Architecture in the Age of Apparatus-Centric Culture

Proefschrift

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PROPOSITIONS

STELLINGEN

These propositions are considered opposable and defendable, and have been approved as such by the promoter, Prof. ir. S. Umberto Barbieri:

Deze stellingen worden opponeerbaar en verdedigbaar geacht en zijn als zodanig goedgekeurd door de promotor, Prof. ir. S. Umberto Barbieri:

1. "Technê" and "poiêsis" refer to the nature of the relations between the constituent singularities. As such, they establish the ecological and material *binding* of the aggregates in both formal and substantive modalities of architecture.

"Technê" en "poiêsis" verwijzen naar de aard van de relaties tussen de samenstellende eigenaardigheden. Als zodanig vormen zij de ecologische en materiële binding van de aggregaten in zowel de formele als substantieve modaliteiten van architectuur.

2. Architecture is neither autographic nor authorial in the sense of the singularity such terms may indicate, and cannot be evaluated as such. Rather, architecture has come to denote the *contingencies* that are composed of relational encodings, thus thoroughly *allographic*.

Architectuur is noch autografisch noch terug te leiden tot de maker in de vorm van een eigenaardigheid die deze termen kunnen betekenen, en kunnen dus niet als zodanig worden geëvalueerd. Architectuur heeft thans eerder de functie de eventualiteiten aan te duiden die uit relationele coderingen van een grondige allografische karakter bestaan.

3. The potential of the algorithmic encoding, codification, and affectation in architecture lies in its very capacity for *allopoiesis*, rather than augmenting, expanding, and reinforcing the appearance of the regime of authorial totality.

De kracht van de algoritmische codering, codificatie en gekunsteldheid in de architectuur ligt in haar mogelijkheid tot allopoiêsis, eerder dan in een manier die het uiterlijk van het regiem van de makers totaliteit versterkt, vergroot of doet toenemen.

4. Architectural composition is an assemblage of *unstable* mediations, of which the tectonics is disjointed and discrete, yet entangled in a series of dependences. The concept of unstable mediation indicates and underscores the *volatility* of authorship and authenticity. The discursive fragmentation and reconstitution of the assemblage become more graduated and explicit.

De architecturale compositie is een assemblage van onstabiele bemiddelingen, waarvan de tektoniek is ontwricht en discreet en tegelijkertijd verward is geraakt in een reeks van afhankelijkheden. De notie van onstabiele bemiddeling verwijst naar en onderstreept de lichtzinnigheid van het auteurschap en de authenticiteit. De discursieve fragmentatie en reconstitutie van de assemblage worden meer gradueel en toch expliciet.

5. In contrast to the smooth spatialization of surface unity, the algorithmic apparatization, encoding, and codification of architectural composition consist of persistent *slippages and displacements*, which take place in the parsing, transposition, reconstitution, and remediation of the *intermodal* content inherent in the languages of algorithmic encoding and codification.

In tegenstelling tot een gladde ruimtelijk definitie van een oppervlakkige eenheid bestaan algoritmische apparatisatie, codering en codificatie van een architecturale compositie uit volhardende en weerbarstige verschuivingen en verplaatsingen die plaatsvinden door ontleding, transpositie, reconstitutie en remeditaties van intermodale inhouden die inherent zijn aan de talen van algoritmische codering en codificatie.

6. Algorithmic apparatuses, encoding, and codification in architecture do not simply serve as extensions of compositional capacities and affectation, but also as fundamental *reformations* of the compositional logic that is simultaneously autonomous and contextually variable, in relation to subjectivity.

Algoritmische apparaten, codering en codificatie dienen niet eenvoudigweg een uitbreiding van de compositorische mogelijkheden en affectatie, maar eerder fundamentele hervormingen van de compositorische logica die opeens autonoom en contextueel variabel is in relatie tot de subjectiviteit.

7. Algorithmic processes in architecture do not simply denote the manner of *presentation* or style, but the discipline's incorporative capacities. They embody autonomic potential that consists of extra-somatic material content that indexes the concurrent processes with which the architectural assemblage is to be imbued.

Algoritmische processen in architectuur geven niet eenvoudigweg betekenis aan de wijze van presentatie of stijl, maar van de in de discipline ingebouwde mogelijkheden. Zij belichamen autonome krachten die uit extra-somatisch materiaal bestaat dat dient om de gelijkluidende processen aan te wijzen die in een architecturale assemblage worden opgenomen.

8. Phantasmagoric tendencies of mediatized and mediative architecture of algorithmic affective apparatuses further undermine the vestiges of architecture's disciplinary identity.

Fantasmagorische tendensen van architectuur die bemiddeld wordt in en door de algoritmische affectieve apparaten ondermijnt bovendien de gemeenplaatsen van de disciplinaire identiteit van architectuur.

9. The affective instantiation and presentation in phantasmagoric architectural work, the purpose of which is neither critique nor reform, are emblematic of excess, and reinforce the dominant dispositif.

De affectieve verwerkelijking en presentatie in fantasmagorisch architecturaal werk, die noch het doel heeft om te kritiseren noch om te reformeren, is emblematisch van de buitensporigheid en versterken het dominerende dispositief.

10. Encoded architecture of environmental mediation articulates the *convergence* between the human necessity for dwelling and affective desires, and among the ontic relations of environmental entities.

Gecodeerde architectuur van een op het milieu betrekking hebbende bemiddeling articuleert de convergentie tussen de menselijke noodzaak om te wonen en de affectieve begeerten, en tussen de ontische verbanden van milieueenheden.

[Nederlandse vertaling door Herman van Bergeijk]

Abstract

This thesis examines the conception and composition of architecture, and the position of architectural presentation and denotation in the context of digital technology and mass media. It positions architectural composition within the technological events at the beginning of the 1990s, when personal computers and software became widely available, and the World Wide Web (W3) standards established the Internet as the predominant technology for society and culture at large, as well as business and commerce. It aims to explicate how digital technology intervenes in the disciplinary practice of architecture, with its algorithmic processes as an independent, substantive, discursive layer that superimposes its own distinctive logic and operative modalities, in contrast to the ideal of technology being transparent and invisible. It confronts digital algorithmic technology as a means for both extending and optimizing human physiology, and interjecting compelling discursive capacities. Thus, this thesis theorizes about the "apparatus-centricity" in the conception and composition of architectural work.

This thesis takes Michel Foucault's concept of the *dispositif* as a point of departure, and connects it to Martin Heidegger's *Ge-stell*, and to Gilles Deleuze's and Felix Guattari's concepts of *nomadic smooth spaces* and *assemblage*. In this thesis, Foucault's dispositif designates a conceptual device of strategic rationality, distinct from "apparatus," its common English translation. Instead, in this thesis, the term "apparatus" designates the aggregate technics and instrumentation that augment and empower "dispositif." This thesis employs the term simultaneously with "dispositif," in order to present a concept-technic conflation as fundamental to discursive formation through digital encoding (algorithms), instrumentation (devices), and deployment (networks). This conflation helps explain how the digital software-hardware binding is deployed, and serves to create, augment, and enforce the strategies of the dominant power regime.

This thesis presents and appraises specific historical examples in music and musicology as appropriate precursors to that which has transpired in architectural conception and composition, with regard to digital dispositif and apparatus. However, this thesis neither compares, nor advocates a comparison, between music and architecture as disciplines at large. Rather, this thesis proposes that the historic, transformative technologies in musical composition and production since the mid-nineteenth century help to explain how technology influences the discourse of architecture. This thesis also relies on technology and media theory to help underscore how technological inventions have transformed the disciplinary perspectives of architecture. This thesis posits that, in the twentieth

century, technology not only provided decisively avant-garde impetuses, but also intensified affectation and commodification. This thesis seeks to demonstrate the substantive influences of technological apparatuses and encoding on the conception and composition of architecture.

This thesis argues that since the 1990s, digital algorithmic apparatuses have fragmented and parsed the presentation of architectural discourse, and reconfigured the aesthetic content in such a way that it has radically diverged from the historical, canonic conventions. The primary concern is how the conception and composition of architecture have been decoupled from the direct, sensuous engagement by the architect. This thesis contends that this condition has intensified the vision-centric mode of architectural discourse, and that the new layers of digital algorithmic apparatuses assert their own particular reflexivity, which intervenes substantially in the architect's autographic authority.

This thesis attempts to reassess the dominant influence of algorithmic, data-based, digital technology, by reaching beyond the developmental optimism inherent in the allure of new technology. This thesis argues that, in architecture, algorithmic digital technology is no longer solely technical and efficient; digital algorithmic technology serves a decisive role in the conception and composition of architecture in various affective modalities, in equally various *dependencies* and *entanglements*. In this regard, this thesis aims to demonstrate that in architectural composition, digital algorithms and databases prove increasingly decisive in a way that represses aesthetic alterity, and augments the dominant political and economic dispositifs.

This thesis criticizes the way in which the architectural discipline's embrace of formal and presentational apparatuses appears to regress to fetish, and the cult of affectation and personalities that stifles the crucial perspective that architecture should accommodate a cultural heterogeneity and its milieu. Ultimately, this thesis theorizes that the apparatus-centric processes are intimately aligned with the dominant dispositifs, and what they may contribute to the conception and composition of architecture, in order to help reform the discipline's discursive practice, embedded in the radicalization of technology.

Samenvatting

Dit proefschrift onderzoekt de conceptie en compositie in de architectuur, en de positie van architectonische presentatie en denotatie, in de context van de digitale technologie en populaire mass media. Het thema van de architectonische compositie wordt binnen de technologische ontwikkelingen aan het begin van de jaren negentig geplaatst. Een tijdsperk waarin de PC en software universeel beschikbaar werd, en waarin het Internet door de World Wide Web (W3) standaard de dominante technologie binnen de gehele cultuur en samenleving werd, alsmede binnen de handel en het bedrijfsleven.

Het proefschrift beoogt te verklaren hoe de digitale technologie, met haar algoritmische processen, ingrijpt in de architectonische beroepspraktijk door een zelfstandige en onafhankelijke discursieve laag, (gekenmerkt door een eigen logica en functionele modaliteit), over de orde van deze praktijk te leggen. Dit is in tegenstelling met het ideaal dat technologie transparant dient te zijn en op de achtergrond zou moeten functioneren. Algoritmische, digitale technologie wordt niet alleen beschouwd als een middel dat de menselijke fysiologie uitbreidt en maximaliseert, maar dat ook boeiende discursieve middelen toevoegt. Dit proefschrift poogt derhalve het "apparaat-centrische" binnen de conceptie en compositie van architectonisch werk te theoretiseren.

Als vertrekpunt gebruikt het argument in het proefschrift Michel Foucault's concept van het dispositif, welke wordt verbonden met Martin Heidegger's Ge-stell, en met de nomadic smooth spaces en assemblage concepten van Gilles Deleuze and Felix Guattari. In het proefschrift wordt met Foucault's dispositif een conceptueel construct van methodische rationaliteit bedoeld, dit in onderscheidend tot "apparatus", de gebruikelijke Engelse vertaling. De term "apparaat" duidt in dit proefschrift op het samenstel van techniek en instrumentatie dat het "dispositif" versterkt en ondersteunt. Het argument gebruikt de term simultaan met "dispositif" om een samenvoeging van concept en techniek te formuleren als fundamenteel voor de discursieve formatie door middel van digitale codering (algoritmes), instrumentatie (apparaten), en uitvoering (netwerken). Deze samenvoeging helpt zodoende om te verklaren hoe de digitale software-hardware connectie wordt ingezet om de strategieën van de dominante machtsstructuren te creëren, te vergroten en te versterken.

Het proefschrift presenteert en evalueert specifieke historische voorbeelden in de muziek en musicologie als toepasselijke voorlopers voor wat later plaats zou vinden in de architectonische conceptie en compositie met respect tot digitale dispositif en "apparaat". Desondanks wordt muziek en architectuur in het proefschrift niet met elkaar vergeleken, noch wordt hier een vergelijking tussen de disciplines muziek en architectuur an sich gepropageerd. Daarentegen wordt als these voorgesteld dat de historische en transformerende technologieën die sinds het midden van de negentiende eeuw in de muzikale compositie en productie zijn toegepast helpen bij het

verklaren hoe technologie het discours in de architectuur beïnvloedt. Verder rust de these ook op technologie en media theorie, om zo te onderstrepen hoe technologische uitvindingen het perspectief binnen de architectonische discipline hebben getransformeerd. De these stelt dat in de twintigste eeuw technologie niet alleen voor nadrukkelijke avant-garde impulsen heeft gezorgd maar ook de identificatie met beelden en consumptiegoederen heeft geïntensiveerd. Het argument beoogt hiermee de onafhankelijke invloeden te demonstreren die technologische "apparaten" en codering hebben gehad op de conceptie en compositie in de architectuur. Het beargumenteert dat digitale algoritmische "apparaten" sinds begin jaren negentig de presentatie van het architectonisch discours hebben gefragmenteerd en ontleed, en de esthetische inhoud op een zodanige wijze hebben gerecombineerd, dat een radicale divergentie met de historische en canonieke conventies is ontstaan.

De hoofdvraag is hoe de directe zintuiglijke betrokkenheid van de architect en de conceptie en compositie van de architectuur van elkaar zijn losgekoppeld. Het proefschrift betoogt dat deze conditie de nadruk op het visuele aspect binnen het architectonisch discours heeft geïntensiveerd, en dat de nieuwe lagen van digitale algoritmische "apparaten" een bepaalde wederkerige relatie afdwingen die diep ingrijpt in de macht van het handschrift van de architect. Het proefschrift poogt de dominante invloed van algoritmische, digitale technologie te herevalueren, door verder te reiken dan het optimisme dat gepaard gaat met het ontwikkelen van nieuwe technologie en de aantrekkingskracht en verleiding die hier meestal van uitgaat. Er wordt beargumenteert dat algoritmische digitale technologie in de architectuur niet langer louter technisch en efficiënt is; maar dat digitale algoritmische technologie inmiddels een sleutelrol heeft in de conceptie en de compositie van de architectuur, dit in verscheidene affectieve modaliteiten en verschillende dependencies en entanglements. In dit verband poogt het proefschrift aan te tonen dat digitale algoritmen en databases in toenemende mate beslissend zijn voor de architectonische compositie, en dat dit plaats heeft op een manier die afbreuk doet aan esthetische verscheidenheid (alterity), en dat het uiteindelijk de dominante politieke en economische dispositifs versterkt.

Het proefschrift levert de kritiek dat de omarming van het formele en representatieve apparaat door de architectonische discipline ogenschijnlijk leidt tot een verval in affect, fetisj en persoonlijkheidcultus die in tegenspraak is met de fundamentele opvatting dat architectuur culturele heterogeniteit en diverse sociale milieus hoort te ondersteunen. Uiteindelijk theoretiseert het proefschrift dat apparaat-centrische processen nauw gelieerd zijn aan de dominante dispositifs, en dat het vermogen om te kunnen bijdragen aan de conceptie en compositie van de architectuur, om daarmee de discursieve praktijk van de discipline te transformeren, besloten ligt in een radicalisering van de technologie.

[Nederlandse vertaling door Thomas Wensing]

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Notes on Key Terms

Alterity

The thinkers who contributed to the concept of alterity include Walter Benjamin (by way of mimesis and empathy with the other),[1] Roger Caillois (by way of mimicry and camouflage as convergence),[2] Emmanuel Levinas (self-transcendence),[3] and Michael Taussig (through the figures and instruments of the dominant power).[4] The concept of alterity in them shares one crucial point in common: alterity designates the discovery and affirmation of selfhood by relating to and incorporating the *otherness*.

Benjamin speaks of the self in the resemblance one discovers in children's play[5] and in the fleeting reflections of strangers on the arcade (*die Passage*) windows. The reflection of others brings about mimesis, empathy and alterity. It defines the moment of self leaving in search of and remembering the others. For Levinas the face of the other and how such moment of encounter with the other's face defines the self that ventures beyond, transcends. Caillois speaks of mimicry as a means of survival, and describes the convergence with the other through camouflage. Taussig speaks of the Cuna people who relate to and produce the figurines of the white occupiers: by deifying the other, they wish to gain the other's magical power: alterity is fundamental to magic.

The term "alterity" in this thesis emphasizes the position of a "medium" and "mediation" that helps transcend and pursue what may be possible. It is crucial to note that Benjamin, Levinas and Taussig share and speak of a medium, a mediative role that motivates the self (Levinas's "I"[6]) to spring out of its own enclosed world. More specifically, in aesthetic terms that concern this thesis, alterity designates the otherness in and through technological media, agents, and the *face* that helps us to imagine what may lie and be possible beyond our ipseity. In comparison to Levinas, Derrida asserts that alterity necessarily includes *impossibility*, now and perhaps ever.[7]

For this thesis, it is crucial to situate the concept of alterity in a technological context where various sensory technologies greatly expand the human capability of alterity in time and place, while they can be also used to obscure, suppress and quash it.

Dispositif and Apparatus

Larousse dictionary of French defines *dispositif* as follows (my numbering):

> 1. Ensemble de pièces constituant un mécanisme, un appareil, une machine quelconque: Un dispositif d'alarme.
>
> 2. Ensemble de mesures prises, de moyens mis en œuvre pour une intervention précise: Un important dispositif policier a été mis en place.
>
> 3. Partie d'un acte législatif, d'un traité ou d'une décision judiciaire qui statue et dispose impérativement.
>
> 4. Partie des conclusions d'un plaideur qui détermine la décision sollicitée par lui.
>
> 5. Articulation des moyens d'une formation terrestre, navale ou aérienne adoptée pour l'exécution d'une mission militaire. [8]

The definitions 1 and 2 emphasize the collectivity (*ensemble*) of instrumental means (*moyens*) for a specific purpose (*une intervention précise*). The definitions 3 and 4 denote legal, judiciary elements (*statue et dispose*; *plaideur*) that deal with something crucial/imperative (*impérativement*). The definition 5 denotes military mobilization in different means of transportation (*moyens d'une formation terrestre, navale ou aérienne*; see "intermodality" below).

In *Dispositif: Webster's Timeline History 1588-2007*,[9] the usage examples of "dispositif" until the end of the nineteenth century cite mostly legal and political instances.[10] Following the industrialization of the nineteenth century, "dispositif" appears to be used to mean a mechanism, an apparatus and a machine (in accordance with the above definition 1) in a general sense, and to indicate compound machines and instruments, especially those that measure and perform specific, precise functions (i.e. the definitions 1 and 2 above). The entries since the 1990s also include procedural or regulatory examples.[11]

This thesis relies on the concept of "dispositif" by Michel Foucault[12] that concerns the universals, the institutions of power and knowledge (e.g. hospitals, schools, prisons, military, etc.) that express, perform and enforce certain functions under socially and politically sanctioned mandates. Foucault claims that a dispositif creates its own new "rationality" and addresses "urgent needs."[13] This thesis will treat rationality as central to the understanding of a dispositif.

In relation to "dispositif," this thesis will employ a parallel term, "apparatus" (*appareil*) to indicate technical and structural organization, akin to the bureaucratic organization of Weber's

three fundamental social organizations.[14] This thesis treats apparatus as bureaucratic, as being most pertinent to dispositif because it would require apparatuses in order to implement and enforce the rationality and needs of the dispositif most effectively through highly functional bureaucratic organization, rather than through charismatic or traditional ones. Even though the Foucault's dispositif has been widely translated into "apparatus," this thesis uses both dispositif and apparatus in parallel in order to indicate two crucial sides of a dominant power: dispositif designates the strategic, conceptual dimension of the dominant power; apparatus designates the mechanistic, operative side of the same dominant power. Employing apparatus in parallel with, not as a replacement of, dispositif was based on the readings of Foucault's use of the term "dispositif" by Paul Rabinow[15] and Stuart Elden.[16]

Codification

The term originates from the legal terminology. As a point of departure, this thesis relies on the concept and purpose of codification proposed by Jeremy Bentham, the eighteenth century English jurist and legal scholar, whose Panopticon Foucault cites as the exemplary apparatus of the modern power dispositif. Unlike the common laws that descend from the traditional conventions and socially accepted practices, Bentham claims that codification offers the more rational approach in which all the rule of a society can be laid out, organized and connected with one another in order to form a more comprehensive and effective legal system.[17] Seen in this historical context, codification is abstract and formal. It is also rational and totalizing as it attempts to transcend the burden of traditions and historical conventions by treating the laws in a collective as texts that can be revised, amended, and when necessary, repealed and discarded.

This thesis applies the notion of codification beyond the legal disciplines in order to examine the relationship between alterity and dispositif. It also applies to the present algorithmically encoded digital machines as they become social and widely connected. In the sense that the programming languages follow specific order and sequence of operations and data definitions, they are seen as codifying. That is to say, unlike the human languages in which individual words mean something within and without the sentences, the semantic elements in programming languages are by and large non-functional without the contexts and other relational elements within the flow of the given algorithm. In short, if one doesn't follow the specific sematic and syntactic rules and format, including the punctuation, the algorithm becomes non-functional. Thus, this thesis adopts the term codification to mean the rules, protocols, standards, and specifications that influence and determine

the functionality of wide, heterogeneous territories.

Intermodality

The term has been used in psychology to indicate, for example, how different senses relate to one another and register stimuli as pleasant or unpleasant.[18] The term is also used in transportation and logistics.[19] In this thesis, the term indicates the technical capability to produce, distribute and present media contents on various classes of devices in a consistent manner. For example, if a video clip can be played on a television, a computer screen and a telephone, it is an intermodal content. If a device can receive and transmit various media contents (i.e. music, video, text, etc.), it is an intermodal medium. On the other hand, for example, in a paperback novel, neither the content (the story) nor the medium (the paper) is intermodal. In this case, for the content and the medium to be intermodal, they must be processed by appropriate, intervening apparatuses. The pages must be scanned or photographed; stored on a digital medium; and formatted for a display screen or to be read using a computer program. The book can also be read by a person, and the reading must be recorded and stored in a distributable medium, such as a cassette tape, a compact disc, or a sound file such as .MP3 or .WAV that will then be played for listening using an appropriate device.

In the evolution of media devices, therefore, today's so-called smart phones represent the most intermodal kind: one can use it to call someone, watch a video, listened to music, look up and find a way to a place on a map, send and receive an email, and so forth. In order to turn media contents intermodal, both hardware and software must be designed according to specific standards, such as the W3 Standards,[20] and facilitated by various programming languages specifically intended for intermodality, most notably, HTML, XML and Java.

Mediate, Mediative, Mediatize, Remediate and Mediatic

In this thesis, "mediate" is used in its common lexical senses, emphasizing the intermediary or intervening role, to mean "acting through an intervening agency."[21] "Mediative" indicates the adjective of "mediate."

The Oxford Advanced American Dictionary defines "remediation" as "the process of improving something or correcting something that is wrong, especially changing or stopping damage to the environment or helping school students who are slower at learning than others."[22] It is related to "remedy" and denotes a process of seeking relief or repair. Despite the problems inherent in

deviating from the establish definition, in this thesis the word denotes "re-mediate," that is, "to mediate again through secondary (and subsequent) agents." It is used to indicate a situation such as, for example, when a painting is photographed, printed on paper, and the paper photograph of the painting is then digitally scanned for display on a computer monitor screen. Here, the digital scanner and the monitor screen are seen to "remediate" the painting from one medium (the photograph) to another (the digital picture file that is displayed on the screen).

Merriam-Webster Unabridged Dictionary defines "mediatize"[23] as a transitive verb to mean to "annex (a state) to another" and/or to "make instrumental or subordinate." As an intransitive verb it means "to act as mediator" or "to become a mediate vassal of the Holy Roman Empire."[24] In this thesis the word is used solely as a transitive verb in relation to "dispositif" and "apparatus" to mean, "to make instrumental" and/or "to act as mediator."

"Mediatic" is not lexically defined. In this thesis it indicates an adjective of "media" to denote "behaving *like,* or possessing and/or sharing the qualities of, (mass) media."

Notes

1 Walter Banjamin, *Reflections: Essays, Aphorisms, Autobiographical Writings,* (New York: Schocken Books, 2007): 333-336

2 Roger Caillois, "Mimicry and Legendary Psychasthenia" trans. John Shepley, October, Vol. 31 (Winter, 1984), pp. 16-32.

3 Emmanuel Levinas, *Alterity and Transcendence* (New York: Columbia University Press, 1999)

4 Michael Taussig, Mimesis and Alterity: A Particular History of the Senses (New York: Routledge, 1993)

5 Banjamin, 2007. See also Susan Buck-Morss, *The Dialectics of Seeing: Walter Benjamin and The Arcades Project* (Cambridge: MIT Press, 1991): 262-279.

6 Levinas, 1999. See also Emmanuel Levinas, *Totality and Infinity: An Essay on Exteriority* (Pittsburgh, PA: Duquesne University Press, 1969)

7 Jacque Derrida, "White Mythology: Metaphor in the Text of Philosophy" trans. F. C. T. Moore. New Literary History, Vol. 6, No. 1, On Metaphor (Autumn, 1974): 5-74

8 http://www.larousse.fr/dictionnaires/francais/dispositif/25960, accessed 26 Nov. 2013

9 Philip M. Parker, ed. *Dispositif: Webster's Timeline History 1588-2007* (San Diego: ICON Group International, 2009)

10 Ibid. 5.

11 Ibid. 16-30.

12 Michel Foucault, *The Confession of the Flesh,* ed. Colin Gordon, trans. Colin Gordon et al. In *Power/Knowledge Selected Interviews and Other Writings* (New York: Vintage Books, 1980): 194-195.

13 Ibid.

14 Max Weber, *The Theory of Social and Economic Organization* (New York: The Free Press, 1964)

15 Paul Rabinow, *Anthropos Today: Reflections on Modern Equipment* (Princeton: Princeton University Press, 2003): 49-55.

16 Stuart Elden, Mapping the Present: Heidegger, Foucault and the Project of a Spatial History (London: Continuum, 2001, Kindle edition): Loc. 1727-1745.

17 Jacques-Alain Miller, "Jeremy Bentham's Panoptic Device," trans. Richard Miller, October, Vol. 41 (Summer, 1987), pp. 3-29; Francis M. Burdick, "A Revival of Codification," Columbia Law Review, Vol. 10, No. 2 (Feb., 1910): 118-130

18 One of the earliest examples I could find was, Albert J. Harris, "Affective Contrast between Modalities" The American Journal of Psychology, Vol. 44, No. 2 (Apr., 1932): 289-299. (http://www.jstor.org/stable/141482, accessed 23 Nov. 2013)

19 A simple search query will produce countless studies on this subject matter. The Merriam-Webster online dictionary defines "intermodal" as "being or involving transportation by more than one form of carrier during a single journey," and locates the first known use in 1963. (http://unabridged.merriam-webster.com/unabridged/intermodal, accessed 23 Nov. 2013)

20 See http://www.w3.org (Accessed 23 Nov. 2013).

21 http://unabridged.merriam-webster.com/unabridged/mediate, accessed 23 Nov. 2013.

22 http://oaadonline.oxfordlearnersdictionaries.com/dictionary/remediate#remediation__2, accessed 26 Nov. 2013.

23 Neither the Cambridge nor the Oxford dictionaries list "mediatize." The American Heritage Dictionary of the English Language defines the word: To annex (a lesser state) to a greater state as a means of permitting the ruler of the lesser state to retain title and partial authority. (http://www.ahdictionary.com/word/search.html?q=mediatize&submit.x=49&submit.y=14, accessed 26 Nov. 2013)

24 http://unabridged.merriam-webster.com/unabridged/mediatize, accessed 23 Nov. 2013.

Introduction

The themes of this thesis partly originate in a purely personal interest in improvised music such as jazz, which arises from physical participation and performance, rather than initiated by formal composition. The themes have come to suggest the compositional instruments that are used in architecture and have been often compared to those in composed music: notations, diagrams, drawings, specifications, and so forth. In regard to improvisation and non-conventional notations, what compelled composers and musician to challenge and to disrupt the conventions of composition that lasted a thousand years? Is a notation system a technology? What is the relationship between abstract composition and the immediacy of physical performance unmeditated by composition? What is the role of technology, and of the technological production of discourse and practice in architecture? What do we make of the historical conventions and orders in such technology-driven discursive environment in relation to the body itself? Is the disciplinary discourse viable without technological agency and conformity?" For that matter, has technology become the discourse?

