, CrowdFlower (formerly known as Dolores Labs) which described its main objective as providing “technology to efficiently harness the power of large, on-demand workforces, allowing businesses to seamlessly integrate human intelligence with their existing systems and processes.”<sup>318</sup> During its initial stages, CrowdFlower’s cofounder Lukas Biewald suggested that “Dolores Labs can become a huge business as medical transcription, content monitoring, market research and piracy policing move to masses of independent workers connected by the Web and unencumbered by employment taxes or minimum wage

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<sup>317</sup> Snow, Rion et al. “Cheap and Fast—but Is It Good?: Evaluating Non-expert Annotations for Natural Language Tasks.” *Proceedings of the Conference on Empirical Methods in Natural Language Processing* (2008) : 254–263. Web. 30 May 2011.

<sup>318</sup> <http://doloreslabs.com/contact.html> captured on 5/29/11

laws.”<sup>319</sup> Although it is not very clear how minimum wage laws would encumber “masses of independent workers,” it is definitely a fact that the company and its corporate customers highly benefit from the lack thereof. It is critical to note that Crowdflower has been primarily utilizing the Mechanical Turk platform for selecting its workers to complete specialized tasks demanded by its corporate customers. The company also provides other services including design of cognitive tasks to be posted on AMT and aggregation and quality controlling of the results. In their initial phase, the company focused on studies that compared the efficiency of the crowdsourcing approach with conventional methods. The result, *Cheap and Fast – But is it Good?* compares the quality of non-expert annotations collected through Amazon.com’s Mechanical Turk to that of the *gold standard* expert annotations for five different semantic tasks: affect recognition, word similarity, recognizing textual entailment, event temporal ordering, and word sense disambiguation. Affective text analysis and word sense disambiguation are good examples for highlighting the use of crowds for machine learning projects. In the former, each annotator is given a list of news headlines and asked to provide their affective reactions that is rated in a numerical interval [0-100] specifically for six type of emotions: anger, disgust, fear, joy, sadness, and surprise. In addition, annotators are asked about the overall emotional *valence* of the content ranging between -100 and +100.

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<sup>319</sup> Victoria Barret, Dolores Labs Vets Web Sites On The Cheap, 03.11.09, 06:00 PM EDT Forbes Magazine dated March 30, 2009

The questions were presented to Turkers as a standard form delivered through Mechanical Turk’s web interface. Here is one example:

*Headline: Outcry at N Korea ‘nuclear test’*  
*How much does this headline evoke the following emotions?*  
 Anger (0-100)  
 Disgust (0-100)  
 Fear (0-100)  
 Joy (0-100)  
 Sadness (0-100)  
 Surprise (0-100)  
*In general, how positive or negative is this headline, on a scale of:*  
*-100 (very negative) <--- 0 (neutral) ---> 100 (very positive)*  
*Comment: ...*

The collected responses to the question of North Korea was as follows: (*Anger, 30*), (*Disgust,30*), (*Fear,30*), (*Joy,0*), (*Sadness,20*), (*Surprise,40*), (*Valence,-50*).

In their analysis of the collected data for this task researchers concluded that “experts agree with experts more than non-experts agree with experts [...] But we also found that adding non-experts to the gold standard [...] improves agreement, suggesting that non-expert annotations are good enough to increase the overall quality of the gold labels.”<sup>320</sup> In their next comparison, researchers asked how many non-experts (Mechanical Turkers) it would take to match the performance of a single expert labeler. For all emotions except “fear,” non-expert annotators of Mechanical Turk were able to achieve the semantic labeling performance of single expert

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<sup>320</sup> Snow, Rion et al. “Cheap and fast—but is it good?: evaluating non-expert annotations for natural language tasks.” *Proceedings of the Conference on Empirical Methods in Natural Language Processing*. Stroudsburg, PA, USA: Association for Computational Linguistics, 2008. 254–263. Web. 12 June 2011. EMNLP ’08., pp.3

annotators within the range of 2-9 labelers. According to this ratio, the researchers made a highly interesting cost analysis: “Given that we paid US\$2.00 in order to collect the 7000 non-expert annotations, we may interpret our rate of 3500 non-expert labels per USD as at least 875 expert-equivalent labels per USD.”<sup>321</sup>

In the case of word sense disambiguation, the task is based on a problem of recognizing different senses of a word by considering the context in which the word appears. Here, the researchers choose an example from SemEval Word Sense Disambiguation Lexical Sample task<sup>322</sup>:

We present the labeler with a paragraph of text containing the word “president” (e.g., a paragraph containing “*Robert E. Lyons III...was appointed president and chief operating officer...*”) and ask the labeler which one of the following three sense labels is most appropriate:

- 1) executive officer of a firm, corporation, or university
- 2) head of a country (other than the U.S.)
- 3) head of the U.S., President of the United States

In this study, 177 different examples where the noun “president” appears were presented to 10 non-expert annotators via Mechanical Turk. Although machine learning algorithms have already presented very good results on this task, this study

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<sup>321</sup> Snow, Rion et al. “Cheap and fast—but is it good?: evaluating non-expert annotations for natural language tasks.” *Proceedings of the Conference on Empirical Methods in Natural Language Processing*. Stroudsburg, PA, USA: Association for Computational Linguistics, 2008. 254–263. Web. 12 June 2011. EMNLP ’08.