This thesis traces instances of architectural conception, composition, and performance relationship in the context of mediating technologies, beginning with the modernist period in the early twentieth century. In this general framework, the concepts of apparatus and codification emerged as central to how we understand, evaluate, and critique the composition and performance of today's architecture. Several instrumental ideas and concepts existed in the twentieth century, which explain how the conception and composition of architecture may be seen to share relevant parallels with specific moments of music and musicology. Our access to and experience of architecture, in a similar manner as of music, appear predominantly apparatus-centric. Each apparatus is constructed around a specific codification system that renders such information and knowledge in a particular way.

Codification is closely tied to the development and proliferation of technological, especially the digital, apparatuses such as personal computers and the Internet that have become pervasive and intimate. The encoding and codifying systems emerging from this recent technology primarily consist of not only classifying and managing the desirable and the undesirable, but also more importantly of creating a pragmatic agent that is determinative of its abstract rationality and exchange value of *experience* as a product. In this context, encoding and codification of apparatus indicate a larger infrastructure that interconnects and accumulates a comprehensive range of situations and applications, most notably a collective of digital algorithmic processes as a new cognitive agent.

The relationship between codification and the logic of algorithmic technologization is embodied in the roles classified by the codification-apparatus combination that exists in various systems of the contemporary culture. In this sense, the context of apparatization and codification of music, for example, include such wide-ranging historical polarities as Guido D'Arezzo's reformation of the musical notation system around 1020 AD as an extra-mnemonic device that augmented the inherited conventions of music;[1] RCA's invention of music synthesizers in the early 1950s (purely electronic modulation of sine wave signals); and the implementation of digital media file standards (e.g. .mp3, .mp4, .wav, etc.). In the case of the file format standards, they have de facto codified and determine the viability of the content, just as the printing, the collective of the printing press and the paper, eventually did for literature and the written language at large. The standardization of file formats may also include data compression to reduce file size, further facilitating transmission and dissemination over a broad scope and at a great speed.

Architecture incorporates representational conventions that have evolved over centuries, namely the orthogonally projected drawings of plans, sections, and elevations, as well as the perspective drawings that geometrize vision. Such conventions of architectural composition not only date back to the time of the Vitruvian triad (*utilitas*, *firmitas*, and *venustas*; plans, sections, and elevations, respectively), but also initiate the authorial construct, found in such treatises of architecture by Alberti, Sangalo, Filarete, Palladio, and so on, leading to present. Such treatises form the canon of the discipline, standardize the conception of architecture, and establish the discursive context from which architectural compositions could be derived.

Against the backdrop of the canonic history, this thesis aims to trace how technological inventions and discoveries since the mid-nineteenth century unsettled the codex of architectural canons, and to speculate on the conception and composition of architecture as discursive practice in light of the technological condition of digital algorithms. This aim leads to the emergence of reproduction technology and mass-media, and to the way in which digital technology initiated the transformations of architectural conception and composition. The thesis seeks to demonstrate that the architectural discipline now includes the practice of highly affective presentation, from which emerges a new class of specialization and expertise in digital algorithmic technology.

In the general stream of canonizing historical tendencies, digital encoding and codification do not simply refer to algorithmic sequences and procedures, but rather an overarching conceptual and operative logic in the development of apparatuses that have both pragmatically and theoretically

unsettled the inherited assumptions of the discipline. Such unsettling effects already occurred in architecture since the pervasive deployment of algorithmic encoding technologies. Architecture today must be viewed in terms of its new, underlying layer of codification systems, rather than in terms of its representational or significative capacities, which refer to a certain finality that may profess a certain presumed essence or truth.

The consequences of the techniques resulting from new apparatuses concern the very nature of the relationship between the cerebral intent of a composition and the reality of physical labor, the performance. In this process, what separates architecture of the past two decades from their historical precedents is precisely the extent to which the discipline has chosen to include or exclude, and to present or obfuscate, within the realm of theory and practice.

The modernist doctrine of architecture — most notably on the part of Le Corbusier and Mies van der Rohe — attempted to implement a vision in which ideological purity and proportional geometry dominated the discipline within the milieu of industrial capitalism and the metropolis. This marks a pronounced divergence between architecture and music, the practices of which progressed along parallel trajectories until the end of Wagner's time, and the fin-de-siècle Viennese modernism. This periodization of the divergence is based not only on the various new propositions in science and engineering, but also on the work of those who pioneered them in that particular place, at that particular time.

The technological breakthroughs and the emerging new visions that accompanied them stimulated various strands of optimism and ideals. Technology was to usher in a new era and space as the progenitors of change and revolution. However, just as the radical changes brought to music by electronic recording and playback technology reveal, digital technology in architecture today often results in a suppression of alterity and dissonance, deemed undesirable by the dispositifs of the established political and economic agendas. Emmanuel Levinas designates "alterity" as the capacity to relate and refer to the other beyond one's own ipseity, therefore an attempt to connect to what may lay beyond one's own familiar and routinized territories by relating to the other "face."[2] Levinas defines this capacity as a form of transcendence into the otherness.[3]

The role of technology today is positioned in stark contrast to that for the twentieth century avant-gardes who sought to celebrate alterity, and the dissonant unsettling qualities associated with the experience. For them, aesthetic work was inevitably enmeshed in, and even obligated to address, social-political agendas. For the twentieth century avant-gardes, the dissonance of the machines

and the unsettling experience of it provided a mean to approach alterity and to tackle the existing social and political regimes of the time. The new digital technology makes it possible to incorporate various elements that are traditionally far outside its disciplinary realm in a way comparable to the historical avant-gardes. The digital technology in architecture, however, appears to extend and reinforce the modernist architecture that has been thoroughly annexed to the identity of global market capitalism through relentless image making and affective experience. Inherent in the process, the subjects of alterity are appropriated and subjugated, and their dissonant expression is neutralized and eventually suppressed. By means of the new codification afforded by software architecture, the imaging and manufacture of affective experience (or *the spectacle*) increaslingly serve the interests of the dominant dispositifs. As a consequence, such architecture driven by imaging and fabricated experience results in the loss of the critical dimension of the discipline and in the pastiche not only of architecture itself, but also more significantly of the city and the society at large architecture is expected to serve.

By juxtaposing the specific examples from music and musicology framed by digital technology, this thesis seeks to propose and demonstrate the formal and substantive trajectories along which architecture as a compositional discipline has developed, relative to technological impetuses and the ubiquity of digitally driven dispositifs. This thesis also incorporates examinations and critiques of, and propositions for, how one might draw parallels between the codification processes of sound recording and architectural representation, in terms of digital apparatuses and the potentiality of registering contingent variables and dissonant elements in architectonic context and form, especially the ephemeral, momentary occurrences, such as sonic, ambient, and spatial phenomena.

Ultimately, this thesis seeks to reconsider the way in which architecture is conceived, composed, and designed in the age of apparatus-centric culture and its formation. In the process, it presents specific precedents found in recent music and media, and attempts to demonstrate that the kind of techno-centric optimism we see in the contemporary culture at large also pervades architecture. In this argument, this thesis demonstrates that the prevalent deployment of technology not only provides the crucial impetuses for innovation and groundbreaking experiments, but also reinforces the status quo in such a way that the opportunities and potential are buried under the surface of superficial appearance and affectation.

In the past two decades, we have seen countless publications that deal with the role of technology in aesthetic disciplines, especially those of the digital algorithms and networks. The

publications include not only the academic theories of digital technics and media, but also countless publications that explain and instruct the use of the digital technology for daily purposes. What we now regard as media theory owes its beginning to Marshall McLuhan's work in the 1950s and 60s that thrusted the presence of "media" to the frontline of contemporary cultural discourse. The category of *how-to* publications explain and instruct on how to use widely distributed software programs for writing, image creation and manipulations, data processing and search queries, computer networks, the Internet, and so on. The quantity and range of such publications highlight the importance and value of the *soft* skills the new technological environment demands, and how those skills have come to replace a wide swath of conventional manual work.

In the sweeping categories of digital technology for architecture, we have witnessed the technological advances from routine drafting to algorithmic form generation and simulation, and to robotics. The software programs for drafting, the kind that replicates and automates manual drafting, help architects streamline the drawings and documentations of project design, execution, and construction administration. Such programs are primarily designed to replicate algorithmically the drawing and documentation conventions that have been in place for centuries. The generative algorithms and software attempt to provide the so-called parametric capabilities, which enable architects to explore complex geometries that are impossible to conceive by hand sketching and drawing on paper or by building physical scale models. This category of software programs also includes those that were originally intended for filmmaking or scientific visualization, but adopted for formal experimentation in architecture. The still emerging area of robotics, or more generally, of cybernetic[4] technology, attempts to discover the intelligent, autodidactic machines that are capable of autonomous decision making in order to augment and/or replace human manual labor in construction.

The preceding categories converge in what appears to be *apparatus-centric encoding* and *codification* in the conception, composition, and production of aesthetic work, including architecture. This thesis will attempt to address the position of the algorithmic, apparatus-centric processes in the conception and composition of architecture that took place since the early 1990s. In the course of the discussion, the thesis will attempt to address how the digital algorithmic processes present distinctly different aesthetic environment from the historical canons. The historical conception and composition of architectural work, dating back to the Renaissance, relied on the communicative media directly produced by the physical labor of the architect. The drawings and documents of architectural design (*progettazione*) indicate the physical, material manifestation of the architect's idea: I will designate

them as the *corpoindexical*[5] of the architect's cognition. While the corpoindexical conceive of and produce compositional instruments or agents seen as *minimally mediated* proof of the architect's physical action, the formalities of the digital rely on the apparatuses encoded with interconnected instructions and operations that are generative and meant for digital processing machines. The digital formalities require the mediation of encoding and interface for human understanding, while the corpoindexical model indicates the work that is intimate with the body's physical action with minimal cognitive agency and media. Therefore, the corpoindexical involves the physics of corporeal instruments and actions that leave their mark, simply the *scratches*, and inscribes the work in an explicitly visual and haptic way.

The digital apparatization and codification are distinct from the analog: they form autonomous logic, and thus an undeniable presence in the layers of human technics, cognition, and discourse. Therefore, this thesis investigates how imbedded and pervasive the technological apparatuses and their codification regimes are, and how they intervene in the conception and composition of architecture. It illustrates the characteristic tendencies that influence and often prove decisive of the conception, composition, and production of architecture as aesthetic work. It examines and explicates compositional practices in specific historical contexts; the impact of technological apparatuses on the conception and the composition of architecture; the emergence of new forms of codification; and the transformation of compositional practices with regard to encoding and embodiment of the given discipline. In order to illustrate and demonstrate the points, this thesis relies on specific historical examples in music and musicology. Despite the examples from music, drawing certain comparable aspects between the two disciplines, the thesis intends no direct, general comparison between architecture and music. Rather, the thesis draws from and illustrates specific examples in music and musicology in order to exemplify the crucial position of technology in architectural composition that has risen since the wide deployment of the intelligent machine.

The prevalent studies regarding digital technology in architecture can be seen in the following overarching interests: the presentational (i.e. the use computer technology in order to fabricate the images of the design's ideal or *realistic* state); the productional (i.e. how to automate and maximize the *efficiency* of producing functional and instrumental documents for construction; how to employ robotic machines to fabricate/manufacture complex geometries that may not be constructed by human); the processual (i.e. how digital technology helps implement *data-* and *algorithm-driven processes* that generate forms, accommodate programmatic concerns; and simulate the resulting performance); and the regressive (i.e. architecture of the human-centric, rationalist worldview;

emphasis on the disciplinary *autonomy*; positions that profess the pros and cons of the digital algorithmic intervention). In contrast, this thesis examines digital algorithmic technology and media as an intervening layer that consists of its own autonomous, cognitive capacities, not simply as tools, beyond the perspective of instrumentality and agency, for the production of disciplinary discourse. Neither intends this thesis to propagate a polemical position between the analog and the digital. It is concerned not with whether we should choose one or the other, but with what it may mean to be both analog and digital, inseparably bound together.

The contents of this thesis consists of the following primary layers:

1. Michel Foucault's concept of dispositif; encoding and codification of apparatus as the inscriptive doubles of dispositif.

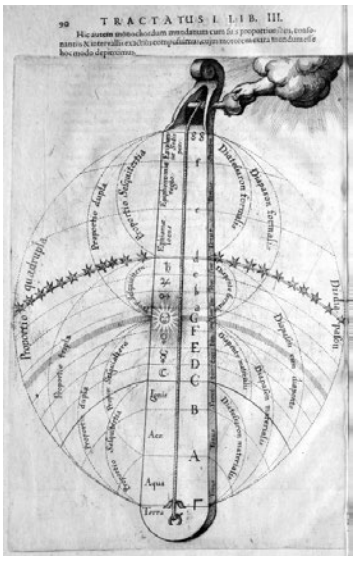
2. The expanded scope of composition and performance that includes contingency, dissonance, and alterity as legitimate constituents of aesthetic work; technological means in order to disrupt and reform the status quo.

3. The pervasiveness of digital algorithmic technology in relation to dispositif, apparatus, and codification, to the process of artistic production, and to the apparatus-centric formation of disciplinary discourse.

4. The codifications systems that separate authorial content and its presentation by means of the algorithmic encoding of aesthetic assemblages.

5. The production of affective experience as the primary ontology of aesthetic discourse in contrast to that of coherent material physical logic.

One of the best-known perspectives on the origins of the proportion and its application to architecture stems from the ancient Greek vision of cosmic tones generated by the celestial bodies, known as *Musica Universalis,* the Music of the Spheres.[6] [Figure 1] The cosmic harmony comprises eight rings turned by the goddess, *Necessity*.[7] These eight rings are subsequently conceived of as an octave scale consisting of seven celestial bodies. Pythagoras envisioned certain harmonic scales based on geometrical proportions, which in turn represented a path for humans to engage in direct dialogue with the gods, by building temples according to such cosmic proportions.[8] For centuries since then, architecture has meant *weaving* together the form and structure that reflect the harmonious cosmic proportions.



[Figure 1] Monochordum Mundanum, Robert Fludd, 1617

In the Western tradition, architecture as proportional composition has evolved to include the kind of conceptual process that relies on formal and abstract instruments denoting the content of the work, thereby describing instructions and conditions for physical presence. When one mentions of architectural composition, one understands it to mean that an architect – an author and composer – assembles together the constituent parts and the structure of the work with particular intent that are denoted in text and graphic form. Thus, in the Western tradition, since the establishment of compositional practice, the heritage of disciplinary contents and conventions has been embodied in media and archives, rather than the body itself. Architectural drawings have come to serve the purpose of conceiving, determining, and instantiating[9] the performance[10] that is to be physically executed, or *realized*. The builders construct the building on-site, section-by-section, relying on the drawings and specifications as instructions authored by the architect. Even though we may regard the constructed work of architecture as an *instance* in very rare exceptions, most architectural compositions, unlike music, are performed once, never to be repeated again. In that sense applying the notion of instantiation to the work of architecture becomes dubious, at best, in order to evaluate the integrity of the composition-performance relationship as such examples of instantiation in architecture are the exception rather than the norm. Such unique composition-performance relationship does not change the fact that a set of architectural drawings and specifications informs the authority behind the work that is to be performed.

Architectural work includes particular compositional instruments, the drawings and specifications that are mediative of the architect's abstract ideas. Above and beyond how crucial the physical construction may be for a given composition, the documents of an architectural composition

instructs a state, preferably ideal, intended by the architect. In other words, the compositional media contain what defines the nature of the work that is supposed to be embodied by the built work, even when indeterminate and contingent parameters form an integral part of the composition. The composition-performance relationship often reveals the elements that may not be fully congruent to one another. And, as architecture relies on the mediative process, it also presupposes the unforeseeable reality of *interpretation*.[11] Depending on the interpretation of the drawings and documents, the builders may choose to deviate from them or even to improvise, in order to deal with the ambiguities or inconsistencies that they believe should be resolved. In certain situations, the builders may simply ignore the architect's instructions, and choose to perform the work based on their own subjective interpretation and/or on the past experience of dealing with comparable work.

Architectural documents include not only drawings that describe the geometries and the relationships among compositional elements, but also specifications and addenda that spell out in writing where those elements come from, what quality of craftsmanship is expected, and to which party responsibilities may be assigned. Therefore, architectural documents also require the builders to follow and interpret the procedures and relationships described in both graphically and verbally. The specifications, legally privileged and enforceable overruling the drawings, and for that reason written in legal language, must be therefore interpreted with regard to what each article may mean, imposing its legal authority on the potential outcome of the performance. And precisely because of such codifying tendencies of architectural documents — that is, the collection of instruments that regulates the work, in terms of both internal and external relations — architects rely not only on the services of professional specification writers, but also on a uniform template that may be adapted to different projects.

Ever since authorship and material-physical construct diverged from one another in architecture, composition and performance have become two distinctly separate domains of practice and expertise. Again, the relationship between composition and performance in architecture is attributable to the mediative nature of the compositional instrument, the drawings and specifications. Since the implementation of architectural projection systems since the Renaissance, the compositional instruments have come to emphasize the abstract potentialities, rather than being handed down in apprenticeship of manual skills or in oral traditions based on the perceived continuity of the history of *what has been*. The modalities of compositional expression, vis-à-vis the substance of the given work, have transitioned from the body (from the master to the pupil) to the media. Therefore, composition has become determinative of the content of the given compositional work, and at the

same time, of the architect as author, thereby bringing about the new class of professionals whose sole work is dedicated to the presentation of content in an abstract and speculative manner through media. On the other hand, the status of an architectural work is primarily judged by the performance, the constructed building, or by the potential thereof. Also, unlike music, painting, sculpture and literature, in architectural composition, the authorial consistency is neither explicit nor solely attributable to one individual author.[12]

A work of architecture is composed and inscribed by a group of individuals from various areas of expertise, the project staff. Even though in architecture we can find lone architects, such as Glenn Murcutt, composing an architectural work involves many other individuals' work than that of the architect himself, such as various engineers and other *experts*, who assist the architect in legal or other operative capacities. For example, the specifications are often written by an expert of legal writing specifically applicable to the construction trade. While architectural drawings are instrumental, they are often also considered aesthetic works in their own right. But architectural specifications are never considered in aesthetic terms, even though they are as crucial as, and may often supersede the drawings in the legal matters, thereby substantively affecting the outcome of a given design.

Therefore, even though we learn of an architectural work through the singular reputation of the architect-author whose name is synonymous with its authorship as such, in fact, the actual authorial content cannot be attributed solely to one single individual.[13] This thesis will argue why such personality-driven architecture no longer exists; how the ontology of architecture should inevitably overcome such singular authorial frame; and how an *allochthonous* position of architectural composition can be augmented by the digital algorithmic apparatuses.

We experience the built work of architecture as spatial, enveloping us with its reverberation, and triggering our sense of sublime in a space that is made to resonate. At the same time, architecture also contributes to ipseity. We share with family, friends, lovers and others the personal space that is sensuous and habitual, the space we consider intimate and intrinsic to our selfhood. Architectural space is composed of material entities that are geometrically delineated, and as such, involve physical perception and the habit of use. To paraphrase Benjamin, it is to dwell in intimately physical "appropriation."[14] Thus, architecture embodies physically shared experience. The embodiment originates in and is defined by the inscription process that is at once cerebral, emotional, and mnemonic, as well as ritualistic and collective.

Ever since the invention of the musical notation system, despite the mediative, instrumental aspect of composition even before the appearance of the recording and playback devices, a musical work has been celebrated and remembered primarily for the composition, precisely because there is more than one occasion or instantiation of performing the work. Primarily due to recording technology, which stores and archives particular performances by particular performers of a given period, certain masterful performances are remembered and celebrated, but only as far back as the late nineteenth century. With recording and playback machines, the performance of music has also diverged into two separate categories, the live performance and the studio production. As a fully annexed part of today's digital *dispositif*, the performance, be it of architecture or music, is a *supposed* finality of the ideas inscribed by the encoding of the work that is yet to take place. The encoding practices rely not only on the larger, codifying regulatory and financial regimes, but also on those that influence the very ontology of each respective discipline. The point is that, in essence, such supposed finalities are designed to emphasize the affective experience as the primary objective in relation to the actual, physical construction of buildings, which is haptic and embodied. In this sense, we may even claim that the very mode of embodying architecture has been changed. The modalities of architectural conception, composition, and experience have also come to diverge in two directions: in one as mediative affectation, and in the other as physical instantiation, where the two do not necessarily reciprocate with one another.

In architecture, the encoding systems of conception, composition, and instantiation have operated through what they refer to and inscribe, in relation to the historical conventions that are both conceptual and technical. Such systems have developed toward the understanding of performance, which has resulted in a radically changed disciplinary practice in the age of digital reproducibility. We see the kinds of mediative and mediatic architectural drawings and models that are themselves the terminus of a given work, independent and regardless of the potential performance, and remain autotelic in their own right. How do we then position the digital apparatus in architecture? What do we make of its uncanny tendency to blur virtual and actual, and subjective and objective? In this process, how do we consider the confluence of the virtual and the actual toward architectural embodiment? What do we make of the historical multiplicity of codification, composition, and performance-production in this regard? Do we need some other type of conception, in order to situate the new technologically codifying regime?

In perspective of converging qualities and diverging rationalities in architecture, this thesis focuses on the conceptual and compositional aspects of the discipline, rather than the

implementation of the compositional instruments for performance. This thesis neither takes for granted the significance of digital algorithmic processes, nor engages in teleological discussions of the preponderance. Put differently, this thesis comprises the themes that pertain to the conception and composition of architecture as a part of extra-somatic cognitive culture[15] that also includes the extra-mnemonic mediations that emerged since the deployment of digital technology and the codification of its algorithmic operations.

In music, the work of composing has been transformed on several fronts. First, the invention of recording and playback devices since the 1860s, and their ubiquitous deployment in the twentieth century made the experience of artificially generated sounds an everyday occurrence.[16] Second, as a consequence of the two World Wars, the locus of authority shifted, owing to the new forms of power structure and ideologies that imposed certain prescriptive criteria on the works' content and presentation.[17] Next, with the emergence of new powers and ideologies destabilizing the old regimes, the modernist avant-gardes attempted to inject social and political imperatives into the historically established idea of autotelic aesthetics.[18] Additionally, arising from techno-aesthetic ideals, the suppositions regarding the role of artistic work and the authority of the historical conventions were challenged.[19] In this regard, architecture also shares with music the techno-aesthetic apparatuses that emerged in the mid-nineteenth century, and their expanding power and influence on encoding have affected the operative logic of the respective disciplines more profoundly than one might take as being simply instrumental and operative.

This thesis is composed of an introduction, seven chapters, and an epilogue that chart the trajectories surrounding the primary layers mentioned above. The first chapter, *Themes on Dispositifs*, sets out to establish the concepts of *dispositif* and *apparatus* in the way Michel Foucault formulated them, on which Giles Deleuze and Giorgio Agamben subsequently elaborated and commented. This chapter tracks the distinguishing elements of *dispositif*; illustrates its conceptual deployment since 1960s; and situates dispositif in relation to the discussions of architecture and its composition. The second part of the chapter revisits the classical understanding of *technê*, and attempts to juxtapose it with the concept of *dispositif*. This includes a brief discussion of Aristotle's *technê* in the *Nicomachean Ethics*, and of Heidegger's analysis of *Ge-stell*, in *The Question Concerning Technology [Die Frage nach Technik]*. This chapter proposes that the convergence of *technê* and *dispositif* provides the foundation for the emergence of digital media since the 1980s, and their dominant aesthetic influence on architectural composition.

The second chapter, *Codification*, first outlines what digital codification may be, and what the most crucial feature of the digital apparatus and of media is. It then illustrates the role of codification that replaces, or at least stands in for, the historical "representation" and its modalities. I discuss the crucial reasons for adopting this particular term in lieu of "representation," and trace key historical ideas and instances. In this historical tracing, we again take Foucault's construct of "dispositif" as a point of departure, and visit his spatializing constructs in relation to power and control. We discuss the characteristics surrounding the notational and graphic instruments with regard to instantiation and determinatives in the digital age.

In this discussion, we consider what constitutes codification, and why and how it is crucial to the understanding of the apparatus-centric processes we experience today. We also discuss the concept borrowed from a historical episode related to Foucault's reference to Jeremy Bentham's Panopticon, and its role in the operation of today's prevailing media. In the process, we will revisit the pertinent hypotheses of Marshall McLuhan and Friedrich A. Kittler, in order to relate codification to digital media. The discussions in this chapter attempt to illustrate and demonstrate the processes and effects of the disruptive nature of new technologies and inventions; how we should view digital media and their cultural manifestation as the expression of the overriding digital codification, and how they are remediated and enfolded into the transformative impetus of the existing dispositif, through codification.

In the third chapter, *Inscriptive Practice*, we examine the idea of discursive formation imbedded in technological dispositifs and codification, as the preceding chapter outlines. We begin with the early twentieth century avant-garde movement, Futurism, and the ideas of its primary proponents, Filippo Tommaso Marinetti and Luigi Russolo, and through other historical instances in which the dispositif–technology–codification triad appears as the primary impetus behind the given discipline's conceptual and compositional practices. The chapter first presents the specific ideals of Futurism, with regard to its machinic warfare aesthetics, and how they proposed the aesthetics of machinic violence (or sublimity, depending on the point of view) as a means of resistance, revolution, and liberation. This chapter establishes the turning point of dispositifs from industrial-machinic to cognitive-algorithmic, and how we may view certain tendencies of the mediative process of aesthetic work toward countering and responding to the encoding and codification of the perceived dominant regime.

The core of the discussion in this chapter involves how the abstract mediation of drawings

and notations has historically come to define the authorial intent of a given work, and thus, inevitably, how such mediative and instrumental modes of practice may be understood in relation to the conditions of the apparatus–technology–codification triad that makes the mediative practice possible in the first place. If we characterize the ubiquitous digital apparatuses as the predominant agents and indices of our cultural expression, it is because of what motivates them, and how they contribute to the formation and reinforcement of dispositifs. I term what drives them the "digital codification," which is decisive, and fundamentally different in our age from those of previous eras.

The fourth chapter, *Dissonance and Resistance*, first focuses on the transformations and shifts in music in the early twentieth century, and then on how such changes redefined the role of dissonant qualities in aesthetic considerations. We will examine and discuss the emergence of dissonance and noise as aesthetic and political resistance, coupled with the idealism surrounding the machine, as the new force for liberation. In such terms, this chapter consists of discussions on changing ideals in both architecture and music, from the closing decades of the nineteenth century to the present day, with its modalities of file types and databases. In this chapter, I also discuss the impact of the new technological apparatuses in their times – photography, phonography, and cinema – and how such inventions have since been appropriated in resistance to the standing dispositif regimes, eventually replacing them with the new ones that are not politically, but technologically encoded and subjectifying.

In the fifth chapter, *Emancipation of Dissonance* (borrowed from Arnold Schoenberg), we will explore and discuss how the pursuit of dissonance and alterity has become the defining tendency of the modernist, avant-garde music that sets the sounds of our age apart from those of previous ones. In this chapter, the central argument is concerned with the key composers of the second half of the twentieth century, the emergence of electronic music, and the development of recording, reproduction, and playback technologies that made virtual music the dominant form of musical experience.

In the second section, we cite three key modern composers, John Cage, Pierre Boulez, and Karlheinz Stockhausen, who pioneered apparatus-centricity in music. They share a period (from the 1940s to the end of the twentieth century), a technological sphere (encoded electronics and reproducibility), and the experimental excursions that run through their approaches to the composition and instantiation of music. In the third section of the chapter we discuss synthetic music and its apparatus-dependent ontology. Synthetic music is not only created with electronic

instruments that require a different set of haptic sensibilities (e.g. turning dials and pushing sliders, as opposed to striking keys or strings, or blowing into a tube), but also in aggregations crucial to the transformation of the musical discipline. The new dimension of musical conception and production began with the phonograph, and led to today's digital media as a condition that is simultaneously fragmented and interchangeable, as well as empowering and subjectifying. The aim of this section is to examine how technology and its media have disembodied the musical experience, and to a large extent dictate the fate of musical instantiation.

In the last section of this chapter on contingency and its potential, we discuss the ideological positions of Guy Debord and Asger Jorn, contrasted with the prevailing dispositif of functionalism. The important point of the discussion in this section is how, for Debord and Jorn, the immediacy of the everyday and of *situations* became a compelling means of resisting and potentially overthrowing the regime of surface spectacle, while the apparatization process of the 1960s intensified on several cultural and aesthetic fronts. I respond by examining the ideological stance against the functionalist regime of the spectacle, and the attempt to render visible the immediacy of urban life by mapping contingencies and random situations, the psychogeography, in order to territorialize an alternative consciousness of liberation.

The sixth chapter, *Architectural Dispostifs*, surveys and illustrates some exemplary cases of architecture in relation to the themes of this thesis, and the changes in the discourse of architecture until the emergence of personal computing power, which began reshaping mediative dispositifs in the late 1980s. The examples in the section consist of three broad phases of twentieth century architecture: Ludwig Mies van der Rohe and Le Corbusier in the 20s and the 50s; Archigram in the 60s, and the culmination of their mediatic agenda with the Pompidou Center, in 1977; and, in the closing part of the chapter, we turn to the discussion of affectation in architecture, citing Robert Venturi and Rem Koolhaas. With respect to Koolhaas, we direct the discussion to filing, databases, augmented space, and embodied virtuality, in relation to the kinds of influences and transformations the digital codification of mediative dispositifs brought to the profession. We discuss the transformation of disciplinary perspectives on architecture, with regard to the periodic tendencies and the technological remediation that were induced by today's digital apparatization.

In the seventh chapter, *Poiêsis of Imbedded Virtuality*, I discuss what an architecture of dispositifs may present in the context of today's apparatuses and codification. We will revisit architecture in the traditional sense of the discipline, and also examine how the apparatus- and data-

driven form of architectural composition has diverged from the historical models we know. One of the key themes of the chapter is the so-called "sustainable design practice," which is exemplified by the realigned relationship between nature and culture in the broadest sense of these terms. At the same time, in this specific area, it is also undeniable to notice the affectation of the discourse diverge from the actual contents.

By evoking environment and ecology, the chapter situates and hypothesizes what the realigned perspective toward Environment, more precisely *Umwelt*,[20] may indicate in architecture, and in its perception as an apparatus. Specific to architecture, this distinction motivates yet another form of apparatus-driven conception of building systems that rely on an understanding of natural principles. In this Environmental thinking, the sustainable design practice also has an affective dimension, projecting politically and economically profitable images, while the actual substance of the prospect of the so-called sustainability of Environment may be obscured by the surface appearance of the affective dispositifs.

Notes

1 John Boe, "Music Notation in Archivio San Pietro C 105 and in the Farfa Breviary, Chigi C. VI. 177," Early Music History, Vol. 18 (1999): 1-45

2 Emanuel Levinas, *Alterity and Transcendence* (New York: Columbia University Press, 1999): 23-26.

3 Ibid. pp. 32-33.

4 Here, the term "cybernetic" indicates Norbert Wiener, *Cybernetics: or, Control and Communication in the Animal and the Machine* (New York: Wiley, 1948), aka "the first order cybernetics."

5 Here I have used the rather contrived term in order to indicate the directly corporeal indexicality that is produced by the use of simple tools such as a hammer or a pencil in contrast to the kind in discussion here, that is, the kind of apparatuses that take effect as a tool only through encoding. Simply put, a hammer or a pencil does not require additional encoding in order for it to be useful because it is simply a technomic extension.

6 Fenia Tsobanopoulou, "Weaving in Polyphony: Destiny, Culture and the Human Condition," in Greek Research in Australia: Proceedings of the 8th Biennial International Conference of Greek Studies, eds. M. Rossetto et al. (Flinders University, Adelaide, Australia, June 2009): 313.

7 Plato, *The Republic*, Book X, trans. Allan Bloom (New York: Basic Books, 1968): 299-300.

8 George L. Hersey, *Architecture and Geometry in the Age of the Baroque* (Chicago: University of Chicago Press, 2000): 26.

9 In music, instantiation means that musicians play the musical composition according to the score, as instructed by the composer, note by note. Each performance is considered an instance because of the subjective variations inherent in the musicians themselves, the venue and the period. Here, the site of the performance may be specific and important in many ways, but not determinative, insofar as whether or not such site specificity is in any way denoted by the score.

10 Hereafter, "performance" indicates built work in the sense that the builders must perform the physical work in order to execute an architectural composition.

11 For example, analogous to music, musicians often resort to their own interpretations of the score, improvising to fill in or embellish the composition as they perform, thereby making each individual performance of a given work unique and different, in terms of who performs the work, and where and when it is performed.

12 In relation to this argument, we can cite the case of Mozart's last, unfinished composition, "Requiem." There exists considerable dispute as to whether or not we can consider the work as authentically Mozart's. We know that his assistant Franz Süssmyer "completed" the composition after Mozart's death. While the question of authorship in the case of Mozart's Requiem is questioned for centuries only because the composition is not entirely Mozart's, in architecture the integrity of authorship is never questioned even when the principal spent only a small fraction of time, simply producing rough sketches. Therefore we can argue that in architecture the authorship is often confused, or to put it mildly, used interchangeably, with copyright.

13 In this position, the architect is comparable to the composer of orchestral music, who, in order to realize a work, must rely on the conductor (the general contractor, if the composer himself is not serving the role) and the musicians (the builders).

14 Walter Benjamin, *Illuminations*, trans. Harry Zohn, (London: Pimlico, 1999): 240.

15 The archeologist Leslie A. White states, "… human behavior is the response of the organism man to a class of external, extra-somatic, symbolic stimuli which we call culture." See Leslie A. White, "Culturological vs. Psychological Interpretations of Human Behavior," American Sociological Review Vol. 12, No. 6 (Dec., 1947): 686-698 (693).

16 For example, the American Gramophone company was founded in 1887, commercializing gramophone cylinders, and through electrical recording technology and the popularity of jukeboxes beginning around 1925 and radio broadcast place music in public spaces. (Attali, 1985: 95)

17 The Habsburg Empire collapsed in 1913, with WWI; the Romanov dynasty in Russia was overthrown by the Bolshevik Revolution in 1917; Germany became a federal republic in 1919; Hitler became the Chancellor of Germany in 1933; WWII 1939–1945; The detonation of the first atomic bomb was in 1945. In other words, the patronage of aesthetic work shifts and takes on different forms, from the aristocratically inherited to the political-industrial. We may cite numerous examples of the avant-garde that arose during this period.

18 For example, see Peter Bürger, Theory of the Avant-Garde (Minneapolis: University of Minnesota Press, 1984)

19 The most vivid examples are Russian Constructivism and the Bauhaus. The former was driven by the newly founded totality of a political-economic utopia, the Soviet Union, and the latter by the alliance of art and industry. This was first effectively demonstrated when AEG, the German industrial conglomerate, commissioned the German architect Peter Behrens to design and implement their corporate identity campaign in 1907. Peter Behrens

also employed Mies van der Rohe, Le Corbusier, and Walter Gropius in their formative years as architects.

20 Here, I indicate the word "Environment" in the species- and/or subject-specific sense, rather than the common usage. In order to reflect the distinction akin to German between *Umwelt and Umgehbung*. The word will be capitalized whenever it is used to mean *Umwelt* as "the world that is perceived by a specific subject, human or non-human" in contrast to the world that is simply *there* carrying no significant meaning for the subject. The word "milieu" will also be also used in places to identify "the world that *influences* the subject."

§ 1 Themes on Dispositifs

1. Overview

If we understand architecture as a discipline of composing harmonies, rules, and orders, one of the most defining issues is the authorial means, just as in musical composition for example. For centuries, in the Western tradition, architecture as well as music developed disciplinary conventions that emphasized the relationship between composition, performance, and instantiation. Composition has relied on signs, symbols, and icons, as well as verbal instructions indicating specific authorial intent regarding a physical instance of the work. While composition is primarily cerebral, performance is corporeal, an actuality through which the authorial intent of a composer or an architect is carried out through physical acts and labor.[1] Through composition and performance, both disciplines imagine, inscribe, and produce habitable spaces that are simultaneously intellectual and emotional. Today there exists the undeniable, ubiquitous dispositif layer of the new digital encoding systems, and therefore, the new apparatus-codification regime offers a new conception and composition of architecture.

In contrast to the historically situated understanding that an architect, a composer, or an artist creates an autonomous world, and that its participants dwell in that world, today our world of dwelling is situated within the logic of the dispositif layer, distinctively positioned in its digital sphere of semiosis. Here too, the idea of dwelling is no longer topographical, of marking-out and occupying geographical territories and spaces. Neither is it any longer an intellectual and emotional inhabiting of an autonomous and creative construction of spatial conditions, of coherent narratives. Rather, the idea of "dwelling" is marked by, and composed of discontinuous, fragmented discourses that are constantly intersecting, stretching, and transgressing the edges of spatial consciousness, that of dispositif assemblage.

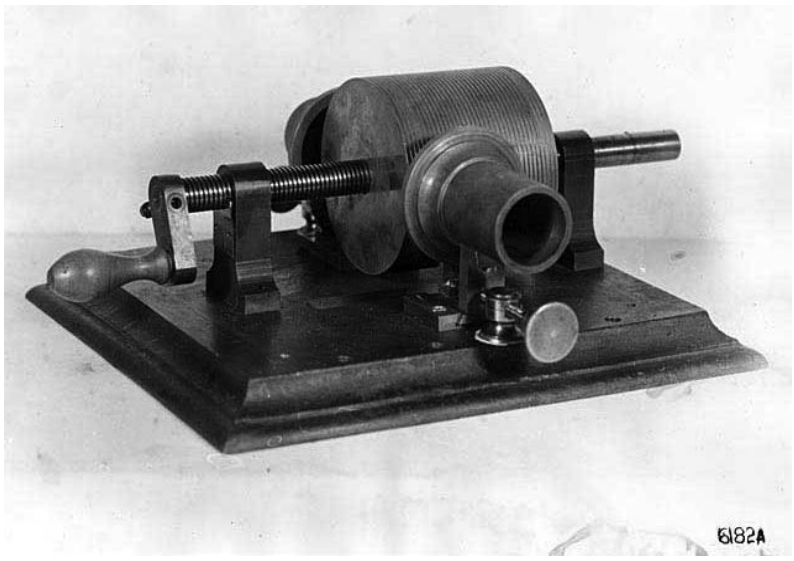
In this context, the development of digital apparatus-centric processes presents a unique situation, where the compositional practice – be it architecture or music involves an extensive formation of technological apparatus and codification that is unprecedented in history. The resulting apparatization is a process by which already existing technological elements are resituated in terms of the strategic instruments and agents. It requires new organizational rules and protocols that define new relations and combinations. This resituating prompts the development of new constructs and logic. Even though such new constructs or logic arising from apparatization may be incorporated in the existing conventions of a discipline, owing to the emergence of a new class of dispositifs and

its operatives, apparatization changes the existing rules and conventions in irreversible ways. This is to say that once a discipline adopts technological apparatuses and their logic construed as such, the practice of the discipline will never revert to the position prior to the technological apparatuses. Therefore, a given technological dispositif dictates the outcome of production and action. The apparatuses intervene as mediation, or may affect the action to the extent that it may be unfeasible to evaluate the production without substantive, in-depth understanding of es apparatus and their codification.

The development of aesthetic apparatus and codification has come to require a fundamental revision of the composition-performance relationship, and ultimately, what it means to conceive and compose architecture, and how its role is defined in an apparatus-centric culture. On the one hand, the term "codification" may be thought of as a set of individual, encapsulated instructions devised toward a certain kind of performance by an apparatus, or in general, as a mediator or an agent, such as architectural drawings to be executed by builders, or music scores to be performed by musicians. On the other hand, codification may also be thought of as the ultimate means for resolving the position or form of that which is left undetermined or deferred. In both cases, codification refers to the instructional and the imperative, and to the assumed participation of what may be termed "executant elements." Therefore, the concept also refers to a certain level of autonomy, and compliance with the instructions that make the apparatus functional and ultimately aesthetic.

Codification also refers to a differentiation regime that consists primarily of classifying and managing the desirable and the undesirable, and more importantly, creating a useful interface that represents the value of a product or a situation. In contrast to an algorithm, which relies on a specific set and sequence of finite procedures in order to develop a certain principle or a generic solution, codification indicates a larger infrastructure that may interconnect with, and accumulate a comprehensive range of situations and applications. Codification addresses wider, pervasive aspects and views of a given society. Additionally, its relationship to the logic of technological inventions and advances is embodied by the roles classified in the apparatus.

The context of codification in architecture includes the conventions that have evolved through successive generations, and circumscribe the production architectural drawings, that is, a set of information and instructions for executing a built object that is authentic to the architect's authorial intent. However, in the contemporary context of media manufacture, the codification of architectural composition consists of multiple layers of interests that include not only the conventional



[Figure 2]
Edison's Phonograph, 1877

construction drawings and documents, but more crucially, the algorithmic process that underlies the application software used in the design work. In the latter case, the codification is envisaged by the advancement of software engineering, and by the resulting regime that often dictates the character of the design, production, and management of architecture. The kind of algorithmic codification underlying a particular software application may determine the finality of architecture as composition.

In music, too, codification include such wide-ranging historical events from Guido D'Arezzo's musical notation system in the tenth century to MIDI synthesizers, and to the latest digital sound file formats (e.g. mp3, mp4, wav, etc.). In this respect, a codification system refers not only to a set of algorithmic steps and procedures, but also to the fundamental patterns in the development of certain apparatuses that have unsettled the established, often historical assumptions and theories of the discipline.

The apparatization of music ever since the invention of the phonograph, [Figure 2] synthesizer, and MIDI foreshadow a condition and behavior of parameters that cannot be expressed by a fixed model of convention and codification because such a model is feasible only within the framework and qualification of this technological micro-hegemony, not outside of it. On the one hand, this is attributable to technology, but on the other, to the conceptual development of the new forms of music best exemplified by various forms of improvised music such as jazz, and since the 1940s, John Cage's experiments with indeterminacy, leading to the composer-musicians such as Anthony Braxton and John Zorn. The composition no longer simply organizes the sounds, but also frames the context within which the sound can occur in its most explicit and fundamental manner.

In architecture, the apparatization may also be considered in terms of the rapid development and deployment of digital modeling and simulation. This apparatization has developed along a path that is increasingly separate from what has been historically regarded as reality, with respect to its own idealized state of mechanized existence. On the one hand, this is comparable to the notion that architecture is an expression of technical imperatives in any given period. Such a view exemplifies the progress situated within the reflexive patterns of history. For example, Mies van der Rohe expressed his belief in the inseparable relationship between the architecture and the technology of a given time. For Mies, architecture is "the crystallization of its [the time's] inner structure, the slow unfolding of its form."[2] On the other hand, digital algorithmic apparatization also overrides our awareness, as it sanitizes and purges the appearance of inconsistency that is inevitable elements of the handmade. Just as in the recording and playback of music, the *toccata* is becoming less and less discernible as such. Our senses become increasingly devoid of intimate, sensuous experience, subjectified by the affects of the technological apparatus.

Between the handmade and the apparatized virtual mode of design and production, the point is neither to argue whether one is superior to the other, nor to judge one over the other in a similar line of argument, for example, between mechanization and mass production vs. traditional crafts in John Ruskin during the nineteenth century industrialization. What makes the digital dispositif different is the emergence of autonomous codification systems matched with the machine (what we now call the hardware) that can be *programmed,* as a crucial, even decisive, factor in the apparatization of aesthetic process. In this case, rather than embracing contingencies or uncertainties that define the characteristics of human sensibilities as potentialities, the apparatization of the design of built environments increasingly appears to ensure that the possibilities of dissonant yet intimate moments, and ultimately, of alterity are further suppressed in favor of the dominant power dispositifs behind the design of built environments.

Apparatization favors the fluency of pragmatic skills over the accumulation of speculative knowledge. The apparatized conception and production of architecture requires a new class of experts whose skills are dedicated to the encoding and operation of the apparatus. The recent history of music, specifically since the appearance of the first purely electronic sound generation in the post-WW II period, demonstrate a process of codification: the sonic environment is constructed based on thoroughly technical, apparatus-driven operations. However, the performances are detached from presuppositions of substantive narratives, or of the mundane and serendipitous moments.

When we consider a system of highly specialized knowledge and skills at the core of the apparatization, we confront the new class of skills and experts, who inscribes the modes of our daily perception and experience. Those who are excluded such a privileged milieu become an underclass. In this sense, the apparatization process appears to intensify the distinction and exclusion of those who are inside and outside of the process and its knowledge-skill system. In the context of the "radicalization of modernity"[3] and the "post-traditional society,"[4] the apparatus-centric codification system fundamentally altered the relationship between epistêmê and technê.

In regard to the production of skill-specific knowledge, our dependence on apparatuses has become so pervasive and imbedded in the process of conception and production of architecture that the apparatus-centric parameters are inexorably blended with the practice of the discipline and its conventions. Epistêmê and technê are merging into what I designate as the "apparatus layer" where the apparatus occupies the crucial source of aura, the *vesica piscis* of epistêmê and technê. This argument may be also established by returning to rational technics, with which the Enlightenment attempted to demystify magic. In the context of contemporary music and its reproduction technology, the intent and objective of composition have come to denote a radical shift in the perception of the nature of complexity and how it may be dealt with, relative to the traditionally situated perception of proportion, balance, and harmony.

Within the totalizing space of the Cartesian world, the preponderance of the Supreme Being, the Sun King, or the Origin (0, 0), architecture and music were supposed to express ideal models that reinforced the power of such entities.[5] In this framework, architecture and music have expressed such a locus of power, and conformed to the conventions of the dominant authority and to the continuity of the dominant regime. The conjunction of epistêmê and technê has been subjugated to shoring up the status quo of the hegemonic regime, as seen in the unifying vision of the rational (albeit abstract and formal) order, be it ideological, political, or economic. However, unlike the historical periods in which the role of the technician-manager was defined by its relationship to the formality and the *toccata*, the finesse of the haptic of the dominant dispositif, not only the technical-managerial but also aesthetic-productive aspects of the architect's practice are now embodied in the digital dispositifs and the codification of their apparatuses. The knowledge arising from the technical-managerial is directly connected to the access to the codification system that distinguishes digital algorithmic apparatuses from the previous historical ones. Concurrent with the arguments made so far, through apparatuses architectural composition and its contingencies – as either an actual situating of buildings and objects, or an intellectual exercise in theoretical speculation – have reached a discursive area where the

supposition of exclusive authority is no longer relevant, just as the complexity of operative forces in contemporary urbanism and apparatuses also negate the notion of singular authority.

The study and practice of architecture are no longer a matter of mastering and applying canonical knowledge, but instead, of apparatus-centric embodiment and the potential for altering the codification of existing worldviews. Such apparatus-centricity in principle should embrace alterity and dissent, rather than similitude and conformity, in order to create a new commons of knowledge. By codifying the digital algorithmic apparatus and the virtual spatiality it produces, the metaphors of actual property rights are deployed, and the potential for a digital commons is increasingly commodified and replaced by the restrictions that neutralize the dissenting and disruptive use of the virtual spatial conditions.[6] Such a premise is contrary to the pattern of the modern avant-gardes that have propagated the impetus and rationale for change (or a revolution) in technologized aesthetics and aestheticized technology, both seen, for example, in Marcel Duchamp and the Russian Constructivism. At this juncture, epistêmê and technê have become one: the possibility of knowledge in its projective qualities is imbedded in, and dependent on the intimate incorporation of the apparatus and the codification, its language and logic.

2. What is a Dispositif?

The term *dispositif*, used by Michel Foucault, is often translated as *apparatus*. The English word, "apparatus", denotes a set of implements designed for and directed toward accomplishing certain performative and operative purposes and objectives. The sense of the term in question here, "dispositif," refers to an actively deployed system of interconnected conditions that situate particular social and political operations and their consequences in aggregate terms that are *universal*, such as various social and/or political institutions, juridical and penal systems, means of sustaining and codifying such institutions and systems, and so forth.

While certain individuals may (appear to) exercise their freedom of various personal choices, such freedom has come to denote the diagrammatic, combinational, and configurational. It depends entirely on the potentialities and the degree of exclusionary processes that may be inherent in the kind of discursive regime and its matrix within which the individual aggregates are suspended. The setup of the aggregation-matrix ensemble, in contrast to that of the singular yet fluid matrix alone, provides an important set of ramifications. It refers to a disruptive shift in architecture as a discipline and ultimately to its apparatization in a way that is comparable to what took place in the media

dispositif — especially in light of what Marshall McLuhan characterized as "hot media" — in the culture of ubiquitous apparatization that we see today.

First, the disciplinary apparatization process refers to a condition that can no longer be considered autonomous or authentic. For example, the inherent distinction between one discipline and another is solely relative to and dependent on the kind of apparatuses they share. The underlying codification systems of such matrixial apparatuses defines the apparatus-centricity and generative capabilities. Hence, the codification molds and shapes the functioning of procedures and protocols, and thus determines the operativity of a given discipline's constituent agents and contingencies.

Second, aggregation and apparatization imply an incremental process of development, in which variations and combinations are the primary operative modes of apparatization. This in turn intensifies the fragmentation of parts, and makes the combinatorial operations and versioning the most crucial aspects of the composition. This is primarily afforded by the flexibility of the design, and implementation of the codification system that ultimately determines the nature of the apparatus' functionality.

Third, the apparatus neutralizes mediatic specificity and differentiation by means of the existing forms of underlying codification systems, and therefore becomes fluid, more horizontally distributed, and intermodal. What used to be known as *medium* in a historical sense, the substrate, no longer requires, or at least no longer foresees, material, physical presence. One kind of content may, and is required to, be easily transcribed and transformed into another kind.

Apparatization is also a kind of operative logic that overlays a given discipline and work. Such disciplinary apparatization is expected to perform particular functions or tasks with certain means, in order to accomplish an objective. In architecture, such operative logic has been the mode of projection: the drawings that are constructed by orthogonally projecting geometries in Cartesian space as plans, sections, elevations, and by perspectival projections. With the advent and proliferation of digital algorithmic extensions, architecture has become a thoroughly apparatized practice. Its disciplinary field has come to include increasingly expansive elements, modalities, and attributes to the extent that the historical autonomist view of the discipline is no longer tenable. Architect have become a new class of professionals whose work is increasingly regarded as image-making of the dominant regime of one kind or another, or at times simply as delusional and stylizing.

The concept of dispositif threads through Michel Foucault's major works, namely, *History of*

Madness, *Discipline and Punish*, *History of Sexuality*, and *Archeology of Knowledge*. The dispositif sublates the primary undercurrents of Foucault's oeuvre on knowledge, its production and power, including object-event, discursive formation, archives, surveillance, and control, into a concept that Foucault himself describes as:

> … firstly, a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions — in short, the said as much as the unsaid. … *the system of relations that can be established between these elements.* Secondly, … in this apparatus is precisely the nature of the connection that can exist between these heterogeneous elements. … *opening out for it a new field of rationality.* Thirdly, … formation which has as its major function … *that of responding to an urgent need.* The apparatus thus has a dominant strategic function. … there was a strategic imperative acting here as the matrix for an apparatus which gradually undertook the control or subjection of madness, sexual illness and neurosis.[7]

In his lecture, *Of Other Spaces*,[8] delivered to a group of architects in Paris in 1967, Foucault already implies that architecture is a part of what he later formulates as dispositif.[9] In this lecture, Foucault defines three historical stages of spatial development: emplacement, extension, and site. The space of emplacement of the Middle Ages is composed of "a hierarchic ensemble of places: sacred places and profane places; protected places and open, exposed places; urban places and rural places (all these concern the real life of men)."[10] Such a space of emplacement was replaced by that of extension, conceived from Galileo's discovery of infinitely open space. The space of extension, Foucault asserts, arises from the scientific discovery that established the worldview that the universe is infinite, and that we are "no longer anything but a point in its movement."[11] We can conceive of space as extending infinitely. Foucault explains that a site, a localization that replaced the space of extension, "is defined by relations of proximity between points and elements".[12] Foucault continues:

> Moreover, the importance of the site as a problem in contemporary technical work is well known: the storage of data or of the intermediate results of a calculation in the memory of a machine; the circulation of discrete elements with a random output (automobile traffic is a simple case, or indeed the sounds on a telephone line); the identification of marked or coded elements inside a set that may be randomly distributed, or may be arranged according to single or to multiple classifications.[13]

In relation to the concepts of extension and site, Foucault's construct of dispositif helps to situate the instantiation of architecture, and its urban conditions as accumulative manifestations of the relations of certain intents, regardless of the degree of coherence of their articulation.

First, architecture and its urban conditions are the outcomes of particular interconnected discourses, attributes, and practices that are instantiated and materialized. In the meantime, internally, architecture as a discipline is dedicated to setting up its own regime of dispositifs centered on "the system of relations" and the agency of its instruments, which are specifically directed at the determinate composition of spatial objects and conditions. They include not only buildings and places, but also, and more significantly, the relations of "enclosure" that order human subjects through time and space, from birth to death.[14]

Second, the substance of a given dispositif of architecture is determined in terms of the relations and trajectories between what is made explicit (drawings and notations, specifications and writings of all sorts, which in some manner bracket a given project) and what remains implicit (strategies, intentions with regard to desired effects or affectations, preferences, etc.). Such "partitioning" and distribution of the disciplinary machinery make it possible to assign individuals and groups in their (appropriate) places.[15]

Third, given its inevitably public presence, and its assumptions of accommodating human activities and use, an architectural dispositif is necessarily subject to the power relations within an ensemble of discourses of institutions, politics, and economies. This ensemble of discourses contains the determining facets for spatializing, that is, the ordering and organizing of social multiplicities, and ultimately, the body itself. This spatializing complies with, and is coded by "the rule of functional sites", which not only administers, but also creates "useful" spaces.[16]

Lastly, because the constituent elements are distributed throughout the dispositifs, the network of relations, individuals are no longer fixed in place, but instead interchangeably organized, unitized, and classified in ranks.[17] This is accomplished through "tables," or to use a more comprehensive term, "databases" that register all the elements involved in the control and management of individuals, and measure the performance of each according to the organizational logic of the given regime. In this sense, databases render operable the instrument of the dispositif, and make it possible to maintain power and systematize the production of knowledge: "They are mixed spaces: real because they govern the disposition of buildings, rooms, furniture, but also ideal, because they are projected over this arrangement of characterizations, assessments, hierarchies."[18]

What is pertinent with regard to architecture is that the dispositif also situates the discipline as a constituent of a network of relations that consists of the elements that used to lie outside what has been regarded as the historical disciplinary core. In this regard, the disciplinary core of

architecture consists not only of the compartmentalized and stratified historical elements (i.e. the successive innovations of each architect), but more importantly, the means by which the discipline has instantiated and determined its work (i.e. the conventions that have been built over time to codify the purpose of architecture, or simply the way it was supposed to be executed, according to the traditions of practice) in relation to the standing dispositifs of ideology, politics, culture, finances, and so forth.

In one instance, the core of architectural practice rests on the instruments that have been the de facto convention of projected spatial representations, most notably, the perspectival projections of the Renaissance. Thus, for centuries, architectural drawings and notations have been the primary authorial instruments for designing, disseminating, and communicating the architect's intent regarding the work, the architect's conception of a certain world and how to construct it. Most notably, Brunelleschi in the fourteenth century and Alberti in the fifteenth, and the subsequent architects of the Renaissance, firmly established the discipline on both tectonic and epistemic grounds: the architects of the Renaissance produced not only built projects, but also the discourse of the discipline. Many of them produced treatises that established the practice of architectural composition. An architect was no longer a hands-on constructor of the actual objects, but instead an author of instructions that communicated the information necessary to exactly execute the design's intent in material form: the turn to encoding and apparatization.

Another important point with regard to the apparatized turn in architecture, or in composing the localized space of the site, relates to what Foucault designated as the second trait of the dispositif: for the first time, architects could administer "a new field of rationality" by producing instructional and notational instruments, rather than participating in the material construction of the actual buildings on-site. In other words, the apparatization process created a new "rank" of architecture that is dedicated to formal-rational constructs and their aesthetic and ideological authority over built objects and environments. Therefore, the new conventions of encoding created the new field of rationality and partitioned the discipline.

Architects could engage in an aesthetic and authorial practice by producing and implementing drawings and notations that inform the design and construction of a building on a site that is no longer a physical location. Rather, the site is a map charting the "relations of proximity between points and elements"[19] in a process that is removed from the immediate actual locales. This form of practice is conceptual, rather than the empirical process of construction in situ, the way of

building prior to apparatization, in which the designer and the builder are often one and the same. The master builder (*arkhitekton*) crafts the building on-site at his discretion backed by many years of experience. This condition of technê and tekton was significantly altered by elevating the exclusivity of the design process through the immanent, allotechnic formation of the design. An architect could remove himself from the actualities of the less-than-ideal site, materials, and construction, and focus on implementing a conceptual ideal.