<sup>322</sup> Sameer Pradhan, Edward Loper, Dmitriy Dligach and Martha Palmer. 2007. SemEval-2007 Task-17: English Lexical Sample, SRL and All Words. In *Proc. of SemEval-2007* . pp. 257

has shown that these results could be further improved if non-expert annotators were used.

During the study, it was revealed that the only disagreement between the non-expert annotations and the expert annotation was the result of an error made by an expert annotator.

Based on their initial findings, Snow et al. present three strategies to reduce the rate of error in non-expert annotations. The first is to increase the amount of worker per task, which would increase the cost of the study. Although the authors do not explicitly mention this point, it seems to be one of the reasons for considering other options. The second, suggested by Amazon.com's compensation tool, is to give bonuses to workers who produce high quality work while denying payments to "unreliable ones." The third option is based on "modeling the reliability and biases of individual workers and correct them." In this last method, a small amount of expert-labeled training data is used to correct the individual biases of non-expert workers. By calibrating the non-expert responses with the expert data, it becomes possible to match the expert behavior across all the responses. However, it would be interesting to consider how this calibration would affect the end result in case of an expert-error as we saw in the Word Sense Disambiguation study. The proposed bias correction algorithm would make use of a weighted voting rule: "each worker's vote is weighted by their log likelihood ratio for their given response. Intuitively, workers who are more than 50% accurate have positive votes; workers whose judgments are pure noise have zero votes; and anticorrelated workers have negative votes."



In later experiments, however, it becomes clear that, for majority of the tasks the average system trained with a single set of non-expert annotators outperforms the average system trained with the labels of a single expert. Snow et al. suggest that the bias of the individual labelers might be one of the possible causes for this phenomenon and the annotator diversity might have an effect of increasing system performance.

One of the possible uses of above application would be to help transform the digital network into its next stage, the so-called “semantic web.” Semantic web is based on the premise that one could automate the process of extracting meaning out of digital data available on the networks with minimal or no human intervention. But in order for this to take place, machine-learning applications need to be trained by human experts to enable the precision of the automated meaning extraction. By matching the vast global human resources for the endless digital labor required for the transformation to the semantic web, crowdsourcing applications are an indispensable source. Semantic web, as the next stage of automatization of networked mind, would have an immense influence on how we would produce, disseminate and consume digital information in the future. In order to be able to analyze this influence one needs to closely look at the conditions of this transformation through crowdsourcing.

The particular use of crowdsourcing for machine learning purposes requires that non-experts play the role of experts by normalizing their responses through statistical correction. However, the expert behavior still exists as a norm against

which the non-expert annotations are assessed. The role is simply relegated to the bias correction algorithm. In addition to the constant mechanization of thought processes, this particular case is also an example of the aim of computing to “reinvent virtually every other site of practice in its own image.”<sup>323</sup> Computer scientist Philip Agre in his 1997 critique of the field of Artificial Intelligence, presents computing as a form of epistemological imperialism. Because computers are “representational artifacts” and their designs are based on constructing representations of activities which replace the site of that particular activity, Agre asserts that Artificial Intelligence is a discursive field based on the fact that the success of computational modeling of an activity is assessed based on the initial definition of that particular activity which may vary widely among the individuals in the field. So, what AI modeling may prove in the end is the initial assumption about itself that is the conceptual representation that replaced the activity. In other words, the conceptual models built in Artificial Intelligence programming becomes the language for explaining themselves. The conflation between representations and the things being represented is also embedded within the concept of a *model* according to Agre. This conflation also provides a flexibility for AI researchers enabling them to talk about a wide range of phenomena through a general theme of *modeling the world*.

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<sup>323</sup> Agre, Philip. “Toward a Critical Technical Practice: Lessons Learned in Trying to Reform AI.” *Social Science, Technical Systems, and Cooperative Work: Beyond the Great Divide*. 1st ed. Ed. Geoffrey Bowker et al. Psychology Press, 1997. 131-157. Pp.131

Agre further states that a similar kind of conflation characterizes formal-logical conceptions of natural language.<sup>324</sup> Because of the assumed accuracy of the mathematical representation of natural language semantics, the formally perfected representation loses its quality of representing and becomes *isomorphic*.