If we examine the composition and instantiation of music in the twentieth century, this provides not only an effective example that illustrates the dominant technological regime, but also that of destabilizing the dominant power dispositifs of the time. First, the Futurists attempted to disrupt and dysfunctionalize the old regime of the time by extolling the noise of machines and mechanized warfare. We may also cite the post-World War II composers' challenge of the historical conventions of music. In the 1950s and 1960s, we see aesthetic movements such as Situationist International founded by Guy Debord, and the emergence of so-called "performance art," proponents of which include,Josef Beuys, John Cage, and Nam June Paik, the three prominent members of Fluxus.[20] They challenged the cultural power dispositifs of their time and set precedents for generations to come. Their explorations follow a pattern of resistance against the standing dispositifs, invoking otherness, *alterity* as a means of transgression and transformation: Situationist International's dérive, détournement, and psychogeography; Beuys's performances involving felt and fat; Paik's video installations and satellite-televised performance such as *Good Morning, Mr. Orwell*; Cage's compositions and techniques exploring the contingent, the aleatory, and the destruction of the composer, such as *4′ 33″* and *Prepared Piano*.

The impetus for encoding new architecture appeared to foresee and idealize a new dispositif. It was supposed to replace the composition of invariable geometry with the topological kind, and to fulfill the digital *zeitgeist* of high technology by radicalizing high-modernism. In the most defining way, the 1990s' dot-com economy has transformed digital algorithms into one of the most potent and profitable commodities ever seen in history. In Deleuze's rhizome, assemblage, and line of flight, Foucault's *object-event*[21] becomes object-matter, the *objectile*[22] that has been subsequently envisioned and appropriated by the proponents of parametricized, or data-driven, architecture. In this sense, the technê of digital algorithmic technology as a form of *Weltanschauung*, the manufacture of a new form of enchantment, enters the twenty-first century with a clear perception of its variability, and a new class of conceptual apparatus. In Foucault's own words, "…object-event, almost imperceptible among so many others, should recopy, fragment, repeat, simulate and replicate itself, and finally disappear

without the person who happened to produce it ever being able to claim the right to be its master…"[23] Furthermore, according to Deleuze, "… the new status of the object, its object-matter (objectile), is inseparable from the various strata which dilate, like so many opportunities for detours and coils."[24]

In the context of the Foucauldian concept, dispositif is multi-faceted. Its first notable feature implies function and functionality as most fundamental units to a given dispositif. Here, function is crucial to a dispositif, and with functionality, Foucault speaks of identity and difference as the function of ordering a knowledge system. Such a function is accomplished by determining the level of complexity, from the simple to the complex in relation to thoughts, rather than the previous historical tendency, which used to determine the order of things in terms of resemblance.[25] Foucault contends that the new function of ordering a knowledge system modified the entire epistêmê of Western culture. Therefore, what was to later become "dispositif" can be seen as its primary function, "the ordering of human multiplicities," a form of exercising power.[26]

By means of mediating the ideal state, with the apparatus of projective (and projected) drawings and notations, architects assume the authority of their conceptual work, and engage in the ordering of the multiplicities and complexities arising from various human and material factors. This apparatized turn in architecture was decisive in the Renaissance as the practice of abstract and formal rationalities became established as a part of the disciplinary conventions through the projective drawings and notations. This turn marks the establishment of the non-sensuous relations, the apparatus and its codification, as well as the disjoining of the discipline from the existing natural relations that were based on similarities, affinities, and analogies.

The codification of architecture as (and as a part of) a dispositif through the apparatus of drawings and notations enabled architects to impose and exercise the power of abstract intent and logic, rather than responding to and accommodating in person the technical variables involved in erecting a building. Rather than repeating empirical patterns that are historically situated in terms of craft and culture, architects in the Renaissance were able to firmly position themselves as authorial figures in the making of buildings, while largely removing themselves from the actualities of material construction as an inherent part of the discipline's practice. This is not to say that the architects were no longer involved in the construction process, but that the nature of their involvement became a substantially different kind.

In the same way as the state's power and authority are formulated and codified as written laws, architecture entered the age of apparatus-driven conception and production by projection

using drawings, and written specifications and other modes of instruction. Rather than being merely describing a constructed functional entity, authenticity is determined by the mediative technics of composition as a practice in its own right, and how such technics subscribe or refer to the dominant dispositif,

In his essay, *What is a dispositif?*[27] Giles Deleuze offers another view of Foucault's dispositif. Deleuze sets out to characterize the dispositif as tangible and multi-linear, composed of lines that do not "outline or surround systems which are each homogeneous in their own right…"[28] In his own reading of Foucault's concept — re-reading Foucault's definition quoted earlier — Deleuze shifts his focus from the idea that a dispositif establishes relations and connections between the heterogeneous elements that constitute it, to the disjointed and precarious character of such a formation. Deleuze asserts forcefully that a dispositif is:

> … a tangle, a multilinear ensemble. It is composed of lines, each having a different nature. And the lines in the apparatus do not outline or surround systems which are each homogeneous in their own right, object, subject, language, and so on, but follow directions, trace balances which are always off balance, now drawing together and then distancing themselves from one another. Each line is broken and subject to changes in direction, bifurcating and forked, and subject to drifting. Visible objects, affirmations which can be formulated, forces exercised and subjects in position are like vectors and tensors.[29]

In this same text, Deleuze identifies four characteristics of Foucault's dispositif. First, it consists of curves of visibility and enunciation. The curves of visibility make forms or shapes of a given dispositif appear and disappear, and those forms are the very constituents of the dispositif. Deleuze connects visibility to light and gaze, in the sense that disciplines such as painting and architecture rely on the appearance and disappearance of forms in light and vision. Second, the curves of enunciations (or affirmations, statements, etc.) based on the visible hold together or transgress the boundaries of dispositifs by distributing the variables or the elements that form the "regime" of enunciations. The third characteristic Deleuze identifies is "the lines of forces." Deleuze describes the lines as vectors that indicate the directionality of certain forces and movement. The vectors connect one point to another, and traverse different element within the dispositif. Here the vectors exemplify the "space" of the dispositif, and form the dimension of power that is internal to the dispositif. The intersection of the vectors may be described as a clash, a conflict, or a "battle." The fourth characteristic leads to subjectification.

For Deleuze, Foucault's dispositifs are composed of "… lines of visibility and enunciation,

lines of force, lines of subjectification, lines of splitting, breakage, fracture, all of which crisscross and mingle together, some lines reproducing or giving rise to others, by means of variations or even changes in the way they are grouped."[30] As a consequence of such dispositifs, Deleuze first repudiates the idea of the universals, as the dispositifs comprise constantly variable and fluctuating lines of interests and objectives. This leads to the type of aesthetic criteria that rely on immanent qualities, rather than the "transcendental," according to the inherent potentialities of the matrix of lines of a given dispositif. The second consequence is that such a dispositif-construct negates the very possibility of unequivocal truth, and instead places crucial importance on the new and the variable. The newness is not one of individual, aggregate elements, but rather, of a whole regime arising from the intersecting and bifurcating lines of enunciation. Thus, the new regime provides new content, and with them, new creative potential. At the same time, such new creativity — which, for the moment, I will call "configurational" — also provides the possibility of transforming the dispositif itself.

With regard to configurational creativity, it is useful to mention Deleuze and Guattari's rhizomatic configuration, in contrast to Foucault's dispositif. The rhizomatic configure the links between the heterogeneous in ways that:

> Collective assemblages of enunciation function directly within machinic assemblages; it is not impossible to make a radical break between regimes of signs and their objects. Even when linguistics claims to confine itself to what is explicit and to make no presuppositions about language, it is still in the sphere of a discourse implying particular modes of assemblage and types of social power. [31]

The common ground for creative potentialities provides the concepts that bind together various heterogeneous entities, even though the strategic functions of Foucault's dispositif, and of Deleuze's and Guattari's rhizomatic configuration oppose each other. Foucault's dispositif indicates the kind of conceptual superstructure that binds and subjectifies the aggregates in an omnipotent matrix of power, the "totalizing effect," while the rhizome offers a fluidity and potentiality antithetical to the supposition of coherence and totality. For Deleuze and Guattari, the rhizomatic construct renders spatial and organizational configurations that escape linear, serialized configuration, and indicates an ad hoc process that equilibrates itself.

The *smooth* space, that is, the space of *the body without organs*, and therefore without the subjectifying striation that subjugates living beings, affords an even greater degree of fluidity. While striated space stems from the linguistic conception and organization of law and order, smooth space

relies on images as a primary means of identification and cohesion. The interface that facilitates imaging (rather than reading) histories, and power and social organizations departs radically from the supposedly objective understanding of one's place in society that is written down, and thus codified. The means of providing such images include tattoos, decorations, embroidery, and woven fabric, and so forth.

Discussions of smooth space in architecture often miss the crucial aspect of the concept noted by Deleuze and Guattari: smooth space is the antithesis of the striating and subjectifying dispositif, and cannot be separated from the consideration of its subversive and destabilizing tendencies with regard to the standing hegemonic dispositifs. In other words, smooth space may be rendered meaningfully only when its subversive and destabilizing potentiality against hegemonic power is adequately accounted for. Smooth space is precisely the kind of space that the historical form of architecture attempts to eradicate by striation. If we suppose architecture as a crucial agent of a power dispositive, the smooth space proves implausible.

The *appearance* of smoothness of architectural space is an entirely different matter, irrelevant to the concept. Considering smooth space without the possibility of highly charged political dissent, considering only the descriptive adjective of being "smooth" as a formalistic feature is highly dubious and misleading. This is because if architecture has retained codified (or perhaps even enforced) control and compartmentalization throughout its history, and if architecture is incapable of positioning itself as a practice of destabilizing and overthrowing the political logic of a given power dispositif, it seems highly questionable whether smooth space is applicable to architecture at all, as a physical, material manifestation.

As long as architecture serves as the enforcer of striated space, to augment and bolster the rationale and power of a hegemonic dispositif, the resistant and subversive potential of smooth space is nothing but another category of striation, one that is thoroughly captured by the dispositif of striation. The idea of smooth space has been often appropriated by a segment of architecture in a way that is conveniently removed from the crucial, substantive features, both political and ideological, which Deleuze and Guattari explicates. With regard to its imagery, smooth space suggests alluring formal qualities, and we have already seen many iterations of smoothness in its commodification.

At this point, Deleuze's concept of assemblage[32] expands Foucault's dispositif. While the dispositif pertains to the rationale of a given social political regime for implementing certain measures and exercising its power to address certain objectives, problems, and needs, assemblage

emphasizes the aggregate aspects by means of diagrams, and how the constituent relations are established and implemented:

> The territory is made of all kinds of decoded fragments borrowed from milieus, but which then acquire a value of "properties": even rhythms take on a new meaning here (refrains, ritournelles). The territory makes the assemblage.[33]
>
> Also:
>
> And it is from this aspect that one distinguishes in any assemblage the content and the expression. In each assemblage, one must find the content and expression and evaluate their real distinction, their reciprocal presupposition, their piece by piece insertions.[34]

While Foucault emphasizes the universal influence the dispositifs have come to represent, Deleuze's assemblage articulates the individual elements and that they may be decoded, extracted, and form "content and expression," and the interstices of the singular constituents, thus anticipating the separation of content and expression. As Manuel DeLanda explains, assemblage is not so much about the whole, the totality, but about the parts, the organs that form such a whole: A component part of an assemblage may be detached and inserted into a different assemblage in which its interactions are different.[35] In this sense, the assemblage undermines the coherence and totality of the body as a coherent whole.

The machinic assemblage underscores the transformativity of a given construct, in terms of aggregation and each singular logic within the whole. The constituent organs define the nature of the whole, of the body. In the case of the striated construct, such as Bentham's Panopticon cited by Foucault, that of the mold, the compartmentalized body of individual organs is placed in its supposedly appropriate position. On the other hand, the construct of smooth space is located around the switching and interchangeable position of each organ. Thus, even the specificity of a given organ is brought into question. For Deleuze, the prime example of such "a body without organs" is exemplified by the nomadic relations that resist and subvert the authority of striation that attempts to *organ*-ize the power relations into a structure of appropriation and subjugation.

In the title essay of the book, *What Is an Apparatus? And Other Essays*, Giorgio Agamben summarizes Foucault's dispositif as follows:

> a. It is a heterogeneous set that includes virtually anything, linguistic and non-linguistic, under the same heading: discourses, institutions, buildings, laws, police measures, philosophical propositions and so on.

> b. The apparatus always has a concrete strategic function and is always located in a power relation.
>
> c. As such, it appears at the intersection of power relations and relations of knowledge.[36]

Furthermore, "The term certainly refers, in its common Foucauldian use, to a set of practices and mechanisms (both linguistic and non-linguistic, juridical, technical, and military) that aim to face an urgent need and to obtain an effect that is more or less immediate."[37]

On the one hand, while Agamben concurs that a dispositif[38] may encompass a vast array of entities and definitions, it is crucial to reiterate that a dispositif appears at the intersection of power and knowledge; that it is expected to serve an urgent need, and to cause an immediate effect related to such a need. While it is worth noting that it is necessarily a discursive organization of some sort, in today's digital context a dispositif consists of radically varied modalities of instantiation, and ultimately of determinatives, in the work of architecture. In this case, the work of architecture also lies at the intersection of power and knowledge, and is made in order to cause an immediate effect. For example, the works of architecture accumulate in cities so that the project, during and after completion, constributes to attracting new residents, promoting new commerce and business, increasing employment, shoring up cultural capital, and so forth.

For architecture, the intersection of power and knowledge underscores the excess of exercising spatial configurations, which consist of cultural, social, economic, and political elements, be they of natural persons or of legal corporate entities. Architecture has rarely been about, and respected for, providing only the necessities or the literal. Also, architecture constructs a particular type of knowledge that runs in the dyad of epistêmê and technê. As an inscribed and encoded process, architecture rarely confronts the means of confirming actuality, even though it may reflect it. The instantiation of architectural work always anticipates certain breaches of the historical. This is to say that even though a work of architecture recognizes the actual present and past on various levels of design and construction, it is a process of encoding and inscribing the kinds of conditions that can be neither confirmed nor denied, as it is a projection. This is also to say that, in that particular intersection of contingencies, architecture is expected to breach and transgress historical bounds, and thereby to reform futurity.

Architecture as an apparatus occupies a peculiar position, where the contingencies of the power-knowledge intersection are defined as the subject-object hybrid. On the one hand, architecture

arises from a subjective perception and consciousness (of architects, engineers, clients, officials, etc.), and subjectifies the content of such perception and consciousness. On the other hand, architecture is also composed of objectified relations of discursive singularities, and is under the control of the productive (enforcing) assemblages. In this sense, the author-architect also manifests the subject-object duality.

Agamben asserts that the position of a dispositif indicates no right or wrong way to use it. This argument arises from the classification of substances (living beings) and apparatuses with the so-called subjects suspended in the network of relations. He asserts that an individual, a substance, may take on "multiple processes of subjectification."[39] Furthermore, dispositifs appear at the root of humanization, and come from the human desire for happiness. He concludes, "The capture and subjectification of this desire in a separate sphere constitute the specific power of the dispositif."[40] Specifically with regard to technological dispositifs, Agamben's predicament is that the capture and subjectification by the dispositifs preclude the possibility of distinguishing correct or incorrect ways of dealing with them, as we are all captured by, and subjects of the dispositifs.[41] Agamben's latter reference to a dispositif having to have an immediate effect on an urgent problem appears to relate to the overall functional tendencies of Foucault's construct. In *Discipline and Punish*, Foucault's conception of dispositif centers around the means by which the dysfunctional and the deviant elements of society are brought under control, and how space actually becomes one of the primary elements such dispositifs should dominate. Aside from discussions of the so-called "bio-politics" and Foucault's discussions of subtractive modes of power dispositifs, the concept of dispositif is in fact spatial and functional. While a power dispositif comprise the organized operations of social and political systems,[42] Foucault describes how individuals, groups, and classes always retain some sort of primordial desire or urge to escape power relations.[43] One example Foucault cites is the carnival, "in which rules were inverted, authority mocked and criminals transformed into heroes."[44]

Agamben's own definition of the apparatus — "literally 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"[45] — is especially pertinent and poignant in today's technological context. For Agamben, a dispositif comprises not only the overarching powers of the state and law, but also the types of devices that have become parts of our daily affairs and their very agents. In his exploration of the dispositif, Agamben names, among others such mundane things as cigarettes and pens as dispositifs. In particular, Agamben names language in particular as a distinctive dispositif that subjectifies, and thus manifests certain power relations in our time. For

Agamben, the processes of subjectification are inherent in the seemingly innocuous apparatuses that we use everyday, for example, cellphones. In relation to Foucault's dispositif, Agamben's view presents an enslaving kind that projects addictive power. Once captured in the net of the dispositifs, no matter what kind, escape is not only discouraged, but also impossible, for all practical purposes. In his view, the extra-somatic extension and capability afforded by apparatuses permeate the social and cultural dimensions to the extent that these (mostly) elective devices have come to dominate and impose on the innate capacity of human production itself, in a controlling and alienating way.

3. Technê and Dispositif

In this section, we will touch on Aristotle's foundational thoughts regarding technê, and trace them in his *Nicomachean Ethics*, and the Four Causes in his *Physics*. Then, we will relate technê to Heidegger's thoughts on *Ge-stell*. Several scholars have argued[46] that Aristotle's formulation of technê provides the latent foundation for the development of the technical logic on which Heidegger sought to elaborate in *The Question Concerning Technology [Die Frage nach die Technik]*. Therefore, in the second part of this section, following Aristotle's technê, we will touch on Heidegger's Ge-stell and his position regarding the role and influence of technics and technology.

With these readings, we will attempt to base the key themes of the thesis – apparatus and codification – in relation to the preceding discussions on dispositifs referencing Foucault, Deleuze, and Agamben. The purpose of this section is to first describe technê from Aristotle's point of view, as fundamental to the Western tradition of technics and technology, and how it pertains to the position of the technological discourse. Specifically, with regard to Foucault's dispositif in relation to Heidegger's conception of Ge-stell, we will attempt to splice this concept to that of codification, and eventually to that of the so-called "new media," through the propositions laid out by Marshall McLuhan, and by following up on recent notable observations and theories of contemporary media.

Aristotle's Technê

In the Western world, the notion of technê has evolved since the time before Plato, and continued to expand in terms of what it indicates. The history of technê begins with a designation that was specific to "the woodwork of a *woven* house,"[47] involving communal effort. It was specifically about the woodwork, and thus *tektôn* indicates a skilled carpenter who builds houses. The historical account of technê addresses the distinctive characteristics of many centuries in ancient Greece. Among the ever-expanding list of criteria, technê has come to consistently indicate knowledge

specific to a determinate subject matter, and to the distinctive and specific objective of producing something functional and useful. It has been supposed to be teachable and learnable,[48] and also to be publicly recognized and sanctioned in some manner. This also includes the possibility of retracting and revoking the public recognition. Unlike the fine arts, technê does not require a talent, but is conceptual, rational, and precise.[49] By the time of Socrates and Plato, technê had also come to include professions such as medicine and rhetoric, and penetrated deeply into the fabric of the ancient Greek culture and society, with some form of monitoring and regulation.

One of the defining markers of technê today is how it has come to loom over its historical counterpart, epistêmê, or the kind of knowledge that may not possess such determinate, specific, qualifying criteria.[50] Epistêmê emphasizes an indeterminate speculative mode of knowledge, the kind that often relies on unteachable and unlearnable conditions such as inspiration, epiphany, innate talent, or even genius. In contrast, technê indicates the kind of knowledge that arises from the practice of material production that involves an extensive array of tools and means external to the subject. Technê identifies the essence of the producing subject's relationship to material techniques and objects, and to nature, of gaining a specific kind of rationality. Therefore, the expanded role of technê "demands a capacity for intellectual solution to determinate tasks, some rudimentary knowledge of geometry or statics, in general *an ability to combine and improvise.*"[51] Technê that means "to be able to coordinate its individual elements systematically toward a determinate goal remains the privilege of the expert."[52] In other words, long before Aristotle's discourse, technê and its expert, tektôn, were already an integral part of the ancient Greek society, and recognized as a special and specific form of knowledge.

In *Nicomachean Ethics*, Aristotle provides a crucial passage on technê that helps to understand and connect the thoughts underlying the concept of dispositif. Technê, under the section "Craft Knowledge," Aristotle states, "A craft … is a state involving true reason concerned with production."[53] Aristotle does not explicitly mention a specific trade or manual labor per se based on physical, especially haptic, skills and dexterity. However, prior to the foregoing passage, Aristotle also states that production (*poiêsis*) and action (*praxis*) are two different categories that are not interchangeable. Furthermore, he also specifies that "building, for instance is a craft, and is essentially a certain state involving reason concerned with production …".[54] What is stated here essentially indicates the nature of poiêsis, which is defined as that which is inherent in the producer (or the artist), not the object that is produced, the expression of the producer's reason. Therefore, the work of poiêsis embodies the essence of the producer's explicit intent regarding the object that is yet to be

produced. Despite the inherent problems and the apparent contradictions in Aristotle's distinction between poiêsis and praxis, what is clear is that in the Aristotelian sense, the integrity of a given work and its poiêsis depend on whether or not the work was made for its own sake, motivated by the producer's explicit intent for such creation.[55]

The Aristotelian construct of technê include both poiêsis and praxis, despite his attempts to distinguish between them. In *Nicomachean Ethics*, Aristotle describes the distinction between poiêsis and praxis as that between production (what one does) and action (why one does it).[56] Crucial to these two aspects is the intentionality and the purposiveness of such action and production. What the two modes of technê share is the intentionality and the sense of purpose assumed by the producer in either process. It is possible that someone might be able (or intend) to act on the basis of ignorance or lack of knowledge, and accidentally produce something without intending to do so. Suffice it to say, Aristotle's argument is that with regard to technê, both poiêsis and praxis articulate the agent's intentionality, knowledge, and relationship to the unfolding of the relations according to the four causes. The content of the work, and how such work content is presented, are embodied in one coherent body of technê.

In the conflation of poiêsis and praxis in technê, Aristotle asserts four fundamental causalities[57] that affect the process of inducing, cultivating, and facilitating, whereas the work of technê is thought of as an emergent process.[58] Aristotle four causalities are:

(1) That out of which a thing comes to be and which persists;

(2) The form or the archetype, i.e. the statement of the essence, and its genera;

(3) The primary source of the change or coming to rest;

(4) The sense of end, or "that for the sake of which" a thing is done.[59]

In the first cause, Aristotle indicates the materials from which a given work could be created and come into existence, such as bronze or silver. At the same time, the materials inform the maker, the agent of the production process, of the kinds of properties to consider. The material properties then lead to the form, the second cause. It describes the "essence" the given work is intended to possess. As for the third cause, Aristotle describes the producer as the origin of a given work's ontology. By distilling the essence from the material, the producer or the artist brings the work into existence. The fourth cause indicates "means towards the end" and "All these things are 'for the sake of' the end…"[60]

Aristotle's third cause, known the *causa efficiens*, often holds sway over the other three as the

very reason for the work's coming into being. The intent of the agent-producer-artist (according to Aristotle, the *father*) who executes the work determines its nature and destiny through production, poiêsis. What Aristotle describes in the four causes is an environmental matrix from which poiêsis is conceived and emerges. Therefore, Aristotle attributes technê to the producer, who integrates a symbiotic, emergent process of material knowledge and practice. The producer, the tekton integrates the relations of technê, and creates a work that serves a purpose, the work itself.

Seen in such Aristotelian terms, technê is in fact devoid of the kind of utilitarian, functional, or instrumental connotations, and the terms such as "technic" and "technology," it has come to indicate. Furthermore, in the context of the term's historical evolution since Aristotle's time, technê also indicates the conditions of the discourse and its resolution. Technê prior to Aristotle is specific to a clear, definable objective, and how it is accomplished in a logically explainable manner. Aristotle's technê highlights an implicit relationship the author-producer establishes and maintains with his work. In that sense, technê relates to mimesis that is a process of establishing empathy and affinity with the object. The producer is capable of formulating a clear, determinate objective and purpose for the work, and carries out the work in a methodical and analytical way, piece by piece.

Heidegger's Ge-stell

Heidegger assigns the term *Ge-stell*[61] to the systematic technicization of human society and its relations that dominates nature for its resources. The Ge-stell is designed and implemented as the backbone of artificial construct in order to extract resources that are necessary to sustain the artificial environment. To a great extent, Ge-stell imposes its efficacy over man and nature, and consists of highly systematized series of technical and functional relations. It also implicates Foucault's dispositif, in the sense that it implies technical universals that pervade and influence the comprehensive strata of social and political organization. From this perspective, Heidegger's Ge-stell does not so much concern technology in the sense of the scientific capacities, but instead, how the human society assembles the means of securing and providing itself with the necessary resources. Ge-stell means to structure and operate the human ontology according to the logic of technics.

In relation to the origin of technê, Heidegger cites Plato, and approaches it by first reestablishing poiêsis.[62] In Heidegger's reading of Plato, poiêsis means "to bring something that is not present to presence." *Physis*, Nature, is the highest form of poiêsis, "arising [*sic*] something from out of itself."[63] He continues to elaborate on poiêsis through the construction of bringing-forth (*hervorbringen*) to presence (*anwesen*) by un-concealing (*entbergen*), and concludes that technics, rooted

in technê, is "a way of revealing."[64] Heidegger also speaks of Aristotelian four causalities and the unity of poiêsis he considers as stemming from them. He concludes that technê "belongs to bringing-forth, *poiêsis*."[65] Subsequently, for Heidegger, in relation to Aristotle, technê is the kind of knowledge that "reveals whatever does not bring itself forth and does not lie here before us, whatever can look and turn out now one way and now another."[66] Heidegger eventually declares that technê "does not lie at all in making and manipulating, nor in the using of means." Rather, "Technology is a *mode* of revealing."[67] Continuing from the foundation of technê and technics. Heidegger establishes that the revealing by modern technology "does not unfold into bringing-forth in the sense of poiêsis," and is rather "a challenge" [*Herausfordern*], which imposes on nature the unreasonable demand…"[68]

Heidegger constructs the term, Ge-stell, often translated as "Enframing," and distiguishes it from *Gestell*, without the hyphen, as used in the common German usage. Ge-stell indicates the pervasive nature of technological constructs in human society, and is aimed at "the fundamental shift in human's relations with technology …"[69] While derived from the common German word, "Gestell," which is simply understood as a device that supports something else (e.g. *Tischgestell*, "table support"), or to provide a physical structure or frame (e.g. synonymous with *Rahmen*, the "frame"), Heidegger distinguishes Ge-stell by establishing the fundamental concept of how Enframing displaces nature, in which "that unconcealment comes to pass in conformity with which the work of modern technology reveals the real as standing-reserve."[70]

What Heidegger refers to is in essence the imposing quality of technology, which literally dominates and imposes on nature. Through Enframing, nature ends up in the position of a reserve, and therefore ultimately being made redundant, even disposable, "imposing on them to take as disposable the things that are disclosing themselves as disposables, das Ge-stell."[71] In this regard, the view of worldmaking in Heidegger's Ge-stell is destabilizing: "technics starts out from a place that is determined by that which it seeks to exclude."[72] The distinction Heidegger makes here is that technics reveal the necessity of dissimulation. This in turn separates technics from physis and its unfolding, the self-emergence. In these relations and distinctions, what sets physis apart from technics is "its impulse to open itself up to the exterior, to alterity."[73] While self-emergent qualities are intrinsic to nature, technics, and by extension, technology, are intrinsic to humanity, and are necessarily prescribed by the rules to define and impose the boundaries or limits of its similitude. Similitude is necessarily defined by the apparatus of exclusivity, and therefore excludes alterity, that is, what is outside of the technics, the artificial process of producing and enframing, and therefore of the matter and the agent,[74] disclosing and unconcealing (*Entbergung*). Such dissimulation also distinguishes the

break that occurred between the pre-modern (agrarian) and the modern (industrial-mechanical). While the agrarian model is seen as inherently in tune with nature, modern technology, by means of dissimulation and exclusion, imposes its logic on nature, and nature is simply turned into a reserve that is to be exploited by, and to be subjugated to such exclusivity.

In the classical sense, technê reveals hidden essence. Heidegger also emphasizes that the purpose of technics is to unconceal and disclose. On the other hand, Ge-stell is contrary to what technê is supposed to be. In relation to the four causalities and poiêsis, the essence of technê is to bring something into being, for example by the artist, the producer in relation to nature's self-unfolding, or autopoiesis. Instead of disclosing the essence of technê, Heidegger's conception of Ge-stell underscores the tendency of technics and technology to subjugate and obscure nature: "Thus when man, investigating, observing, ensnares nature as an area of his own conceiving, he has already been claimed by a way of revealing that challenges him to approach nature as an object of research, until even the object disappears into the objectlessness of standing-reserve."[75] Heidegger's articulation of Ge-stell highlights the irreconcilable position that it subjugates nature and turns it into a reserve, the kind of *Ersatzteil*. Nonetheless Ge-stell provides a crucial view of how the situatedness of worldmaking may be further considered. While Ge-stell presents a decidedly skeptical perspective of the technics and of overarching subjectification of nature in its path, by implying that Ge-stell's enframing power and unsecuring-unsettling are largely destructive, Heidegger offers a view in which such subjugating relations may be rerouted.

The destabilizing and unsettling aspect of Heidegger's Ge-stell also suggests another layer of the reading with regard to the role of technics and technology in contemporary culture. Even though Ge-stell may project a pessimistic and destructive view of instrumentality-driven culture, it offers the very potential of technology: unsettling the cultural conventions and overturning them. Specifically in relation to data-driven digital technology, various modalities provide the very fabric of discursive, and therefore cultural formation, the intermodality that everything anything and everything can be turned into data and transposed. For both Ge-stell and the technics that unconceal, what defines Heidegger's Ge-stell is not specifically technical or technological. Rather, it explains the structure of technics and technology, and the dispoition thereof that connect to Foucault's dispositif, the reticulate matrix of relations and formations that pervades society. If the modern industry from which Heidegger's Ge-stell arises may be said to partly petrify and subjugate nature and its elements for instrumental and functional exploitation, the contemporary technological dispositifs, unlike the Ge-stell of Heidegger's time, transpose the given fabric — social, cultural, political, and so on — into

ever-shifting flux of modalities.

The modalities primarily arising from the pervasive implementation of technology, technological devices, and media, which Agamben describes as offering no right or wrong way but subjectification, can be characterized by the question of the content that is increasingly separated and detached from the modality of (re)presentation. Digital technology and its capacity to encode, decode, and transcode, presents a clear distinction between the content of the industrial and machinic Ge-stell that are directly embodied by their own physical presence, for example, the nuclear power plant, a hydroelectric dam, a modern machine for standardization and identical copies, and so on. But unlike modern industrial technology, the digital or the high-tech present a fundamentally different problem. Heidegger's Ge-stell is antagonistic to nature by imposing its logic and turning everything in its path into resources to be extracted and consumed. In this sense, Ge-stell is a threat, if left unbridled.

In contrast, the digital Ge-stell is also instrumental and pragmatic, and furthermore, highly aestheticized and even alchemical. This is partly due to a tendency of the digital, whereby "the technological reproduction, alteration, and reassembly of signifying elements in high tech becomes less a means to an end than an artistic-cultural process that has become an end in itself."[76] Industrial logic brought rationalized and instrumentalized means and ends. This includes the rationalization of aesthetic objects and experience, as well as the aestheticization of technological objects and experience. But owing to the highly discrete mediation and reproduction, digital technology and its encoding are dedicated to providing aesthetic experiences, and the database behind such experiences.

Walter Benjamin proposed that mechanical reproducibility caused the demise of authorial aura. If the mechanical reproduction of aesthetic objects dislodged works of art from their privileged position, and dismantled the aesthetic authority of the artist, we may project the recurring dynamics of technological advances and logic onto the digital. Digital technology not only dislocated the privileged position of rational and analytical artistic production, but also dematerialized aesthetic objects, above and beyond their mechanical reproducibility. In this situation, Ge-stell is not simply instrumental, but autonomously encoded in a way that perpetuates fragmentation, reproduction, recontextualization, mutation, and re-creation. Ultimately, the aggregate encoding will become interconnected and thus codified.

The digital Ge-stell and the resulting dispositifs offer a radically different view of the subject-object relationship. Not only the human-instrumentation dyad, but the very innovations in tool-making and instrumentality bring forth profound changes to human tendencies, and to relations

themselves. The subject-object relationship is not as simply split as the dialectics of human-machine and subject-object might suggest. Heidegger analyzed Van Gogh's painting, *A Pair of Shoes* (1886), and noted the difference between boots when they are worn and put to use (*zuhanden*), and when they are not worn, and simply placed on the floor (*vorhanden*).[77] In this specific example, the world is composed of relations that are *vorhanden* and *zuhanden*.[78] Those relations consist of those states in which we have surrounded ourselves with extra-somatic instrumentality (if not the entire ontology) that binds us in place in one manner or another.

According to the foregoing view, we cannot simply situate our being in terms of the relative containment (of size, shape, location, measurement, etc.) of ourselves and objects, while maintaining as if our body and the objects were separate and detached. Our very ways of identifying ourselves are formed by entities that are intimately connected to our being-in-place, and inform the poietic potential in both formal-categorical and substantive-ontological ways, rather than by the detached presence of the entities contained by a certain logic that subjectifies us, that is, rather than becoming one of those objects that are simply to be located and managed by surveillance.

The relevance of the foregoing view for architecture should be evident: architecture is a significant part of both formal and substantive relations in artificial as well as natural environment. The architectural entities that compose the assembalges in our environment are not just simply there, but stand in front of us (*Gegenstand*), contrary to the idea that there exists such an "objective" world. Rather, they actively inform and engage us, demarcating our place, the human Umwelt, and thus shape us in one manner or another. By participating in the interconnectedness and the *binding* process, we actively define our artificial dispositifs in relation to nature. For example, the distinction between *Umgebung* – what is simply given (*geben*) around (*um-*) us, regardless of whether or not we relate to it (neutral, non-subject-specific, *vorhanden*) – and *Umwelt*, the world (*Welt*) around us – about which we cogitate, and to which we relate in some capacity, (subject-specific, *zuhanden)* – proves crucial in usage and conception.[79] Unlike *Umgebung*, the *Umwelt* is distinguished by the elements that are particularly meaningful for the given subject, an animal species. Therefore, an *Umwelt* is a subject(species)-specific world, in which the subject and its biological motivations become defining, therefore seen in terms of the kind of subjectivity involved; there are as many worlds, *Umwelten,* as there are animal species. The subjectivity is surrounded by the capacities of perceptive and effective "organs," "marks," "carriers,"[80] and, according to Heidegger, "disinhibitors."[81] In other words, the immanence of our poiêsis, and ultimately of our being, is autonomically embodied, and thus formed around the interconnectedness of subject and object, and by how we encounter and incorporate them

in our sense of our world, the human subject-specific Umwelt.

In response to Heidegger's Ge-stell, Bruno Latour proposes his account of the symmetry between humans and nonhumans with regard to the transformative nature of the relationship between humans and their tools and other objects. The specific analogy he cites, to underscore the acuteness of the issue, notes that a gun in the hands of a person is not the same gun as it would be, simply lying on a bookshelf, just as a human with a gun is not the same kind of a person as the one without.[82] In essence, this is not so different an observation from Heidegger's example of the farmer's boots. Either way, the manner and circumstances in which both animate and inanimate entities are meaningful, useful, and/or significant to human beings in various degrees of intimacy. A gun may be used to kill if a person is holding it in his hand, or it may be lavishly engraved with silver and gold to serve simply as a decorative element displayed on a wall, in which case its original function as a weapon becomes rather secondary. The boots worn by a farmer may contribute to his livelihood when he works in muddy fields, or simply be a pair of dirty, worn-out boots to be disdained and discarded. The potential transformation of the human subject is no less dramatic: the one with the gun may be a potential killer, and the one wearing the boots may be a hard-working farmer. These two may even be the same person in different positions of production, action and being.

Latour's critique of Ge-stell is based on a symmetrical configuration: humans create tools, but the very tools also transform humans. He states, "…the word 'modern' designates the two sets of entirely different practices that must remain distinct."[83] However, it is not so simple to draw a definitive line between human subjects and nonhuman objects: they achieve symmetrical hybridity, often in a contradictory way. Latour proposes that the account of the hybrids is born of the modern division of what he calls "translation" and "purification." The former is a set of practices that creates "hybrids of nature and culture," while the latter "creates two entirely distinct ontological zones: that of human beings on the one hand; that of nonhumans on the other."[84] The state of translation involves intermingling the mythical elements of nature and the rationality of human society. On the other hand, Latour contends that the science of the Enlightenment, the practice of purification, made it possible to separate and extract hard facts from the kind of culturally entrenched rituals that may stem from irrational worldviews and the ways of rationally proving or disproving them. However, the social still retain its narrative dimension; in fact, the moderns made possible the formation of the hybrids and quasi-objects that operate and proliferate beneath the surface established by the work of modern science.

Returning to Ge-stell, above and beyond the argument over the transcendence or the immanence of humans or their technics, it appears clear that the questions concerning technology may not be so easily posed around the uncontrollable subjugation of nature. At the same time, the transformative power of technology and technics also applies to the human intellect in such a way that the role of technology and technics cannot be separated. What remains is the way the technology is imbedded and encoded in human society. Again to cite Latour, "Thus symmetry holds in the case of fabrication as it does in the case of use."[85] At the core of Latour's critique of Heidegger's Ge-stell is the "black-box" effect.[86] The technological condition is now composed of too-complex networks of entangled human and nonhuman interdependencies[87] to be thought of simply in terms of one party's dominance or subjugation of the other. The complexity of the flows of constituent elements, be they of a building or of a car, has moved beyond any one party's dictates and comprehension. Latour employs the analogy of theater, where behind every scene and actor stands a series of complex instructions and operations. Whatever the forms various social political entities may assume, their actions may partake of the same strategic objectives. All such "actants"[88] diverge from the theatrical assemblage enclosed in a "black box." Such a black-box assemblage renders a clear separation of one kind of operation from the other impossible or irrelevant, as to exactly which actant agent manifest the expression (or symptom) on the surface. Such black-box constructs are innate in human technics and technology, and humans are thus imbedded and irrevocably transformed in the interconnected and entangled network of objects, technics, and assemblages.

Notes

1 Bruce Ellis Benson, *The Improvisation of Musical Dialogue: A Phenomenology of Music* (Cambridge: University of Cambridge Press, 2003): 147-148

2 Werner Blaser, Mies van der Rohe: IIT Campus (Basel: Birkhäuser, 2002)

3 Ulrich Beck, Anthony Giddens, and Scott Lash, *Reflexive Modernization* (London: Policy Press, 1994)

4 The notion stems from the appearance of the "projective ego" in traditional societies where the identity was shaped by the long-standing traditions. According to the sociologist Dan Lerner, "We note, then, that in Turkey the life-styles of many persons are in a process of change. In this change, access to the mass media is an interactive variable-conditioned by such factors as status and residence. It helps to articulate a social setting radically different from communities in which media exposure is restricted or absent. However, it teaches a skill – having and expressing opinions – which is a large asset in the changing society and hence is desired by many who have no access to it through given status and residence. Among these, persons are differentially equipped to acquire a share in this asset by their particular handling of the mechanism of identification." [Daniel Lerner, "A Scale Pattern of Opinion Correlates: Communication Networks, Media Exposure, and Concomitant Responses," Sociometry 16, no. 3 (Aug. 1953): 266-271 (270-271)]

5 Stephen Toulmin argues that the Cartesian ordering of space is the outcome of the tumultuous time in Descartes's life, mired in decades of religious wars and chaos. Toulmin argues that the Cartesian space is a worldview that called for the definitive center of the universe and our world is organized around that center. In this sense, Toulmin suggests that the Cartsian space is far from being neutral as have often come to be seen. See Stephen Toulmin, *Cosmopolis* (Chicago: University of Chicago Press, 1990).

6 Dan Hunter, "Cyberspace as Place and the Tragedy of the Digital Anticommons," California Law Review 91, no. 2 (Mar. 2003): 439-519

7 Foucault, 1980: 194-195. (Emphases added; emphasis of "urgent need" in the original).

8 Michel Foucault, "Of Other Spaces," Diatritics 16, no. 1 (Spring, 1986): 22-27

9 Ibid. 23.

10 Ibid. 22.

11 Ibid. 23.

12 Ibid.

13 Ibid.

14 Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Vintage Books, 1995): 141.

15 Ibid. 143.

16 Ibid.

17 Ibid. 145.

18 Ibid. 147.

19 Foucault, 1986: 23.

20 See Hannah Higgins, *Fluxus Experience* (Berkeley, CA: University of California Press, 2002)

21 Michel Foucault, "Preface to the 1972 Edition," in *History of Madness*, ed. Jean Khalfa, trans. Jonathan Murphy and Jean Khalfa (London: Routledge, 2006): xxxviii

22 Gilles Deleuze, "The Fold," trans. Jonathan Strauss, Yale French Studies, no. 80, Baroque Topographies: Literature/History/Philosophy (1991): 227-247.

23 Foucault, 2006: xxxviii

24 Deleuze, 1991: 245

25 Michel Foucault, *The Order of Things: An Archeology of Human Sciences* (London: Taylor & Francis, 2005): 53-55

26 Ibid.

27 Gilles Deleuze, *Michel Foucault Philosopher*, trans. T. J. Armstrong (Routledge: New York, 1991): 159-168.

28 Ibid. 159.

29 Ibid.

30 Ibid. 161.

31 Giles Deleuze and Felix Guattari, *A Thousand Plateaus*, trans. Brian Massumi, (Minneapolis: University of Minnesota Press, 1987): 7.

32 Gilles Deleuze and Félix Guattari, "Concrete Rules and Abstract Machines" trans. Charles J. Stivale, SubStance, Vol. 13, No. 3/4, Issue 44-45 (1984):7-19 (8-10). This extract translation is the first instance of the term in English. Also in Deleuze and Guattari, *A Thousand Plateaus*, 1987.

33 Deleuze and Guattari, 1984: 9

34 Ibid.

35 Manuel DeLanda, *New Philosophy of Society: Assemblage Theory and Social Complexity* (London: Continuum, 2006): 10.

36 Giorgio Agamben, *What is an Apparatus? And Other Essays* (Stanford: Stanford University Press, 2009): 2-3.

37 Ibid. 8.

38 Even though in the English translation of Agamben's text, the term apparatus is used, here I have restored Foucault's term dispositif, Agamben's *dispositivo*.

39 Ibid. 16-17.

40 Ibid.

41 Ibid. 21.

42 Peter Dews, "Power and Subjectivity in Foucault" New Left Review, 144 (Mar./Apr. 1984): 90

43 Foucault, 1980: 138.

44 Foucault, 1995: 61.

45 Agamben, 2009: 14.

46 For example, Samuel Weber, Paul Rabinow, Rojcewiwicz, Stuart Elden, Jeff Malpas and others; see bibliography.

47 David Roochnik, *Of Arts and Wisdom: Plato's Understanding of Techne* (University Park: The Penn State University Press, 1996): 19. (Emphasis added)

48 Aristotle states in general of science, "Further, every science seems to be teacheable, and what is scientifically knowable is learnable." *Nicomacchean Ethics* VI.3.§3

49 Roochnik, 1996: 20-41.

50 Ibid. 20.

51 Ibid. 19. (Emphasis added)

52 Ibid.

53 Aristotle, Nicomachean Ethics VI.4.§3.

54 Ibid.

55 John L. Ackrill, "Aristotle on Action," Mind, New Series, Vol. 87, No. 348 (Oct., 1978): 595-601

56 Aristotle, Nicomachean Ethics VI.4.§2

57 Aristotle, Physics, II.3.

58 Richard Rojcewiwicz, *The Gods and Technology* (Albany: SUNY Press, 2006): 19

59 Aristotle, Physics, II.3.

60 Ibid.

61 Martin Heidegger, The Question Concerning Technology and Other Essays, trans. William Lovitt (New York: Harper & Row, 1977): 9-10

62 Ibid.

63 Ibid.

64 Ibid. 12.

65 Ibid. 13. (Emphasis in original.)

66 Ibid.

67 Ibid. (Emphasis in original.)

68 Ibid. 14.

69 Stuart Elden, Mapping the Present: Heidegger, Foucault and the Project of a Spatial History (London: Continuum, 2001): 75.

70 Heidegger, 1977: 21.

71 Ibid.

72 Samuel Weber, "Upsetting the Set Up: Remarks on Heidegger's Questing after Technics," MLN 104, no. 5, Comparative Literature (Dec. 1989): 977-992 (985) (Emphasis added); Weber uses "technics" instead of "technology." He argues that Heidegger never intended to mean technology, and that this is because Heidegger's text does not contain the kind of subject matter that is associated with "technology" per se.

73 Ibid.

74 In the Aristotelian sense of the Four Causes.

75 Heidegger, 1977: 19.

76 Robert. L. Rutsky, *High Technê: Art and Technology from the Machine Aesthetic to the Posthuman* (Minneapolis: University of Minnesota Press, 1999): 104.

77 Martin Heidegger, "The Origin of the Work of Art," *Basic Writings*, ed. David Farrell Krell (New York: Harper Collins, 2008): 158-162.

78 Martin Heidegger, *Being and Time*, trans. John Macqarrie and Edward Robinson (New York: Harper Collins, 1962): 98-105.

79 The distinction between *Umgebung* and *Umwelt* is adopted from that made by the zoologist Jakob Von Uexküll (1864–1944), and related to Heidegger's use. Von Uexküll is widely considered the founder of biosemiotics and the forerunner of cybernetics; Jakob von Uexküll, *A Foray into the Worlds of Animals and Humans*, trans. Joseph D. O'Neil (Minneapolis: University of Minnesota Press, 2010. Kindle edition). For a specific connection between Heidegger and von Uexküll, see Agamben, *The Open: Man and Animal*, Kindle edition Loc. 469–475.

80 Uexküll, 2010: Loc. 1202-1283.

81 Agamben, 2004: Loc. 469-528.

82 Bruno Latour, *Pandora's Hope* (Cambridge: Harvard University Press, 1999): 196

83 Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge: Harvard University Press, 1993): 10.

84 Ibid. 10-11.

85 Latour, 1999: 182.

86 Ibid. 183-185.

87 Ian Hodder, *Entangled: An Archaeology of the Relationships between Humans and Things* (New York: John Wiley & Sons, 2012)

88 Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network Theory* (New York: Oxford University Press, 2005): 54.

§ 2 Encoding and Codification

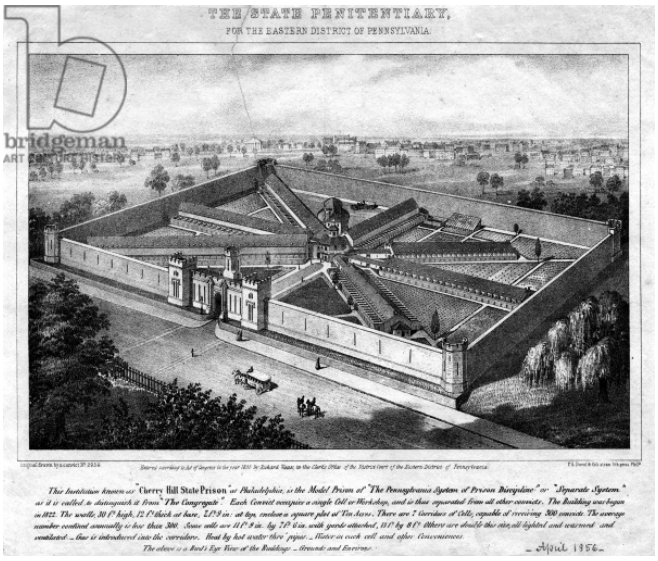
1. Overview

Foucault discusses dispositif in terms of the spaces of discipline,[1] which encompass the codification as the juridical power of the dispositif. Through codification, the state penal apparatus creates the *gentler* instrument of surveillance, detention, control, and corrective-punitive measures. The state codifies and enforces various laws in order to regulate and manage undesirable and criminal *behaviors*, rather than directly interjecting on the body itself through torture, mutilation, and execution. Such publicly displayed punishments were used to serve as spectacle staged by the state apparatuses in order to discourage criminality and dissent.[2]

Codification includes specifications and protocols that define the operation and performance of a given dispositif and its apparatuses, regardless of the state or any other types of socio-political organization. Another aspect of codification is the attempt to establish consistency, coherence, and rationality, ultimately a sense of justice, by means of standardization.[3] By consolidating various encoding and encoded (formal and/or substantive) schemes of society, government, and territory, codification strengthens the collective ideals that are reflected, shared, practiced, and enforced as the authoritative reference and standard. In both aspects of the operative-performative and standardization, codification reflects the intent and the will to *organ*-ize and to manage (if not entirely to suppress) the undesirable elements that adversely affect the governance of all aspects of a society.

First, codification constructs a way of consolidating and formalizing the juridical processes by writing into law a division of legal subject matters such as, for example, the codes governing the penal system and its procedures, or those for commercial practices and transactions. In relation to Foucault's *Discipline and Punish* and the notable example he refers to in it, Jeremy Bentham's Panopticon and its actualization as Eastern State Penitentiary[4] in Philadelphia in 1829, [Figure 3] it is significant that the eighteenth century English barrister and legal thinker was an ardent proponent of codification, of rationally and critically writing the state's laws in order to implement a comprehensive and consistent instrument of governance. In this sense, in contrast to the kinds of rules and practices that are culturally and historically inherited, the common law, codification is an abstract and formal as well as a rational way of consistently and equitably organizing and executing judiciary responsibilities.

Bentham's opposition to the common law — judiciary and legal practice based on the



[Figure 3]
Eastern State Penitentiary Lithograph by Samuel Cowperthwaite (Convict No. 2954), lithograph, 1855

precedents of similarities, rather than the formal, textual statutes — is well established. Bentham even proposed to *codify* of the laws of the United States to James Madison, the fourth president of the US (1809-1817), and the governors of numerous US states, including Simon Snyder, the governor of Pennsylvania at that time.[5] In his letter to Madison in October 1811, Bentham offered his services for "drawing up for the use of the United States … a complete body of proposed law … a *Pannomion*."[6] In the same letter, he also brought to Madison's attention that his proposal for a Pannomion was to replace "the wordless, as well as boundless, and shapeless shape of common, alias *unwritten* law."[7] Bentham characterized the common law as "the plague," and advised Madison to "shut out our ports against the common law [*sic*]."[8] What Bentham proposed was meant to transform the legal system from the practice of traditional, inherited norms to that of abstract, rationalized statutes, the codification. Thus, it is consistent with Bentham's ideal of a totalizing codification that he would propose the architectural apparatus of discipline, the Panopticon. The abstract-rational nature of the Pannomion is embodied in the power relations embodied in the Panopticon, and also makes it a part of the codification that consists of encoding technologies. The architectural configuration of the Panopticon reflects the apparatization of such codification, and ultimately helps produce a new rationality within the dispositif. For Bentham, the architecture of the Panopticon presents the quintessential embodiment of codification. This is to say that in the juridical sense of the term, codification is a *matrix* that coagulates and suspends the social and political aggregates in appropriate places, and determines the operative disposition of various state apparatuses. Ultimately, codification reflects the state's ideals and the extent to which it is willing to enforce such ideals, as a form of inscription.

Bentham also believed in the potential universality of codification. He held the view that "Laws need not be of the wild and spontaneous growth of the country to which they are given." Furthermore, "prejudice and the blindest custom must be humored, but they need not be the sole arbiters and guides."[9] Bentham also regarded foreigners as better suited to writing the laws of a state. He believed that they were less prejudiced and less tained by the particular social and cultural inclinations than the natives, a kind of disinterested Kantian aesthetics of legal codification. Bentham's Pannomion was supposed to embody the ideals that are enumerated and codified in statutory aggregation.

Codification is an assemblage of various singularities – the individual statutes – that are inscribed, encoded, and interconnected in order to form a comprehensive domain system that circumscribes and controls a given social and political milieu. The Panopticon is an architectural manifestation of the power dispositif legislated by the Pannomion, the codification that consists of determinate intent and objectives of each individual statute, and how such objectives will be implemented and enforced by the power dispositif. The Pannomion creates a new rationality that contrasts with the hereditary common law. However, the Panopticon is a technological, engineered apparatus that is encoded with the ideals and efficiencies of the penal laws according the codifying authorities. Seen in a juridical sense, codification is supposed to establish the limits, boundaries, and trajectories of social, economic, and political threads. As does any form of inscriptive practice, codification also sets out a certain ideal state in which the categorization, compartmentalization, and formation of archives or depositories of information and knowledge are expressed, defined, disseminated, and enforced.

In architecture, the effects of disciplinary codification — how to inscribe and incorporate programmatic objects, events and/or situations in order to sublate them in an existing assemblage — depend primarily on the specifications of both graphic and textual documents. While the historical instruments for inscribing architectural assemblages consist of orthographical, projected drawings (i.e plans, sections, elevations, etc.), today's architectural dispositifs rely on the codification by technology. In other words, architecture, which is always a hybrid of subjective-objective ontologies, is now also intimately incorporated into codifying technological dispositifs. Not only are the inherited traditions of architecture superseded by technologizing assemblages, but the practice of architectural conception and composition is also parametricized to the extent that the architect's work involves a series of software programs for encoding the substance of the design and its constituent parts. The technologized and parametricized form of architectural practice is an

assemblage of various components selected from a database or a catalogue. Each product represents a given industrial manufacturing interest. The extensive digital database of construction product manufacturers provides not only the product information, but also more crucially the graphic *library* items that can be simply inserted into project drawings and other documents the architect prepares. Such databasing of many divisions of architect's work connects very closely the marketing interests of the manufacuturers and the timesaving workflow for the architect that reduces drawing time, thereby directely affecting the profitability of the practice. Therefore, the architect's work consists of overlaid, specifically calibrated elements that are no longer directly attributable to the architect himself.

The codification specific to apparatus-centric culture — that is, the kinds of cultural work and products that depend on extra-haptic or even non-haptic agency for conception, composition, production, and dissemination — expresses radically different kinds of rules and protocols, which contribute to its scope and fluidity. This codification is imbedded in what Friedrich Kittler describes as the "discourse network."[10] According to Kittler, a discourse network consists of:

> … the network of technologies and institutions that allow a given culture to select, store, and process relevant data. Technologies like that of book printing and the institutions coupled to it, such as literature and the university, thus constituted a historically very powerful formation.[11]

Therefore, and most importantly, a discourse network is linked to the operative nature of a given institution that administers it, in relation to Foucault's conception of dispositif, as well as being composed of technologies and their instruments. Such an operative and administrative dispositif and its codification would exert a substantial influence on producing, standardizing, implementing, and enforcing the integrity of the data. In this respect, the data is seen to include anything and everything that may be tabulated, enumerated, and classified, both quantitatively and qualitatively.

Also related to Foucault's construction of "archive" and "discursive formation," what Kittler describes is a radical shift in the codification of discourse, its dissemination and its use-consumption, from the discrete, numerical archival model of classification and organization, to the relational database that is non-local and intermodal. For today's digital apparatus-centricity, codification defines that which "In describing such feedback systems of senders, channels, and receivers, the instantaneous exposures or snapshots of a single moment can be of more help than intellectual histories,"[12] as well as modifying accumulated historical conventions.

Regardless of the origin and content of the data, including various forms of encoded text

and the application software used in architecture, and regardless of the area of codification involved, today's ubiquitous codification necessarily underscores the need for a new discourse. The new codification distinguishes itself from the historical one in that it is: (1) composed of languages that are specific to the hardware and the division of labor to be encoded; (2) supposed to be invisible or opaque beyond the interface or implementation level, that is, the end users should not be able to ascertain and manipulate the so-called source code, the secret; (3) composed of various layers and modalities that are simultaneously operative yet disparate, and predictable, yet random; (4) multimodal and influential in a pervasive and ubiquitous manner, that is, it extends far beyond the immediate areas of interest, and may be transposed to other areas of affective interest.