The introduction of machine learning applications in natural language processing changes this isomorphic relationship between the model and the represented phenomenon. Machine learning is based on developing algorithms for inductive inference by processing incomplete information about a phenomenon that is represented statistically. The expert annotations constitute the statistical representation of a semantic concept, which is in a constant state of enhancement. There are two channels of enhancement: the first is the enrichment of the database for statistical accuracy, while the second is the improvement of the algorithm for identifying statistical patterns within this database. In both cases the incompleteness is the key assumption. Thus, Agre's critique of isomorphism does not directly apply in this case. However, one still needs to consider the conditions of a different form of semantic mapping, that is the modeling of natural language uses, through a calibration of semantics expressed by the crowd worker. This calibration is based on the expert annotators who mostly convey the semantic specificities of their own empirical environment.

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<sup>324</sup> Agre, Philip E. *Computation and Human Experience*. Cambridge University Press, 1997. Pp.39

The automated Mechanical Turk crowdsourcing model can be considered as a platform for standardization of digital information semantics. This aspect stands in conflict with the statistical value of information that is dependent upon a meaningful level of variety in participant responses. These two opposing factors—the standardization of cognitive tasks and their significance as collective data with variation—establish the core quality of the crowdsourcing paradigm. In other words, in most crowdsourcing applications, the resulting product is no longer based on the value of a cognitive work determined by the skill level of an individual worker but by the *value created by the variance of cognitive approaches produced by a multitude of workers*. This aspect of crowdsourcing concurs with the ideological premise of digital information, with its emphasis on a sterile and uniform environment, since Mechanical Turk in its digital labor platform provides a lab-like sterility by means of rigidly defined algorithmic tasks that are designed to valorize the mapping of the variations of the paths taken in that algorithmic task labyrinth. This uniformity in crowdsourced cognitive production transforms global cultural diversity into a mere factor that may enrich the collective data, adding to the value of the mapped information. As Gregory Bateson once described it, “the difference that makes the difference.”<sup>325</sup>

Thus, in the Mechanical Turk system semantic difference derived from the difference in the lived cultures of the individuals is valorized into commodified

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<sup>325</sup> Bateson, Gregory. *Steps to an Ecology of Mind*. University of Chicago Press, 2000. pp. 459

information. In contrast to the technical definition of information based on probabilistic derivation in signals as ascribed by Claude Shannon, Gregory Bateson used this definition to describe feedback loops between contesting social groups. Information is what makes difference by creating meaningful difference among the bits of data whether they are digital, biological or social. In the following decades after the Macy Conferences, Bateson's motto highly influenced the direction of the research in the field of cybernetics and later in cognitive science field. Gregory Bateson's argument was crucial in reformulating the Cartesian mind-body duality into an embodied cognition framework. His theory had a particular emphasis on the tools we use as extensions of our bodies, which establish the mind as the innermost core of the cognitive process, while the body and the surrounding artifacts serve as the externalities that define the demarcation lines. The crowdsourcing scheme in the Mechanical Turk reverses this relationship; the machine becomes the processing center of the cognitive system extending toward individual human minds. This configuration creates a systemic contradiction to the main aspect of the cognitive apparatus that creates cognitive diversity, which holds all the real value.

## 6. Conclusion

If the digital network is the assembly line of cognitive labor, then the Mechanical Turk is its model apparatus. As the network shifts the object of control from working bodies to collective minds, the Mechanical Turk achieves this objective by foreclosing the mode of collective cultural production to cognitive

workers and confining them within the legislative, temporal and cultural states of exception. Crowdsourcing, as exemplified by Mechanical Turk, serves at the liminal zone of the neoliberal system of exception by guarding the flows of cultural formations between global South and the global North, or the crowds and the “multitude.”

Amazon Mechanical Turk fulfills its function by dividing the cognitive tasks into discrete pieces so that the completion of tasks are not dependent on the cooperation of the workers themselves but, organized from outside by Information and Communication Technology (ICT) industries. By eliminating cooperative aspect of cognitive work, labor power becomes a “variable capital” as it creates value only after the activation and organization of the capital regenerated by and for Western ICT industries.

As a result of the fragmentation of cognitive tasks, crowdsourced workers not only produce the desired information for the task algorithm. They are, in turn, produced by the algorithm, disciplined by its process flows into a particular mode of cognitive processing and problem solving that eventually determines the efficiency of their labor and thus their livelihood. This effect becomes more significant when we consider the fact that the processes that require the fulfilling of tasks by means of Mechanical Turk system are mostly the culture producing algorithms that constantly feeds the production/consumption cycle of the network economy. This is the source of the system’s innermost paradox, a gradual reduction of the differences that define the economic value of information as a product by approximating the unpredictable

global variety of tastes, expressions, metaphors, and conceptual affinities into a singular cultural ontology of the post-industrial “multitude.”

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Issue: 1. and, Ayteş, Ayhan "Return of The Crowds: Mechanical Turk and Neoliberal States of Exception" in *Unthinking Digital Labor*. Ed. Trebor Scholz, Routledge NY 2012 (forthcoming)



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