This new, multimodal codification may be characterized as a discourse. It already contains the kind of information that is invisible (and mostly impenetrable to everyday users of such information), but dictates nonetheless how determinate the work is in relation to the matrix of media. The expansive networks of global archives — if we were to entertain for a moment the existence of such a totalizing entity — are interconnected, and behave in an intermodal way that is encoded and managed by various objective-specific, standardized, semantic, and syntactic systems. This codification system underpinning the discourse network includes not only text and image content, but also the names of the authors, creation dates, the kind of application software used, and so on, that is, what is known as "metadata." At the same, time the codification allows the archive to become fluid, in such a way that what has been encoded may be transposed, modulated, exported, and/or extended to another form of object-event.[13]

The creation of such object-events designates the process of creating content by encoding it in the language of digital codification. More specifically in architecture, the codification process that is broadly termed "scripting" has come to mean encoding a formal, generative process in a specific digital language, such as Processing, MEL, VisualBasic, and so on. By virtue of the codification matrix and its language, architecture today is intermodal. Architecture may be interchangeable with other forms of media. Such interchangeability, and therefore intermodality, also allows architecture to modulate[14] various mediative expressions of cultural categories. According to Deleuze, "Enclosures are molds, distinct castings, but controls are a modulation, like a self-deforming cast that will continuously change from one moment to the other, or like a sieve whose mesh will transmute from point to point."[15] Foucault spatializes the nineteenth century's disciplinary societies in terms of the progressive enclosures one would pass through, the family being the first in one's life. Such enclosures are "no longer the distinct analogical spaces … but coded figures — deformable and

transformable …"[16]

The question of whether historically established disciplinary authenticity has become pointless, when considered as only one instance of control via coded and modulating figures.[17] However, while the authenticity of a given discipline's practice and influence has greatly diminished, the modulation also affords architecture, and its conception and composition, the capacity to significantly expand the extent of its affectation. Hence the modulation provides vastly richer potential by more easily and effectively incorporating other kinds of apparatus-codification-driven modes of architectural conception, composition, and production, as well as what is regarded as traditional media.

The modulation designates how one can navigate different forms of information and media, regardless of the purpose of the production (of the coded figures), and subsequent use and consumption. Architecture is one *visible* element in the matrix of intermodal dispositifs. But, architecture is itself a matrix that contains various modalities that help to connect architecture to other matrices. Therefore, Kittler argues, "a total media link on a digital base will erase the very concept of medium."[18] Likewise, architecture as mediation of both production and use implicates the fluidity of the media matrix suggested by Kittler's view of the totality of the digital base. According to Kittler, such fluidity helps to refresh discursive fragments indefinitely in an endless loop, as long as they are expressed by numbers.[19] It affords the architectural dispositif the opportunity to absorb and incorporate increasingly complex affectations of other media dispositifs that have existed outside the traditional, historical bounds and supposed autonomy of architecture as a discipline.

Analogous to Deleuze's contiguous, free-flowing spatial modulations made possible by the new forms of control and management, architecture also instantiates modulation in which it flows more freely in and out of other dispositifs. In this sense, we could also posit that architecture is a type of a medium and a dispositif. It is no longer absolute or certain in the historical sense of the disciplinary autonomy. Instead it is fused to the endless loop of information and knowledge of all things. It erases its very concepts, and thereby, an insistence on disciplinary authenticity and autonomy appears highly dubious, if not pointless and irrelevant.

Returning to an issue that was touched on in the section on Heidegger's Ge-stell, that of the separation between content and its (re)presentation or (re)presence, the algorithm-driven media disjoin the content from its means of presentation, and even from presentability. Also considered "transcendental,"[20] the emergence of the Internet protocols and the subsequent structural changes

prompted the development of the markup languages such as HTML 5 and XML. Their design and implementation explicitly emphasize intermodality. They facilitate various types of information to appear in a consistent manner across various hardware and software environments. Today's digital media are distinctive in their capacity to span different types of devices, change shapes, and shift places, depending on how the content is encoded and codified. Thus the new languages of codification makes it possible to assemble a large amount of information in a way that is not determined by temporal and geographical bounds. Ultimately, the encoded and codified database has lead to a new construct of knowledge that is based on exchange values and valorization.

The digital media make the one-to-one correlation between the physical presence and its content highly problematic, even impossible.[21] On the other hand, such disjunctions and random *slippages* also make it possible to work with and manipulate the content in ways that would have been impossible without the digital capability to separate content and presentation. In this process, the slippages occur in a random, gratuitous way that our daily interactions with and through digital devices consist of modulations between our explicit action, and the contingencies that occupy the disjunctions of such modulations.

2. Cool vs. Hot Media and the Technologization of Aesthetic Work[22]

One of the points in understanding what Kittler describes, is what Marshall McLuhan first outlined as characteristic of "media."[23] According to McLuhan, we have always moved from one type of media to another, from "cool" media to "hot."[24] Through technological advances, certain new media appear hot, and older ones become cool. "Cool" media are exemplified by their degree of fixity, or of their "molded-ness." For example, compared to a book or a newspaper printed on paper, quintessentially a cool, molded, and fixed medium, the TV broadcast is "hot" because it is not as fixed as printed paper medium and therefore more volatile. By the same token, as the Internet emerged as hot, the TV broadcast became cool. Such *molded* media – after Deleuze's concept of the mold – cast in a set of specific technologies and devices, can hardly function substantively outside the fixed frame of the hardware. Once they are set, the molds are not interchangeable, fluid, or *smooth*. The distinction between cool and hot media also indicate the substrate and agent of containment. The content is contained, transmitted, received, consumed, and used in a specific, fixed manner that agrees with the inherent logic of the mold, the substrate, not the content. The mold-substrate determines the nature and latitude of the content.

To this argument, McLuhan adds the dissemination and transformation of the content, the potential for participation and completion.[25] Cool media facilitate, even require, participation and completion by the receiver, while hot media do not. The cooler the media are, the more engaged and invested the receiver must be in order to imagine beyond the fixity of the substrate. For example a person reading a paper book will have to resort to his imagination based on the purely textual material he reads. There is no recourse to any other way of imagining the content than by projection from what is printed on paper pages. On the other hand, the hotter the media are, and therefore the more volatile their ontology is, the less engaged and invested the audience will be, due to the increased disjointedness from one part of the content to the other in constrat to the relative coherence and stability of the old media. In this case, various fragments of the same book may be available pre-recorded in an audio or even video format that can be accessed with far less effort that reading the book page by page. The degree of participation and completion suggests that, along with the emergence of hot media, specialization and fragmentation emerge. Hot media destabilize the established order and conventions.[26] New technologies and new tools afforded by hot media require new classes of producers, specialists who are familiar with their function and use. These new specialists in turn fragment and *detribalize* the standing regime of their society. Hot media possess such disruptive potential that, once they emerge, the older standing order is disrupted, and a new order emerges in accord with to the new technology. When the new order of hot media stabilizes, the new expert class retribalizes the society. The new tools and technologies of hot media not only destabilized and detribalized traditional societies,[27] but also brought with them hot codification, namely that of a fluid, mutable modulation of enclosures.

McLuhan speculates about how the invention of the typewriter has changed the practice of literary composition. While pre-mechanized handwriting provides the writer with an occasion for mapping the interiority of storytelling in a specifically tactile and personal way, the medium of ink on paper directly inscribing a smooth flow of words, the typewriter augmented the meditative qualities of writing, as the practice became a clinical, mechanical operation. The use of a typewriter offers a fixed pattern, through the functional organization of the keys, eventually standardized as the so-called QWERTY keyboard. By becoming proficient at typing, through internalizing the proprioceptive act of pressing the keys, the writer eventually establishes a similar kind of relationship to the paper. He can type as fluidly as he can write with a pen. Yet, with a typewriter, the writer can see the standardized letters appear one by one in neatly organized lines, and therefore the interiority of personal storytelling appears objectified and exteriorized in a form that suggests certain a finality

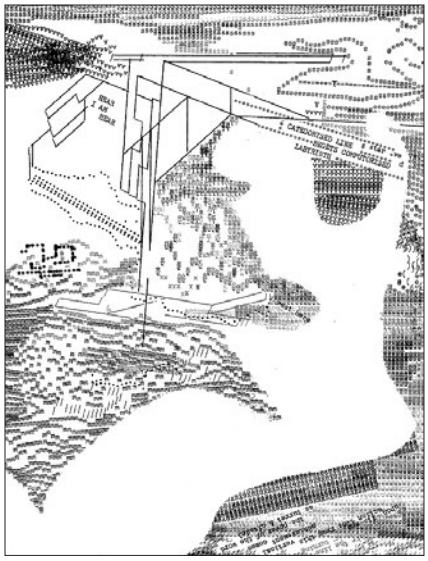
in the writing process. The personal, authorial aura of the writer is gone.

As McLuhan points out, unlike handwriting, "The typewriter fuses composition and publication, causing an entirely new attitude to the written and printed word."[28] Typing, unlike handwriting, consists of first comprehending the mapping of the alphabets according to the logic of the mechanical organization. Next, the writer advances the pages through a linear, letter-by-letter, line-by-line clicking of the keys and pushing the return lever, according to the precisely standardized spacing of individual letters and lines. The typewriter apparatizes the writing process as a combinatorial pattern. Typing standardizes the writing process, and brought writing into the age of the industrial manufacture of identical copies.

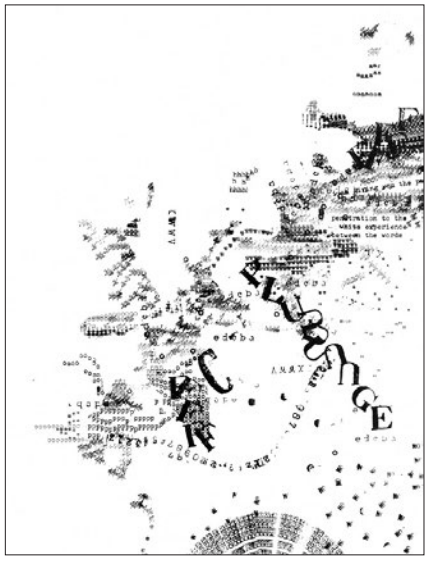
While handwriting is an isolated, unique process, several stages removed from its final exteriorization as a printed book, the typewriter provides "the freedom of oral stress … Because he is an audience for his own mechanical audacities, he never ceases to react to his own performance."[29] Seen this way, it is no coincidence that for today's architects composing before a computer screen, the process is not far removed from that of the writer in front of a typewriter: interacting with the device is the act of composition, and vice versa. In fact, the architect's work with a computer became closer to the writer's with a typewriter. Aside from the apparent complexity of the algorithmic processes of the computer's digital, hardware-software setup, the architect no loner scratches vellum that constitutes a more direct and definitive prospect of composition-instantiation. He now reacts to the patterns of the apparatus, as exemplified by typing keyboard shortcuts, or clicking virtual buttons for automated algorithmic operations through skeuomorphic interface using a movable switch, the mouse.

According to McLuhan, the poet E. E. Cummings's experiment in composing a page with words demonstrates the treatment of typed pages as visual objects by composing the visual locations of each word, manipulating the way the given page may be read. In McLuhan's view, the poet with the typewriter, the machine for writing, "much in the manner of the jazz musician, has the experience of performance as composition."[30] On this point, chronologically located between McLuhan's and Kittler's publications, the poet Steven McCaffery's typewritten work, *Carnival* that succinctly illustrates writing first as a physical work and then as a visual experience, before being noetic and verbal. Reading as an embodied experience has been transformed beyond the oral tradition by typing as a haptic index mediated by the typewriter.

McCaffery's notable poem/typewriter art, *Carnival*,[31] in two different versions, the first from



[Figure 4]
Steve McCaffery
Carnival I, Panel 11, 1967-70



[Figure 5]
Steve McCaffery
Carnival II, Panel 1, 1970-75

1967-70[32] and the second from 1970-75,[33] are typed in graphic composition. Each letter was typed and the paper released, and the next letter was typed, in order to form a kind of topography of letters on paper space. In addition, sections of typing were masked by paper cut into different, flowing shapes, so as to block out parts of the writing. Each letter of the first panel is an aggregate within the overall cartography of the red and black letters of a typical typewriter with a black and red ink ribbon. [Figure 4] The second panel employs the same technique, but adds the imprints of ready-made letter stamps and additional colors.[34] [Figure 5] Often characterized as typewriter art, the language composition becomes visual, and the field condition of the composed letters becomes the primary content. As McCaffery himself puts it, "*Carnival* is … designed ultimately to put the reader, as perceptual participant, within the center of his language."[35]

McCaffery further states, "Language units are placed in visible conflict, in patterns of defective messages, creating a semantic texture by shaping an interference within the clear line of statement."[36] He also states that *Carnival* is "product and machine, not process," and "must stand objective as a distancing and isolating of the language experience. … It is language presented as direct physical impact …"[37] Thus:

> Taken this way — as the "seen thing" — its conflicts and contradictions are accommodated in a form based more on the free flight of its particulars than on a rigid component control. … Against the melodic line which is narrative I work with semantic patchwork, blocks of truncated sense that overlap, converge, collide without transition as the sum total of language games within our many universes of discourse.[38]

McLuhan's theory also describes the technological codification that took place both with writing and therefore with the formation of discourse and its dissemination through communicative media. The technological codification reflects on both the substrate material, and on how the media require an additional layer that instructs them how to function. In the oldest of the cool media — for example, cuneiform and hieroglyph writing carved in stone —the writer, the content creator, connected with the substrate in a direct tactile-visual way. As media become hotter and more fluid, they require an ever-increasing complexity and extension of dependencies in the way their content is structured and instructed, proportionate to the scope of the content's disseminability.

Along with the cool-to-hot transformation of media ontology, the means and manner of their codification have changed in such a way that the language of codification merges with, and dictates, the ways in which the content is registered, contained, and disseminated. Deleuze also provides a perspective on how the use of control has transformed the way society functions, from a series of discrete enclosures, the molds of tribalized and tribalizing individuals, trades and institutions. In other words, the transition from Foucault's society of discipline to the society of control indicates that "one is never finished with anything — the corporation, the educational system, the armed services being metastable states coexisting in one and the same modulation, like a universal system of deformation."[39]

For highly extensive deformation, "The numerical language of control is made of codes that mark access to information, or reject it. We no longer find ourselves dealing with the mass/individual pair. Individuals have become 'dividuals,' and masses, samples, data, markets, or 'banks.'"[40] This language of control determines the digital coding and codification in countless forms of application

software and Internet dispositifs. It has destabilized all forms of cool media, and their norms and conventions, in a profound manner. Without being subjectified by the codification in one manner or another, one can no longer choose to opt in or out. For example, money, probably the very last vestige of cool media, has already become many times hotter when severed from the gold standard, and when alternative financial instruments, such as credit cards, stocks, and bonds were invented. Money is increasingly destabilized and detribalized by the codification and modulation of multimodal disposifs and devices: the Internet, satellites, wireless transmission of digital signals, encryption, and so forth, not to mention an array of the so-called "derivative" financial instruments. As Deleuze summarized it, "Everywhere *surfing* has already replaced the older *sports*."[41]

The society of hot media and its *hotness* are defined by how it has come to be encoded and codified by the numerical language of control and the degree of multimodality. The now ubiquitous smartphone may be well said to be the device of control and subjectification. While we may access bits and pieces of information and services with one single type of multimodal device, it also functions as a "trackers"[42] that we subscribe to and carry voluntarily. Even though we become attached to our smartphone because they make our life easier, faster, and entertaining, it circumscribes our affairs in its technological mold for profit. We may also speak of the codification of multimodal architecture, in a similar way to that of the emergence of multimodal dispositifs. Architecture has always been multimodal. First, in the traditional sense, the drawings embody the interiority of the conception and composition process. They contain and inscribe various modes of architectural construct that are open to various interest, such as the architect's own, the clients, the contractor's, and so on. We also reconize the exteriorization: how the drawings are qualified, and the specifications and contracts legalize and move the drawings toward a certain instantiation as a built structure, regardless of the actual site. Subsequently, the instantiated architecture is occupied and used by *acting out* our habits and routines in it. We also add to and modify the buildings to suite our desire, habits, need, and changes of life circumstances. The buildings ha vebecome as intermodal as the society that has come to depend on intermodality for economic growth.

The International Style, which dominates the metropolises of the globe amply demonstrates the potential for the extensive and pervasive penetration of, and the ensuing destabilization and detribalization manifest in "hot" architecture. The subjectifying nature of digital algorithmic apparatuses is predicated on the software, which destabilizes the historical instrumentality and conventions of architectural composition, the orthographically projected drawings and the specifications in legal writings that have exercised their authority.

At this point, we can discuss Andreas Huyssen's criticism of Jean Beaudrillard's notion of *simulacra*.[43] For Huyssen, McLuhan's theory of media is fraught with problems. The most serious one is what Huyssen sees as a "media theology":[44]

> Indeed, the mythic pattern of fall and salvation must be taken at its most catholic. Try an experiment in reading: for electricity substitute the Holy Spirit, for medium read God, and for the global village of the screen understand the planet united under Rome. Rather than offering a media theory McLuhan offers a media theology in its most technocratic and reified form. [45]

In other words, according to Huyssen, for McLuhan media takes on the role of totalizing religion, in its power to arouse the optimism of faith. Unlike the early modern avant-gardes, which shared a similar optimism about technology, the postmodern art of the 1970s lost the connecting link between the aesthetic and the political, and come to take popular culture for granted.[46] While the historical avant-gardes were always conscious of social change through aesthetic experimentation, the American postmodern avant-gardes especially failed to sustain communication between art and life, and ceased to maintain the critical and resistive position.

The subjectifying apparatuses and the deification of media share the same kind of encoding that complies with the engineered, technological codification. As religion used to impose its authority, and exerted a totalizing, transcendental authority, the worldmaking that McLuhan and Kittler describe is written in a technological language that underlies and drives contemporary discourse. All the elements of McLuhan's media are in fact detached from the historical form of art that is directly connected to somatic engagement. Even when there was no premeditation, the composition, what distinguishes an experimental artistic work in the historical sense has always been the directly physical, often destructive, engagement by the artist, the producer.

McLuhan's theory, and by extension Beaudrillard's, represents the codification layer, the *velo* of the apparatus, which severs the direct link between the work of art and the artist. Even in photography and cinema, the quintessential modernist media that were thought to destabilize painting, the somatic engagement is rather explicit. Photographs are *crafted* through a series of physical work with a camera and through photochemical processes. The photographer must first expose the photosensitive media, a sheet of film or photo paper by carefully calibrating the exposure and focusing on the object. The depth of field maust also be controled in order to compose the elements of the photo that will be sharply focused and the others that will be made out of focus

and fuzzy. After the exposure, he physically immerses the exposed photosensitive media in a sequence of chemical solutions, controling the temperature and the chemical reaction time precisely. After the image was developed and stabilized, the photographer would sometimes retouch the photograph with dyes, eliminating the flecks of dust shadows that could not be avoided due to the static electricity the media material tends to develop. In cinema, the motorized, linear advancing of the film also demands the labor of cutting and splicing various segments, essentially a series of still photographs, twenty-four of them per one-second. The serial nature of both photography and cinema does not alter the fact that ultimately, photographic media also involve substantial haptic engagement. It is not the same kind of somatic engagement we see in sculpture or painting, that is, directly corpoindexical, but the somatic aspect of producing photogaphs is closely connected to the photographer's sense of timing, of light exposure and chemical reaction. In this sense, the fact that human intervention is directly and solely responsible for the appearance and existence of this work explicitly embodied in the photographer. However consistently reproducible photographs and movies may be, it is undeniable that they are nonetheless crafted, handmade. The mechanical reproducibility occupies a highly contigent, if not marginal, position.

The distinction between photography and painting becomes starker, when it comes to the proximity between the originals and the reproductions. The mechanized and automated reproducibility of photographs is substantially higher than that of paintings. Especially within the scheme of digital codification, in which photographs are encoded as electromagnetic data, not unlike the magnetic tapes for audio and video contents. In the case of digital photography and video, the craft of photography is completely severed from the materiality of silver particles fixed on film and paper. Here, the only vestige of the photographer's corporeality is limited to algorithmic operations that are mediated by the interface layer of the imaging software program displayed on screen.

Apparatization through codification involves a completely new set of operations and expertise, which is detached from the direct artist-content relationship that, historically, aesthetic works used to embody. Aesthetic works are now produced according to the specifications supplied by the programmers who stand independent of the content and production of a given work. It is hardly an exaggeration that the new professionals' intimacy with the codifying regime is crucial to the production and existence of an aesthetic enterprise in the apparatus-centric culture. They *write* the "soft" infrastructure in which the aesthetic work may be not only created, but also allowed to exist.

Beyond the point of initial contact, that is, the encounter between the artist and the object of

the work, apparatuses that comply with certain codification regimes mediate the work's ontology. Such new, codification engineering, a new form of a machinic as well as linguistic construct, has become increasingly invisible, as it penetrates more deeply into popular culture and politics. As we discuss in the next section, digital, algorithmic apparatization and codification are meant to *disappear.* To the extent that the user-subject end of the affectation is ubiquitous, yet is again mediated by the interface that relies on culturally familiar and acceptable graphic signs, icons, and symbols, the experience of both emotional and cognitive dimensions is intimately imbedded in a manner that appears culturally coherent and inclusive.

3. Architecture of New Media

Since McLuhan's time, the scope and potency of computing power have exponentially expanded and increased. Since the 1980s, we have witnessed the rapid proliferation of the so-called personal computer. Today, we can reasonably claim thatwe are very close to Mark Weiser's vision of ubiquitous computing (UC) proposed in 1991.[47] According to Lev Manovich, the "new" media are characterized by five tendencies that are present not only in those produced with computers from the outset, but also in the digital conversion of analog materials of "old" media.[48] The five tendencies are numerical representation, modularity, automation, variability, and transcoding.[49] Further extending the theory of hot media in the context of computing, the new media incorporate a wide array of old media types, as they are converted and encoded for use on various types of digital devices.

Mark Weiser, the former head of the Computer Science Lab at the Xerox PARC (Palo Alto Research Center), claimed in a paper published in 1991, "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it."[50] Weiser believed that if the computer were to become part of the most profound technological developments, it had to be so seamlessly integrated into our lives that it would disappear and become invisible. Thus, what we do with computers will be as natural as writing with a pencil on paper. Xerox PARC is the birthplace of the graphic user interface (GUI) that provided the prototype for subsequent GUI's such as the Apple OS. According to Weiser, the promise of ubiquitous computing is not related to how portable the computers are, or what we do with computers individually:

> "Ubiquitous computing" in this context does not mean just computers that can be carried to the beach, jungle or airport. Even the most powerful notebook computer, with access to a worldwide information network, still focuses attention on a single

> box. By analogy with writing, carrying a super-laptop is like owning just one very important book. Customizing this book, even writing millions of other books, does not begin to capture the real power of literacy.[51]

According to Weiser, the widespread distribution and availability of the hardware alone would not realize "the real power" of computing. In his view of the UC, it is crucial for the computers to be able to recognize their location and the scope of connectivity. The capacity of computers to recognize the users and theor location in relation to the information or data they need at a very large scale makes the UC comparable to the collective power of literacy. In this scenario, computing is so pervasive, and its network is so vast that the users do not necessarily carry the information with them, as computing devices will be as common as paper. Weiser calls this "embodied virtuality,"[52] (EV) to replace the virtual reality (VR). He sees the VR as further exacerbating the disconnection and isolation of individuals by encapsulating them, and replacing the human environment.

While various forms of both EV and VR gain wider popularity (e.g. most notably in telecommunication services, entertainment, computer games, etc.), the key issue lies in the very mode of "interface." Especially in EV, with its suggestion of imbeddedness, the GUI continues to incorporate and extend the historical and cultural models, making them hotter, and its content increasingly intermodal. VR aims to replace such historical and cultural models altogether; EV extends the tradition of rectangular framing and distinctive foreground-background relationships of classical painting, books, windows, proscenium theater stages, and so on, in the form of a rectangular screen with an array of icons modeled after the common physical desktop. VR is designed to replace the entire visual and audio field of perception with wearable devices. With regard to Weiser's claim over EV and VR, it is worth discussing what an interface is and does.

In the context of the position that a new medium always remediates and includes the elements of the older one that it destabilizes and supersedes,[53] the development of media displays a genealogy of cultural conventions. This genealogy both contains the tendencies that define hot media, that is, some sort of *improvement* to the older media, and increases the volatility and disjointedness of each historical medium overlapping and remediating another. This phenomenon is primarily attributable to the assemblage of digital apparatuses is purposeless by itself, and has no direct effect on the tasks that may be handled by its use prior to encoding. Digital apparatuses must be programmed. They must be programmed with a consistent, widely shared encoding scheme, in order for them to be functional in various dispositifs.

Codification is inherent in every instance we use a computer, through the software and its interface. We are aware of the efficacy of the software, the one piece of technology that comes close to Weiser's EV, rather than the aggregation of hardware itself. The way we use software has became almost intuitive, but this type of routine, intuitive use is possible because of culturally referenced interface systems. By incorporating culturally established elements and rituals in the presentation of the interface, the software is accepted as a part of the everyday experience. Such software includes a wide range of programs for various everyday needs. Several programs established the de facto standards, such as Microsoft Office Suites, Adobe Creative Suites, Autodesk Suites,[54] and so forth. Packaging several related programs into so-called suites increases one manufacturer's dominance over a particular trade or work by codifying the relations that are shared by a given work environment. But on a more general scope, directly simulating the sense of community America On Line (AOL), for example, demonstrated a codification regime. AOL, one of the first enterprises that attempted to form a *gated cyber community* through paid membership, provided an easy-to-use interface, communication and exchange features such as chat rooms and bulletin boards, and thus built a very large membership base. In the 1990s, AOL provided all the features we have come to expect in what is now known as social media. It also implemented a standard of conduct for the members, and what they distributed through its channels of communication. It created an absolute catchment area where the members were captured for marketing. AOL could observe and control all its members, and it became impossible for an individual member to be selective:

> AOL is a different narrative world; it can create other different worlds because it is in control of the architecture of that world. Members in that space face, in a sense, different sets of laws of nature; AOL makes those laws.[55]

The digital codification of new media has placed an anchor for the dispositif to mediate and modulate between the dematerialized content-presence relationship, and the inevitable "slippages" riddled with the contingencies of random occurrences.[56] The codification of a community no longer relies on typeset media, but is instead imbedded in the very act of participating in the dispositifs of the networked formation of discourse and culture. Furthermore, the codification operates in such a way that its presence is invisible, if not opaque. The invisibility of the operatives and the inherent instances of random slippages make it all the more relevant, now that the inevitable contingencies of mediation and agency amplify dissonance, and its in-your-face penetration into the profoundly destabilized determinatives and instantiation of the quotidian, or what used to be regarded as such.

What makes digital dispositifs different is that they do not involve the sense of totality foreshadowed by Bentham's Pannomion, and its embodiment in the Panopticon. The codification of cyberspace is composed of slippages and contingencies that arise from the various encoding languages that share certain vocabularies that enable them to be networked. But there is no singular, universal language, as various divisions within a system require different encoding languages. A programmer or a software engineer is required to learn a Babelian array of such languages in order to be able to implement and maintain a system.[57] As Bolter and Grusin note, the new media and its dispositif network may reform and reconstitute reality.[58] The reformative capacity of the media emerges through the increasing technological capability to separate content from presentation, and thereby reconstintute and reconfigure the respective discursive fragments. In digital hypermediacy, the discursive fragments are *marked-up* and *tagged,* ready to be relocated and reconfigured according to each individual context of dissemination, the database that can represent any number of quantifiable information, a type of a choropleth map of the digital age

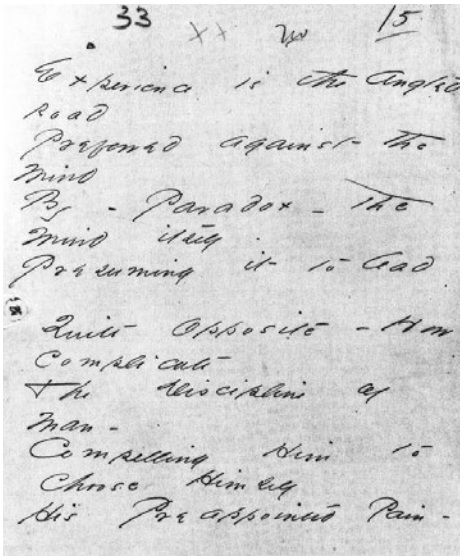
Just as the legislative legal codification process does, countless individuals and organizations contribute to the encoding and implementation of software programs and systems. Even if a program or a system becomes outdated, or presents a host of problems and incompatibilities rendering it dysfunctional, as in the case of laws, it cannot be simply discarded and replaced with a new one. Once a software system is in place, technically and financially it becomes extremely difficult to dispose of it. The existing system is patched and made to run.[59] However outdated and inadequate a software program may become, and even if the original developer goes bankrupt, it will be modified, revised, and bought out by a new company, which will repackage it and incorporate it into a different system ecology. Therefore, beneath the seemingly magical intermodalities of a software environment is a long series of slippages and entanglements that fold into itself in a web of disparate programming languages.

In 1989, shortly prior to the implementation of the W3 standard, Kittler identified three technological inventions of the late nineteenth century that transformed the way we perceive and understand the world around us: gramophone (aural); film (visual); typewriter (textual).[60] According to Kittler, the typewriter was the first device to initiate the separation of content and presentation. What Kittler describes is, in essence, that the three devices, and their impact on reforming the presentational, set the stage for the intermodality of media technologies and devices we witness today. Unlike the kind of liberating experience proposed by McLuhan, the process of writing on a typewriter became personally disengaged and altered the somatic dimension of the presentation.

The typewriter removed the author's personal inscription, and replaced the handwriting that used to embody the presence of the writer. The typewriter represents not the liberation but the disappearance of the author. Writing no longer carries the traditional contingencies of the hand and the body. The content of writng is more open to the outside of the writer's immediate coporeality, objectified and exteriorized. The typewriter removes part of the authorial aura that used to be embodied in the writer. In effect, the typewriter altered the practice of writing and the position of the author in a way that "separates paper and body during textual production, rather than during reproduction (as did Gutenberg's movable type)."[61]

Media technology produced new forms of dissonance between image and sound, thereby bringing to the surface the slippages and contingencies of encoding. But the consequence of typed texts strengthened the authorial status, first, by making the writing appear more objective and refined because it appeared finished and *printed*. The typewriter made the authorial intent appear more definitive and determinate by removing the ambiguities and tentativeness of handwriting, because according to the manufacturing logic, the letters were standardized in shape as well as their position on the keyboard. As Kittler also points out, the first mass-producer of typewriter was Remington,[62] the manufacturer and major supplier of guns during the American Civil War of the early 1860s. The work of the writer was incorporated into the manufacturing logic of the machine, and domesticated by the industrial manufacturing dispositif and codification that neutralized the infinite variations characteristic of handwriting replete of the writer's presence. [Figure 6]

Writing on a typewriter by mechanically striking one key at a time, displaced the flow of handwriting. The process of striking the keys and advancing the page line by line contrasts radically with handwriting, and compels the writer to adapt to the logic of the device. Kittler contends, "In standardized texts, paper and body, writing and soul fall apart. Typewriters do not store individuals; their letters do not communicate beyond that perfectly alphabetized readers can subsequently hallucinate as meaning."[63] By this account, writing with a typewriter complies with the codified logic of a device that is a radical departure from the biological anatomy of gestural-haptic inscription. Also, writing as corpoindexical work loses the enchanting trace of ephemeral gestures of the body. The three previously mentioned technological inventions effectively separate image, sound, and written texts, and leave them devoid of the corporeal index. Kittler notes the possibility of these three inventions eventually being reassembled as other forms of recombinant technology, in which the user-audience are unable to recover a clear anatomy of discourse from the disembodied content.[64]



Experience is the Angled
Road
Preferred against the
Mind
By – Paradox – The
Mind itself
Presuming it to lead

Quite Opposite – How
Complicate
The Discipline of
Man –
Compelling Him to
Choose Himself
His Preappointed Pain

[Figure 6]
Emily Dickinson's handwriting and the typed text

In a similar way to machine writing, architectural drawings have lost the corpoindexicality and become *codeomorphic*.[65] The sensuous relationship the architect used to maintain with haptic media — for example, Frank Lloyd Wright's black ink on silk drawings, the fuzziness of Mies van der Rohe's charcoal drawings, or the *pentimenti* of Carlo Scarpa's drawings — is turned into the mechanized specifications of printer size and speed, ink cartridge combinations, printing resolution, and the texture and weight of paper specifically dedicated to the inkjet printer. The typewriter endowed writing with the appearance of a complete product. The word-processing software programs help writing directly connect to the mass-printing press. The affective regime of digitally encoded media is capable of manufacturing ephemeral compositions that enchant and seduce with the appearance of meaning as real as that experienced by the immobilized subjects in cinema.[66]

Autonomized mediation was further reinforced by magnetic tape, and eventually by digital apparatuses. Digital codification has come to command the role of interjecting new encoding logic into the hardware. We may consider two examples that aim for radically different ends, with regard to the separation of content from presentation. One is the previously-discussed concept of EV, as envisioned by Mark Weiser and his colleagues at the Xerox PARC in the early 1990s. The codification of this model relies on the simultaneous and equally-pervasive presence of both the physical-actual and the presentational-virtual. The apparatus of presentation is codified and aggregated in such a way that the virtual follows us, all the time. This model relies on the condition of the hardware being as ubiquitous and as readily available as the information. Our sensuous actual presence converges with the virtual in an indivisible hybridity. In this view, ubiquitous computing is centered on codification that will facilitate and operate the omnipresence of digital devices that are sublated into

the material ontologies of human cultural fabric. In other words, embodied virtuality is a convergent model of computing where, as the term already suggests, the actual and the virtual domains are not seen in dualistic or dialectical terms, but instead, the two feed and transform each other.

In contrast to EV, the VR model seeks to project the high fidelity virtual by flooding the entire field of vision. It also seeks to render the layers of codification that drive the presentation completely transparent and invisible. Thereby, VR aims to provide a seemingly unencumbered experience beyond framed vision, that may be understood as being as real as the real can be perceived, unfettered by an evident presence of an interface, and without remediating the cultural artifacts of cool media. Newer media necessarily start by appropriating and incorporating culturally conditioned elements in one form or another.[67] In literature, the dispositif of authorship has maintained its position to this date. Prior to digital codification, the printing press established the status of the author as the undisputed source of the written content by making possible the production and dissemination of original, identical copies.

Ever since the W3 codification of the Internet, the authorial publishing apparatus (i.e. the aggregate of writers, publishers, printing companies, critics, and reviewers, etc.) has diminished greatly in its power, followed by those associated with other forms of media, according to their varying degrees of technical complexity. Owing to the seemingly open-ended, fluid appearance of the newly codified space, the notion of nomadic smooth space appeared to portend a new opportunity for the kind of resistance and liberation the historical avant-garde once envisioned. However, we still subscribe to the cultural status of the architect as author, and the cult of personalities in architecture, as the term "starchitect" suggests, is further reinforced. We may as well call the starchitects the stylists of digital images, not unlike the hair stylists who can style any color and shape of hair covering the skull. In the smoothness of the newly codified space and its image-making phantasmagoric tendencies, such (appearance of) authorial significance has assumed a radically new assemblage, the radicalization of technology, in which the content and the presence of the author's work diverge radically in an altered state of disjunct collection of "bodies" and "organs," slithering scattered across the smoothness of nomadic space.

The dispositifs of power and control that used to impose primarily on the body itself now operate on the perceptive and cognitive dimensions of our mind through mediatic technologies. Through such technologies, the discursive positions of architecture have shifted to the apparatuses of the virtual and its media. Architecture as a discipline is dedicated in large part to the discourse of the

physical construct that is yet to take shape. It relies on a priori conventions, means, and techniques (in short, codifications) that help to present, illustrate, and demonstrate the potentiality of programmatic instantiation and construction. Therefore, in architecture we may also define the instruments of such a priori conditions as mediative, and as those that destabilized the standing (modernist) aesthetics that propelled the standardized universality of the functional machine for the masses, identical objects that are indefinitely replicable in endless combinations.

As soon as architecture is appropriated by the historical dispositifs of power, it ceases to be nomadic and smooth Instead it reinforces and efficiently administers the process of striation and subjectification by compartmentalizing. In the meantime, the process of redefining and *organ*-izing smooth space is not unlike Henri Lefebvre's analysis of "the space of catastrophe,"[68] with regard to how "a differential space" destroys inherited space, in the same way as perspectival space destroyed symbolic space.[69] The various strategies of power consist primarily of the spatial, in the way they attempt to manage and control the apparent volatilities that surface in a capitalist society. The spatial management and enforcement of the capitalist mode of production and of the space of property include the apparatuses that produce technological innovations and new knowledge. The space of property "pulverizes" and reconstitutes the existing historical space into parts that are differentiated according to use. The state's instrument of logical space, the spatial codification, reconstitutes the pulverized fragments. In the process, the codification helps control the "chaos and dissolution," while implementing "the differential and the concrete."[70]

Composers and musicians used to leave their mark on great public concerts that were regarded as virtuous and masterful. They were celebrated and remembered. The musical experience was limited to actual concerts that took place at a specific locality and time. Through phonography, such memorable performances were archived and imprinted in portable storage media, the scratched wax drums and disccs that served as an extra-mnemonic medium that could be distributed, and bought at various outlets. Ever since the advent of radio, the cult of the performance has taken a new leap in time and space. The authority and prominence of composers and musicians have come to be measured by the number of physical storage media (LPs, tapes, CDs, DVDs, etc.) sold, as well as the frequency of the composition's radio and TV broadcasts. Just as the printing press made the number of identical copies produced and the scope of their distribution the indicators of the author's prominence and potential significance, the digital remediation of authorial content and its supposed importance are expressed by the frequency and the position in the database. We may add to this the new class of professionals and critics who contribute to the new expression of authority.

In keeping with the new codification, the scope of the critics' role includes commenting not only on the physical performances and the identification of instantiation, but also on the remediating media themselves, the criticism of the apparatized work, how well it has been apparatized, and how well the apparatized instantiation measures up to the codified standards. In the age of new media, the critics may as well be the artist's double.

In the age of the newly codified, mediative space, architecture is no exception to the scheme of codification: the authority of a given architectural work has come to be measured by frequency, files, and the database, by how often the given work and its architect rise to the surface of extra-mnemonic consciousness, and and how well and often the free floating organs of the work's content are received by the media apparatus. The work's content is detached from the presence of both the work itself and its authority. The architecture of the new codification is that of new media regime. While pre-W3 architects have pursued and practiced the intimate relationship between the determinatives of the work and its compliant performance and instantiation, the architecture of the new media is shorn of its historical density and repleteness, and becomes disjointed and highly articulated by semantic discreteness.

According to Walter Benjamin, the mecahnical reproduction dematerializes aesthetic work and contributes to the disappearance of author.[71] The combination of technologically encoded aesthetics and algorithmic conception and composition dematerializes works of architecture. In this process, architecture loses its political, social, and cultural potency,[72] and turns into yet another agent for maximized efficiency and profit. The algorithmic media afford both the composers and the performers access to the practice of composition, a new capability that is only possible in the allopoietic potentiality of apparatization and codification. We may criticize and accuse the allographic apparatuses of the destruction and comminution of the author as a coherent body. We may also mourn the demise of such an author, and attribute it to the new apparatus and codification regime, the ideological purpose of which is thoroughly captured by the economic and programmatic maximization of what may be defined as cognitive capitalism.[73] However, the potential for dissonance and alterity to rise to the surface of our radically augmented consciousness is also as high and compelling as its power to capture and domesticate them. The power gained from the assemblage of new apparatuses and codification should be liberating in its very potential for an expanded and intensified allography, in contrast to that which further elevates and empowers the inherited authority of autography and the author.

For architecture, the new technological apparatus and codification can help it to overcome the cult of authoritative personalities, the fetish of the so-called "starchitects," by invigorating the allographic and allopoietic capabilities of new technology. The notion that the digital apparatus foresees autopoietic architecture would be missing the point. Behind every outcome of the so-called autopoietic process stands a personality whose whims determine the finality of the composition. Just as the typewriter empowered the author and his authority as the indisputable origin of the given work, and as the film director has come to be the face of a cinematic work, digital technology also empowers the author-architect. Given that an architect's work is mediative — even though architectural drawings and accompanying documents often claim an ontology of their own, they are as often instrumental and transitive — the codifying nature of digital technology actually emphasizes the human architect and his command of the technological apparatus that extends his power to produce enchanting designs.

An architectural work is never a coherent autographic construct. Even if it is initiated by an individual architect's innermost epiphany, it is expressed and reified in many variations. The disposition of the compositional assemblage often consists of disparate and conflicting interests. The correspondence among the constituents proves more crucial than the work's spiritual origin in the architect's singular vision. Instead, in any given project, the architect's work is filtered and refined through various phases that are reflective of such interests, and culminates in the physical execution on site. An architectural work may rely on the charisma and autonomy of the presumed author-architect for both mediative composition and performance. Ultimately, an architectural work does not possess the singular authorial consistency found in literary or musical compositions. The work of architecture is thoroughly technological, in which the collective of expertise is carefully delineated and monitored in terms of each individual division. The extent of the individual content is constantly kept in check within the overall strategy of the project execution. As such, the relationship between the work and the author-architect's *charisma* is mediated by several layers of of intervening skills and interests.

Architecture is not concerned with the notion of autopoiesis. What lies behind the affective, mediative surfaces of architecture is no singular body that is self-enclosed in its own consistency. Instead, architecture is a manifestation of interdependent and often inconsistent elements that are assembled in order to instantiate both formal and programmatic constructs. Just as often, architecture is entangled in the network of bits and pieces of dependent parts that are assembled around their affective purposiveness. Therefore, a given work of architecture is often expressed by the smallest of

its material details, such as the screws holding together wainscoting panels, or doorknobs. Therefore, the redundancy and excess of architecture, that is, its aesthetic qualities, are determined by the dependencies that are established among the constituent elements, both in terms of their ontologies and the modalities of their design and construction. In this sense, architecture as autonomous aesthetic work is no longer tenable either for design front, or for construction. Design work is an assemblage of the mediative techniques and technologies, while construction work is an instantiation of the bits and pieces of parts that are selected from catalogues, and held together with incongruous screws and plaster, all of which are dedicated to producing affects.

Every new technological invention since the mid-nineteenth century has resulted in some form of avant-garde. The position of the modernist avant-garde has been that of aesthetic experience as an agent of change that is empowered by technological impetuses. Even for architecture, which rarely, if ever, detaches itself from the spheres of power, the modernist avant-garde was highly relevant for its recognition of its reformative agency. In contrast, the architecture arising from new software and media of digitally codified technology, despite its pseudo-avant-gardist posturing, not only intensifies the efficacy of the status quo, but also further shores up the fetish and cult of authorial personalities and the exchange value of affective exploitation and control.

Notes

1 Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Vintage Books, 1995): 141-149.

2 Ibid. 104-115.

3 Rutsky, 1999: 78-79.

4 The Eastern State Penitentiary was designed by the British architect John Haviland in 1822, who immigrated to Philadelphia in 1816.

5 Charles Noble Gregory, "Bentham and the Codifiers," Harvard Law Review, Vol. 13, No. 5 (Jan. 1900): 344-357. See also, Francis M. Burdick, A Revival of Codification, Columbia Law Review, Vol. 10, No. 2 (Feb., 1910): 118-130.

6 Quoted in Burdick, 1910: 118 (Emphasis in original.)

7 Ibid. (Emphasis in original.)

8 Quoted in Gregory, 1900: 346

9 Quoted in Gregory, 1900: 345

10 Friedrich A. Kittler, *Discourse Networks 1800/1900*, trans. Michael Metteer and Chris Cullens (Stanford: Stanford University Press, 1990)

11 Ibid. 369

12 Ibid. 370

13 Michel Foucault, *History of Madness*, ed. Jean Khalfa, trans. Jonathan Murphy and Jean Khalfa (London: Routledge, 2006; Preface to the 1972 Edition, Taylor & Francis e-Library edition, 2006): Loc. 636.

14 Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation* (Durham: Duke University Press, 2002): 76

15 Giles Deleuze, "Postscript on the Societies of Control" October, Vol. 59. (Winter, 1992): 3-7 (4) (No translator given; Emphasis in original.)

16 Ibid. 6.

17 Reinhold Martin, "The Organizational Complex: Cybernetics, Space, Discourse" in Assemblage, No. 37, (Dec. 1998): 102-127 (108)

18 Friedrich A. Kittler, *Gramophone, Film, Typewriter*, trans. Geoffrey Winthrop-Young and Michael Wutz, (Stanford: Stanford University Press, 1999): 2.

19 Ibid.

20 Alan Liu, "Transcendental Data: Toward a Cultural History and Aesthetics of the New Encoded Discourse," Critical Inquiry 31, no. 1, (Autumn, 2004): 49-84.

21 N. Katherine Hayles, "Virtual Bodies and Flickering Signifiers," October 66 (Autumn 1993): 69-91 (71)

22 In this section, I refer to Marshall McLuhan's *Understanding Media* (1964) and the notable points he raised in the book. I acknowledge the fundamental problems with McLuhan's work, and the criticism directed at his message regarding technology and humanism. Called "McLuhanacy" or "Techno-theology" by some (Benjamin DeMott, John Fekete, Andreas Huyssen, etc.), McLuhan's views of technology and media in human societies pose grave problems, by ignoring the historical instances of religious and political power regimes that resorted to technology and media to control and subjugate the masses. Thus, it is common to find critical, and even hostile, reactions to McLuhan in 1960s and thereafter. For example: "Reading Marshall McLuhan is something like looking through an exhibition of 'op' art. Before long it gives you a kind of vertigo. *Understanding Media* ought to be packaged and sold with a supply of Dramamine. … It is a result of both his method and his madness that reading a book like *Understanding Media* is like picking up a porcupine – no matter where you grab it, it hurts."; and "But now art as aesthetic experience is rapidly becoming a kissing cousin of science and a blood brother to technology. Art is getting a kind of Mexican divorce from humanism." [Both from Lueders, "The McLuhan Thesis: Its Limits and Its Appeal," 565–567, 586] And also, "His unbounded optimism about the effects of electronic communications on human community and his blindness to the relationship between the media and economic and political power could only be read as an affirmative culture, as an apology for ruthless technological modernization, or, at best, as naive politics." [From Andreas Huyssen, "In the Shadow of McLuhan: Jean Baudrillard's Theory of Simulation," 6–17]

This section is neither a comprehensive reference to McLuhan's media theories, nor an agreement with his theory in general. But rather, this section discusses some points of his theory in order to illustrate the mediative aspects of technological presentation of aesthetic work.

23 Marshall McLuhan, *Understanding Media: The Extensions of Man* (Berkeley: Gingko Press, 2003)

24 Ibid. 37-50

25 Ibid. 41

26 Ibid.

27 Ibid.

28 Ibid. 348.

29 Ibid. 350.

30 Ibid. 349.

31 See: http://archives.chbooks.com/online_books/carnival/index.html (Accessed 31 Jan. 2011)

32 Published by Coach House Press, Toronto, 1973. See: http://archives.chbooks.com/online_books/carnival/1.html (Accessed 31 Jan. 2011)

33 See: http://archives.chbooks.com/online_books/carnival/2.html (Accessed 31 Jan. 2011)

34 The original version of the second panel is composed to five colors, while the published version is red and black, by Coach House press, Toronto, 1999.

35 Steve McCaffery, http://archives.chbooks.com/online_books/carnival/2_introduction.html (Accessed 31 Jan. 2011; Emphasis in original.)

36 Ibid.

37 Ibid.

38 Ibid.

39 Deleuze, 1992: 5.

40 Ibid. 5

41 Ibid. 6 (Emphasis in original.)

42 Peter Maass and Megha Rajagopalan, "That's No Phone. That's My Tracker." New York Times, 13 Jul. 2012. http://www.nytimes.com/2012/07/15/sunday-review/thats-not-my-phone-its-my-tracker.html (Accessed 5 Aug. 2012)

43 Andreas Huyssen, "In the Shadow of McLuhan: Jean Baudrillard's Theory of Simulation," Assemblage, No. 10 (Dec., 1989): 6-17.

44 McLuhan is said to have been a devout, born-again Catholic.

45 Huyssen, 1989:12.

46 Andreas Huyssen, *After the Great Divide: Modernism, Mass Culture, Postmodernism* (Bloomington: Indiana University Press, 1986): 170.

47 Mark Weiser, "The Computer In the 21st Century" Scientific American, Vol. 265, No. 3 (Sep. 1991): 94-104. See also http://www-sul.stanford.edu/weiser/Ubiq.html (Accessed 29 Sep. 2012)

48 Lev Manovich, *The Language of New Media* (Cambridge: MIT Press, 2001): 27-48.

49 Ibid.

50 Weiser, 1991: 94

51 Ibid.

52 Ibid. 98.

53 Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge: MIT Press, 2000): 44-50.

54 Office Suites include programs for writing, data processing, communication, and presentation. Creative Suites provide image-specific programs for photography, graphics, and website design. Autodesk Suites include Building Design, Entertainment Creation, Factory Design, Infrastructure Design, Plant Design, Product Design, and AutoCAD Design.

55 Lawrence Lessig, *Code and Other Laws of Cyberspace* (New York: Basic Books, 1999): 70.

56 Hayles, 1993: 57.

57 Ellen Ullman, Close to the Machine: Technophilia and its Discontents (New York: Pisador, 1997): 101.

58 Bolter and Grusin, 2000: 59-62.

59 Ullman, 1997: 116-117.

60 Kittler, 1999. See also: Kittler, "Gramophone Film Typewriter," October 41, (Summer 1987): 101-118.

61 Kittler, 1999: 13-14

62 Ibid.

63 Ibid.

64 Ibid. 14.

65 Alex McLean et al. "Visualisation of Live Code." In *Electronic Visualisation and the Arts (EVA) 2010 London Conference Proceedings*, Alan Seal, Jonathan P. Bowen, and Kai Ng, eds. See also: Thor Magusson, "Algorithms as Scores: Coding Live Music," Leonardo Music Journal 21 (2011): 19–23.

66 Jean-Louis Baudry, "Ideological Effects of the Basic Cinematographic Apparatus," Film Quarterly 28 (1975): 39-47.

67 Bolter and Grusin, 2000: 53-62.

68 Henri Lefebvre, *State, Space, World: Selected Essays*, eds. Neil Brenner and Stuart

Elden, trans. Gerald Moore, Neil Brenner and Stuart Elden (Minneapolis: University of Minnesota Press, 2009): 247.

69 Ibid. 248.

70 Ibid. 249-250.

71 Benjamin, 1999: 220-221.

72 Antoine Picon, "The Ghost of Architecture: The Project and Its Codification," Perspecta 35, Building Codes (2004): 8-19 (18)

73 Yann Moulier Boutang, *Cognitive Capitalism* (Malden, MA: Polity Press, 2011); See especially pp. 50-59.

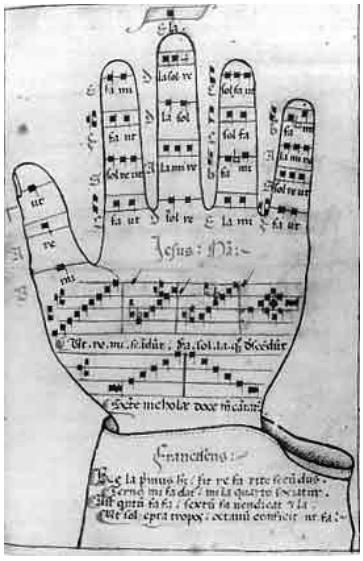
§ 3 Inscriptive Practice and Incorporation

1. Overview

If we regard the shifting positions of technology, from Ge-stell to dispositif, and from cool to hot media according to McLuhan, it is crucial to ascertain how the nature of composition, be it of architecture or music, has been influenced and transformed by each relative position. The changing resolution of technology transforms the way a given compositional work is realized or performed. The underlying dispositif and codification also transform the ways in which disciplinary discourses are formulated, and with what kinds of ideals. Reciprocally, the dispositif and its codification are transformed by the *tooling* of the disciplinary practice within which the discourse develops. The relationship between the technological dispositifs and codification, and the disciplinary changes, are in many ways reciprocal, drawing from one another's newly found territories and potential.

In this chapter, we examine how the position of instrumental practices takes shape, and the resulting necessity for a new kind of codification forms the apparatus-specific discourse. Today, at the core of the development of new discourse are the prevailing technological dispositifs and codification that have destabilized the historical conventions. Such dispositifs and codification, McLuhan foresaw, detribalized the power of authority and authenticity. More than ever before, the erosion of disciplinary discursive bounds, and the attempts to redefine them or to create new ones, depend largely (if not entirely) on the apparatus of the new technology, its media, and the ubiquity of devices that disseminate new content.

The apparatization of architecture has initially appeared in notations and projected drawings, as the de facto, standard conventions of composing, describing, and communicating the intent of the architect. The importance assumed by geometrically delineated drawings and notations since the Renaissance cannot be emphasized enough, as to this day they remain the dominant mode of describing an object, or structure that is to be constructed. The emergence of geometrically exact drawings presents the first historical instance of the disjunctive formation of work in architecture, quite unlike the circumstances prior to the Renaissance, when the role of the architect was synonymous with that of the builder, who accumulated the lifetime experience of technê in the ancient sense of the term. Therefore, architecture was an endeavor of the master builder whose work was conceived on the basis of the inherited tradition of materials, techniques, and conventions pertaining to the given project This condition is characterized as "disjunct," because – for the first time – the intent of the architect could be idealized, inscribed, and removed from the immediate,



[Figure 7]
Guidonian Hand from a manuscript from Mantua, 15th century

practical concerns of the realities of the actual construction site. However, the notational conception of work ultimately brought about a clash of ideals, between those of the author-architect and the builder-practitioner. Here, the builder's claim to authority has become largely subservient to that of the architect.

If we turn to music, we see a transition from an inherited oral tradition to the written system, through the wide adoption of the notation first charted in the form of the so-called Guidonian reform of around 1020 AD. The solmization of musical tones (*solfeggio*) established the basic units of composition in very much the same way that the introduction of phonetic scripts did for the spoken language. In short, the Guidonian system of inscribing music reformed the discipline into a semantically and syntactically rational process, in which composition supersedes performance as the primary authority in the creation of music. As a result, the musical performance, even one remembered in history as a momentous occasion, is relegated to the status of masterful instantiation.

Subsequently, by developing the solmized tonal scale mapped on the palm of a hand, [Figure 7] we see the practical application of the written scores, not only in composition, but also in performance. The composer may indicate the precise notes to the choir by designating the parts of hands to different notes and harmonic scales that may be shown and indicated to the singers. The evolution of the musical score includes the developments of the twelfth and the thirteenth centuries AD, when the dominance of vocal music was notated in a vertically aligned format (as the Guidonian hand shows), and in such a way that the score may be read by singers standing in a circle. The rise in popularity of instrumental music in the 1600s firmly established the notational system we have today, composed of notes arranged in horizontal rows of bars.[1]

The Guidonian notation system, which preceded the establishment of architectural drawing conventions, allowed composers to expand the range of the dissemination of their work, and gave performers access to compositions from remote locales, in a relatively authentic and intact state. The Guidonian notation system allowed the dissemination of a given work over time and space, helped to maintain the work's integrity, as intended by the author-composer, and thus presents the first engagement of the apparatization process of the musical discipline. The Guidonian notation system is a form of apparatization, because unlike the preceding oral traditions, the verbal discourse and storytelling, the invention and deployment of notational conventions first objectifies the work in a more concrete manner. The notation systems give rise to a new form of rationality that may disrupt or radicalize the existing order and conventions. Furthermore, by pushing the work with an open, objectified intent, the subsequent iterations of the composition can be traced and documented.

Since Guido D'Arezzo's reform of musical notation in the eleventh century, the subsequent development of the musical notation system enabled the authorship, and helped composers become a class of their own, distinctly different and separate from musicians. In the centuries since then, the notation system allowed composers to engage in a creative process that is focused on the authorial content, rather than the conventions of performance that relied on traditions. The adoption of the notational conventions of music composition has come to mean a notation-compliance relationship. Composers have become able to pursue composition as an exercise in abstraction and often-theoretical exploration of the limits of musical space.

From the standpoint of composition as abstraction, musical scores are supposed to be *work-determinative*. While we may consider architectural drawings as works of art in their own right, musical scores are almost never regarded as such, except for certain examples of the so-called graphic scores. Architectural drawings are not seen as work-determinative, because of the complexity of the materiality that is inherent in the execution of architectural drawings and notations as a built object, while a given set of scores for music may be directly and immediately performed, thereby realizing the work.

An individual musician may interpret a given score in a different way from others, and therefore, one musician's performance of a somposition is different from those of others. The score may be interpreted and performed in different ways, depending on the preferences or tendencies of the musician and of the given period. A musical composition provides a direct means of instancing the musical work through the way it is written as a score. Therefore, a score determines the nature

and form of the musical work, because "it records a set of instructions, addressed to performers, the faithful execution of which generates an instance of the piece it specifies."[2] Furthermore, a composer may choose to omit from the score certain features or elements of the composition, because such choices are well understood and widely practiced within the musical conventions of the given culture and place.[3]

Architectural drawings and notations are not determinative of the work to be executed, because architectural documentation cannot fully include the types of information that are necessary to determine the authenticity of an architectural work in regard to the necessary division of labor involved in its production. Without the architect's direct supervision, a given design may turn out radically different when built, depending the builder, the performer. Furthermore, an architectural work may rarely be considered in terns of instantiation, because most architectural compositions involve a single performance that is specific to the geographical context in which it occurs. Architectural drawings and notations are composed for the construction of the single object for which they are intended, and almost never instantiated in other local and temporal contexts. Architectural drawings and notations may also be seen as works of art in their own right, not always intended for construction. Additionally, architectural drawings and notations constitute not so much instructions, but a form of a legal contract that specifies that a certain building be built under various conditions that further qualify them (such as the contract duration, the costs, the liabilities, the legal limitations, etc.), which music scores do not include.

But both musical scores and architectural drawings are composed to project the ideal of a specific outcome. Both disciplines externalize the author's intent through medium. Once the composition or the design is completed, the information and instructions presented in drawings, notations, and scores are handed over to the experts who will execute and perform the compositional content in a way that is consistent with the composer's or the architect's intent. If we consider composition as a discursive process that produces information and knowledge, and that a discourse relies on medium that contains languages, pictures, numbers, signs, symbols, and so forth in order to facilitate communication, we can certainly include architectural drawings, notations, and specifications, as well as musical scores, as a part of the discourse-formation process. In the context of the ubiquitous new media and digital technology, it is crucial to consider how such discursive formation occurs in architecture as a work of composition.

With regard to today's so-called "new media," be it architectural, musical, or of any other

discipline, the stream of discourse consists of digitally encoded and codified texts, sounds, images, and videos. Such media are discursive to the extent that their conception, design, and production, as well as their dissemination and management have become largely, if not yet entirely, digital and intermodal, highly calibrated. The mediatic discourse traveses device-site specific molds. Ultimately, the kinds of apparatuses and their codification regime determine the functionality of a specific device, What we may call "metadata" and the "meta-apparatus" set the standards applicable to the work of composition, design, dissemination, coordination, and eventually, performance.

By relying on intermodal apparatuses for conception and composition, architecture no longer relates to the specificity that used to mandate that architects delimit a given work in relation to the demarcation of both geographical-physical (the actual site) and mediative-virtual space (the drawing paper). By actively embracing intermodal apparatuses and specific file formats that enable multi-device compatibility and network connectivity, architecture is no longer subject to the question of authorship and site-specific authenticity. On the surface, each architectural instantiation may hold site-specific considerations. But it is in fact a collection of encoded files that are cross-referenced and imbedded in iterations of assemblages. Architecture has become a kit of parts that are assembled from a collection of catalogues, databases and schedules. An overwhelming portion of architectural production consists of referencing, extracting, assembling and in particular stylizing the products from the entangled web of industrial dispositifs.

2. Notations and Instructions

The instrument of composition – the collection of drawings, notations and accompanying written instructions – has proven crucial to the development of architecture for centuries. The compositional instrument always refers to the work as an abstraction, a composition that is yet to be performed, or a design that is yet to be built. The compositional instrument functions as *velo*, or the screen on which the work yet to come is projected. Scores and drawings, thought of as transitive and instrumental, have rarely been considered the ultimate material manifestation of the composer's or the architect's intent, but simply a means to an end, to a physical concert or a building. Both kinds of compositional instrument specifically inform and call for eventual performance, but are seldom regarded as the definitive work in and of themselves. When they are finally performed, the purpose of the compositions is fulfilled. In music, a given composition may be performed repeatedly by different musician for generations. In architecture, such notations are used once for construction, and relegated to an archive. Despite such fundamental differences, both types of notation are

instrumental, determine the nature of the work, and are regarded as the source of the work's status. In the Western tradition of musical composition, the score provides a visual-cognitive sequence that is specific to the instrumental context of the music that is to be performed. It is visual in the first instance, because of its vertical organization in relation to the five guidelines. The higher the note is on the five-line scale, the higher its pitch. In addition, the score is read from left to right in the same way as Western books are read. Next, a musical score is semiotic, as it employs various signs and symbols that denote the duration of each note, the relationship among the notes, whether a note is a half or full tone, and so forth. It is also structured as the conventional score sheets of five horizontal lines clearly distinguish different parts of the composition and different instruments.

A given musical score depends on the historically established conventions of the graphic elements of notation, the particular musical instrument to be played, and the kind of sonic aggregation and effect that is supposed to be produced. The notations that include such information must be read and understood, and physically acted upon, in order to produce a sound that may be characterized as music, or a composition of sounds. Furthermore, the music to be performed is only an instantiation of the given score. This is not only because music is ephemeral, but also because when a composer writes a score, it is assumed and expected that the particular composition will be performed more than once, hopefully for generations.

A crucial feature of the composition-score-performance relationship is that the execution of the notation-instructions necessarily includes, or at least implies, certain conditions and characteristics that are not, and cannot be, notated in the score. The essence of musical composition assumes the performce to be listened to, rather than to be read. The score as composition informs the conditions under which the performance could occur.[4] In this sense, the mediative yet peripheral function, the instrumentality of the musical score for music itself, indicates that, since the system of score writing is considered universal, it should be universally applicable to all types of musical instruments. However, there are scores that are specific to a particular set of instruments, and if played on instruments other than those specified by the composer, the composition would lose a considerable part of its identity and authenticity.[5]

For music, compositions are either "thick" or "thin," depending on the constituent elements[6] that are specified by compositional documents such as scores, drawings, written instructions, and specifications. They describe the extent to which the properties of the work and the compositional intent may be realized. The "thick" composition is replete with the indicators that specify how the

composition is supposed to work and be performed, while the "thin" composition relegates more latitude and responsibility to the performer, in terms of filling in the properties of the composition, when and while the composition is realized. At the same time, whether a given composition is thick or thin also depends on historical conventions. While the Western tradition of composing music has extended the limits of notation over the past millennium, thereby making the compositional work thicker. In this regard, the philosopher of music Stephen Davies states, "there is a tendency for musical works to become simpler and for improvisational and performance-skills to become more important for their own sake …"[7]

Music, as a phenomenon and as a work of art, does not exist without the physical performance. The physical performance cannot occur without the cognitive and interpretive process based on the score.[8] This particular view becomes problematic when a given piece of music is performed, and therefore created, by playing an instrument intuitively, by improvising. The position of the composed score also becomes problematic when we consider the kind of music that has been culturally imbedded and specific. This kind of music tends to be handed down through successive generations of performance, and then may be transcribed as written scores. In these cases, as in many other types, the score does not function as the determinative of the performance, but is simply a means of documenting and preserving the state of the given musical tradition.

It is evident that music as performance has existed, and still exists without written scores. The distinction of the existence of a score for a work of musical art indicates that the musical score is essentially the encoding of performative substance, and an abstraction of a composer's cognitive process, rather than a physical performance. In this sense, such encoding may be said to undermine the identity of the musical work as a primarily performed condition, in which the musician is physically engaged in the production of the musical sounds.[9] This is because the score, the notations, and instructions can never fully inform the actualities of the performed musical work. Even though the score informs the potentiality of a performance, the score itself is simply a means of encoding the intended physicality of a performance, in which the contingencies of the performing body may be neither predicted, nor distinguished.

Architectural documents serve a similar means of encoding the ideal state of a given design, in both graphic and written forms, as drawings and specifications that are yet to be performed, made physical by construction. Here, the architectural performance designates quite a different set of qualifications, in contrast to those of music. Architecture, even though similarly based on notated

drawings and written specifications, is supposed to be constructed. The performance of architecture would include the site conditions and context, the legalities involved in the building type and use, the composition of materials and parts, and finally, the modes of assembling the materials and parts. Even though one may suppose the use of architectural drawings in the same way as that of musical scores, they present radically different sets of codification regimes.

Within the set of concepts related to apparatus and codification previously laid out, for a work of architecture as a constructed body and its encoded double, the notations and drawings, are, unlike for music, specific to particular spatio-temporal conditions. Certain architectural drawings are regarded as transcending their own time and place. But the substantive status and influence of a building are tied to a particular time and place as a constructed object. But no matter how influential and transcendental the drawings may be, when removed from the specific site contexts (i.e. geographic, social, cultural, political, economic, etc.), the building built from such transcendental drawings would hardly be as significant and/or transcendentaThe authority of drawings and notations presents one of the fundamental dilemmas in architecture. On the one hand, a set of notations and drawings may attain an authoritative (or definitive) status through historical consensus that designates them as masterpieces. The architectural notations and drawings may themselves acquire the status of art, regardless of the intended end result being a built artifact. This is precisely because, as a mode of encoding, architectural drawings and notations indicate an ideal state that is free of aberrations and contingencies. Such a masterpiece status of architectural drawings and notations may also be attributable to the fact that they may reveal qualities and ideals that are unattainable in a built work. Despite the recognition of such notations and drawings, one would rarely consider the built work based on such authoritative architectural drawings in more than one instance.

If we consider the traits shared by the modes of architectural and musical production encoded in notations, drawings, and other signifying graphic elements, it is reasonable to suppose that the very nature of encoding foreshadows a multiplicity and transcending of spatio-temporal limits. Music, as a performance-based art form, identifies itself in terms of such a spatio-temporal transcendence in the encoding of the content. However, architecture, also a performance-based art form, precludes the consideration of the work overcoming the specific dimensions of temporality and locale. In other words, the finality of a given architectural work, the physically constructed building, must be the one and only, imbedded in a specific time and place.

Even though the life and influence of drawings – for example, for Mies van der Rohe's German Pavilion for the 1929 International Exhibition at Barcelona, for Frank Lloyd Wright's Falling Water, or for that matter, the drawings for any other universally recognized masterpiece of architecture, by any renowned architect in history – may transcend spatio-temporal specificity, the work's definitiveness as a performed object will not be challenged. Therefore there will be only one authentic instance of the work. That may be the case if we consider the architect's personal involvement the prerequisite for the work's authenticity and authority. In this view, subsequent versions lack the architect's personal involvement. For example, the reconstructed Barcelona pavilion of 1982 may be designated "unauthentic" because it lacks the requisite categorical authority that is expected from any original work. Furthermore, the authorial view of architecture may insist that the reconstruction lacks authority because this instantiation lacks the personal aura, so to speak, of Mies himself. The documents that were instrumental to the construction of the pavilion called for a temporary structure, and the building was dismantled and removed from the site shortly after the exposition ended. In this particular example, the reconstructed pavilion is an instantiation of Mies's work that is no less authentic than the one of 1929. If the drawings, specifications, and other project-related documents define the nature of the work, and if the performed work must comply with such determinatives, the built work is an authentic instantiation of the composition, regardless of the architect's personal involvement.

It is certainly debatable whether drawings, specifications, and other documents are determinative of architectural composition to the comparable extent as the score is for music. The primary function, or the *symptom* as Nelson Goodman would put it,[10] of notations[11] is to authoritatively define a work, so that it is clearly identifiable with respect to what is intended. Additionally, Goodman's "symptomatic" function of notations also indicates that the performance of the notations, as in musical scores, must comply with the definition of the work set out by the notations, in order to guarantee the consistency of the work's instantiations and performances. If a performance, for example, of a musical composition or choreography, deviates from the notations, it cannot be identified as an authoritative instantiation, in the strictest sense of Goodman's term. On the part of the composer, the notations play a significant conceptual role in the composition and production of the mediated work of art. The art form that is created through mediation includes music, architecture, dance, drama, cinema, and so forth. When the performance of a mediated aesthetic work deviates from the notations, the performance simply did not comply with the composer's authorial intent. Thus, notations are not simply transitive instruments, but expose and

demonstrate the formal logic of a given compositional work, be it music or architecture.

> Grouping architectural compositions under the rubric of "notation" is certainly problematic. In regard to notation, Goodman states:
>
> The architect's papers are a curious mixture. The specifications are written in ordinary discursive verbal and numerical language. The renderings made to convey the appearance of the finished building are sketches.[12]

According to Goodman, however, architectural plans are a combination of a digital diagram and a score.[13] A sketch by an architect belongs to a system of pictorial representation that is neither syntactically nor semantically differentiated, and the constituents of a sketch are "replete" in Goodman's term. The relationship among the constituent elements in an architectural sketch is equally dense as to make the gradation among the syntactic and semantic elements infinite. Such elements may thus denote more than one thing at the same time. In contrast to the analog, the digital, according to Goodman's definition, is identified by semantic disjointedness, finite differentiation, and syntactic articulation. In an architectural drawing, every single element must be identifiable as one thing, not two simultaneous ones. The resolution among elements must not be so contiguous as to be infinite.

Architectural drawings contain the discrete elements that are specifically attributable to individual, compliant elements. Written specifications that accompany the drawings encode the conditions under which the discrete elements are qualified and assembled. In the context of today's understanding of the digital, almost four decades after Goodman's formulation, the gradation has become substantially finer (for example, from 8-bit or 2^8, to 256-bit or 2^{256}), and approaches the level of analog smoothness and infinity that is exemplified by Hokusai's images of Mount Fuji, Goodman's example of the analog.[14]

In response to Goodman's claim that for architecture, the drawings and specifications determine the provenance and authenticity of the work, one could argue that architectural drawings and other documents determinative of a work are not a matter of identifying authenticity, once the building is built. Therefore, Goodman's argument for the allographic nature of architectural composition, and how it pertains to the question of authenticity is incidental. This is because architectural determinatives are not applied in multiple instances, and therefore the consistency and compliance of a given performance are hardly issues.[15] According to the foregoing argument, the determinatives of architectural work include the kinds of elements that are not adequately described

in the conventional instruments of architectural composition as much the same way as those of music. The composer's notations cannot and do not have to account for every single contingency inherent in the allographic nature of the performance. Nonetheless, regardless of the degree of authenticity, the kinds of nuances the performers bring to the realization of the given musical work are expected as an ordinary matter of executing the composition. Buildings such as Gaudi's Casa Mila, or Frank Lloyd Wright's Kaufman House (aka Falling Water) exemplify the features that are as crucial to the materialization of a building as the architect's intent and history of producing the design expressed in the documents. This is especially true of buildings that may be considered autographic, according to Goodman's formulation. Such autographic buildings that are designed and executed by the architect, the author himself, are those in which the aesthetic intent is expressed directly by the architect, regardless of notational or corporeal mediation.

When the audience and the users are accounted for, the threshold of discernibility matters.[16] A musical work may be performed with a few notes missing or a few others wrong. Such deviations and/or errors do not necessarily prevent the audience from appreciating the work because listening to music one does not listen to the notes individually, but as a stream of tones. The experience of watching a movie similarly consists of streams of twenty-four frames per second. Human visual perception cannot detect a defect of one frame or two, and one cannot discern the identity of each individual frame. Any sensory, perceptual experience involves the similar degree of discernibility in regard to the authenticity of performance vs. the compositional intent. The discrepancy within a range of discernibility between the score and the performance, either intentionally or by mistake, does not necessarily invalidate the entire performance. Besides, an allographic art is a *relationship* among the composer, the performer, and the audience. Similarly, in architecture, as an allographic art, the contingencies of how it is realized are inevitable. If a builder deviates from the architect's instructions, that does not necessarily invalidate the entire built work, as long as it complies with the instructions within a(n) (in)discernible range. The question is whether or not it is valid to argue the authenticity of a work, without considering how discernible the differences are, among the various iterations of the work in question. For that matter, in architecture, like music, the quality of the built work depends on the performer's capability. Regardless of how immaculate and thorough the drawings, specifications, and notations may be, the builders contribute to, or degrade, the composition.

Returning to Goodman's definition of the digital, the gradation and granulation afforded by the digital have become indiscernible to humans, and project the impression of seamlessness. In

architecture, while the extremely fine gradation and granulation afford the "realistic" rendition of designs, hypothetically making it indistinguishable from the analog, the notational and inscriptive qualities of architectural drawings and specification remain discrete and disjointed. The perception of pictorial smoothness intimates the fidelity of the given project. However, the technical diagrams and notations inform the assemblages. The combination of the two forms the basis of an architectural inscription that is made disparate and more effective. The effectiveness of the duality — the effectiveness of administering both the appearance or presence, and the substance or content of the project — is embodied in the digital codification that so pervasively reinforces striation, while maintaining the sense of sanitary comfort on the surface of reality.

In architecture, the assemblage of disjointed materials replaces the authorial singularity of a composition. Such assemblage ultimately assumes an organic and smooth outer membrane. If we follow Foucault's dispositif and Deleuze's assemblage, the latest tendency of the pervasive algorithmic processes in architecture is to striate the conception and construct of architecture in a substantially more granulated way, thereby far more effectively reinforcing the standing power regime. In order to efficiently discharge the formal objectives, an architectural composition should consist of more discretely distinguishable elements. The logic of intermodal content makes it possible for a work of architecture to be driven by a database. Such a database for architectural work was once – is still called – a *library*, as in the case of the "library functions" of various design software programs. One could assemble and maintain a consistent, coherent database of design elements, ranging from furniture, to parts and materials, to construction details, and written specifications.

Libraries, in the sense of both CAD applications and of historical and canonical documents — for example, Alberti's *De Re Aedificatoria*, Palladio's *I Quattro Libri*, Durand's *Précis*, and so on — also contribute to the changing ideals of composition. While historical libraries of architecture have focused on compositional conventions, that is, those derived from various elements that could be authorized or sanctioned as legitimate and culturally/technically appropriate, digital libraries are designed to maximize efficiency and the labor pool, by standardizing and automating repetitive work. Libraries also consist of the algorithms themselves, that is, of the direct, algorithmic scripts to be used in a larger programming environment, rather than the ready-made graphic elements that can be plugged into the drawings.

Such an algorithm library or catalogue forms another inscriptive layer. Digital algorithms now occupy a place that is beyond simply instrumental, efficiency-driven *tooling*. They have a more

substantive influence in the generative aspect of architectural composition, even more crucially than the autographic sketches of the master architect. We may even venture to say that the authorial charisma is framed and identified by the algorithmic. Whatever the immaterial origin and content of the work may be, the material expression and presence of the work are made manifest through the class of expert performers responsible for the particular encoding and performance of the given division of the work's content. In the algorithmic process of architecture, such an expert class exerts its influence in the inscriptive encoding that is not only instrumental, but also, more crucially, generative.

3. Instantiation and Determinatives

One of the intriguing questions that has emerged so far is, is it feasible, and for that matter, useful at all to consider a work of architecture in terms of instantiation and determinatives in the context of the digital algorithmic process of conception and composition? As mentioned already, the idea of instantiation becomes highly questionable for architecture, where a composition is constructed (performed) once, almost never to be repeated. If it is, this is often motivated by the profit from producing multiples of one design, the practice that has come to characterize suburban sprawl. We may also consider the example of architecture that is considered a prototype and/or driven by a certain ideal or an ideological position, such as Buckminster Fuller's Dymaxion House. The third case of instantiation is based on historical practices and conventions. A given tradition hands down the kinds of practices that are adopted and inherited by successive generations, and thus historically anchored. When such traditional practices are unmediated by documentation and notation, the practice depends on "that the conventions of performance are complex, stable, widely understood and generative in nature …"[17]

Other than the instances of repetition-for-profit, and of an idealized prototype that can be replicated, and traditionally bound practices, the obvious categories of instantiation in architecture include a historically significant building that was destroyed is reconstructed based on the original documents and/or historical records (e.g. The German Pavilion by Mies, or Pavilion L'Esprit Nouveau by Le Corbusier); a given architectural composition is notationally *thin*, so it may be adapted in different contexts (e.g. John Hejduk's or Peter Eisenman's house designs); from the outset, the work itself is simply considered an instantiation of an external referent or a database (e.g. the so-called parametric design).

In the first category, questions regarding the integrity of the instantiation become largely a matter of restoring historical facts to the extent that is known and reasonably extrapolated. This relies on the state of historical archives and their interpretation. When Mies's German Pavilion was reconstructed in 1986, the problem was obvious. In the first place, the original pavilion was temporary for the duration of the world exposition. The pavilion was dismantled in 1930 after the exposition closed in 1929. The reconstruction was, in fact, another process of an archival work rendered in order to preserve and re-instantiate a particular moment of architectural history. The reconstructed pavilion is not, and never purported to be, an authentic work by Mies himself. But the pavilion reconstructed in 1986 is nonetheless a compliant instantiation, and authentic to the extent to which it may be demonstrated to comply with Mies's drawings and instructions, and to the identification of the (in)discernible, with regard to the experience of it. Here, the question of experience is an obvious problem, since the original does not exist. The same may be said of Le Corbusier's Pavilion L'Esprit Nouveau, reconstructed in Bologna, Italy, in 1977. In this case, supposedly Le Corbusier's former staff carried out the reconstruction, according to the original set of drawings and documents.[18] The reconstruction does not take into consideration the original site of the first pavilion. Again, the original pavilion was meant to be temporary, limited to the period of the Paris Expo of 1925. We may regard both examples as instantiations, not unlike the instantiations of musical works.

In the second case, where the composition is *thin*, it requires others to add to, or to compensate, in order to materially execute the composition. For example, we may consider two of John Hejduk's compositions: Wall House #2, and the Botanical Research Center. The former was constructed in Groningen, the Netherlands, and the latter was built as a part of Eisenman Architects' City of Culture Galicia in Santiago de Compostela, Spain, renamed as The John Hejduk Memorial Towers.[19] John Hejduk designed Wall House #2 in 1973, for Ed Bye, a landscape architect and fellow faculty member at Cooper Union, and intended it for a forested site in Ridgefeld, Connecticut.[20] But between 2000 and 2007, the house design was transplanted, and built on a new site that in no way resembles the originally intended one. The original site was in a secluded, wooded area in Connecticut, while the new site is in the middle of a densely populated residential area of Groningen in the Netherlands, quite distant from the original site. The original client abandoned the project, owing to financial concerns. The house was then transplanted to a site with a radically different set of site contingencies. The new site raises new issues that prompt the question of whether or not the built house as an architectural work is authorial and authentic. We may argue whether or not the Wall

House #2 in Groningen is an authentic work of Hejduk. This is simply an instantiation of Hejduk's Wall House #2, because it fulfills the requirements as shown in his initial drawings. Being an instantiation, the question of authenticity depends on the integrity of the documents, and the extent to which the built work complies with them.

A similar situation holds for the Tribute Towers erected as a part of Eisenman Architects' City of Culture of Galicia, Santiago de Compostela, Spain. In 2004, Peter Eisenman delivered a lecture at the RIBA in London, on the occasion of receiving the Charles Jencks Award.[21] During the lecture, Eisenman presented images of John Hejduk's towers, and mentioned that, shortly before Hejduk died in 2000, he had promised Hejduk he would build them for him. In this example, the towers may also be considered an instantiation. The design, originally intended for a botanical research center, is now the John Hejduk Memorial Towers. We may question the extent to which the buildings, built in large part by Eisenman Architects' intervention, are the work of Hejduk. But the point here is that, just as Wall House #2, this is a compliant instantiation of Hejduk's composition that may be reasonably discerned as such.All the above examples exhibit characteristics of *instantiated* works of composition. While the specific qualities of the site make Frank Lloyd Wright's Kaufman House unique, unimaginable anywhere else, the preceding examples of Hajduk's designs are by and large distinct from site considerations and instantiated apart from site qualifications, just as a musical composition that may be performed regardless of the venue of the concert. They are largely removed from the specificities of a site, or the site itself is generic, therefore, they function as autotelic compositions encapsulated in their own motives, narratives, and logic. Such autotelic ontology makes these examples of architectural composition instantiations where the authorial compositional intent outweighs the particularities of the performance venue.

In the third case — the more crucial part of the discussion at hand — in the algorithmic parametric design process, what matters is how a set of data may be instantiated. In this case, the idea of performance as instantiation provides that the resulting composition or design does not, and should not be considered to *represent* or even *express* the data or the parameters. Neither is it a translation process: This is because the algorithmic process consists of another substantive layer of encoding that is discrete and disjointed from the substance of the data at hand. Such encoding must comply with a larger, strategic scheme of rules, protocols and standards. As the algorithmic process depends on an explicit programming language with its own unique system of semantics and syntax, not to mention the even more crucial markup elements, the mediation of data through such a programming language necessarily presents the content in a specific manner that is appropriate to

the end medium. As the idea of algorithmic intermodality suggests, the data may be transposed to an image to be printed on paper or projected on a screen, into sounds, to be played through a set of speakers, or into a three-dimensional model of a chosen scale, even 1:1.

With the algorithmic-parametric processes, for the first time in architecture, a design process that is based purely on instantiation, without deliberate authorial composition per se. The authorial intent is intrinsic to the way the programming language is used to write the operations that instantiate the data and the parameters. The emergence of such an algorithmic, parameter-driven process is not unlike the emergence of synthetic sound generation in music and sound art. The electronic generation of sounds, preceding the algorithmic one, first generated musical works that were not intended for human performance. The electronic music resulted in a situation in which the work remained as encoding, and thus human performers had no place. Instead, its ontology is dependent on the devices that receive, store, and decode the work, and play it through a set of speakers.[22]

The algorithmic process of music is now also used for improvisation in the practice called "live coding."[23] This form of improvisation relies on the performer writing the *codes* that generate sound compositions as they are written in real time on stage. In live coding, composition and performance are one and the same. But while certain live, improvised music, such as what is known as free jazz, involves no scores. It relies purely on the performer to make music on the go. In live coding, algorithms mediate the production of music in a way that resembles how paper scores used to function. But in live coding, the musical event is not only the resulting sound composition itself, but also the process of coding on stage, live, displayed on-screen for the audience. This may be seen as a new path in the evolution of the musical score. It is yet to be seen whether or not algorithmic live coding of music succeeds the graphic scores of the twentieth century.

Live coding is a highly technologized aesthetic practice, involving various hardware devices, software systems, programming languages, and other interconnected technological apparatuses that are unique to the post-W3 period. The practice of live coding is comparable to Steven McCafferey's typewriter composition in the 1970s as previously discussed. The practice is a unique instantiation of working with a "semantic patchwork, blocks of truncated sense that overlap, converge, collide without transition as the sum total of language games within our many universes of discourse."[24] In contrast to what McCafferey contends about his *Carnival*, however, in live coding, the author and the apparatus as the assemblage of hardware, software and peripherals underscore how the non-linear

and the generative become prominent in mediated aesthetic practices that inch forward to the notion of non-sensuous, encoded improvisation.

Notes

1 Stephen Davies, *Musical Works and Performances: A Philosophical Exploration* (New York: Oxford University Press, 2001): 100

2 Ibid.

3 Stephen Davies, *Themes in the Philosophy of Music* (New York: Oxford University Press, 2003. Kindle edition): Loc. 936

4 Roman Ingarden, *The Work of Music and the Problem of its Identity*, ed. Jean Harrell, trans. Adam Czerniawski (Berkeley, CA: University of California Press, 1986): 39.

5 Davies, 2003: Loc. 65.

6 Davies, 2003. Loc. 71 & 485-514.

7 Stephen Davies, "The Ontology of Musical Works and the Authenticity of their Performances," Noûs 25, no. 1 (Mar., 1991): 21-41 (31)

8 One could also argue that based on Cage's 4' 33" music may be instantiated by exemplifying the other, the lack of musical performance or the performance of non-structured sound.

9 Ted Nannicelli, "Instructions and Artworks: Musical Scores, Theatrical Scripts, Architectural Plans, and Screenplays," British Journal of Aesthetics 51, no. 4 (2011): 399-414.

10 Nelson Goodman, "When Is Art?" in Stephen David Ross, ed. *Art and Its Significance: An Anthology of Aesthetic Theory* (Albany: SUNY Press, 1994. Kindle edition): Loc. 5266-5284; originally published in Nelson Goodman, *Ways of World-Making* (Indianapolis: Hackett, 1978): 57-70.

11 Nelson Goodman, *Languages of Art* (Indianapolis: Hackett, 1976): 127-130.

12 Goodman, 1976: 218.

13 Ibid. 219.

14 Ibid. 229.

15 Anthony Ralls, "The Uniqueness and Reproducibility of a Work of Art: A Critique of Goodman's Theory," The Philosophical Quarterly 22, no. 86 (Jan. 1972): 1-18 (13)

16 Ibid. 4.

17 Davies, 2003: Loc. 929-936

18 Maurice Lagueux, "Nelson Goodman and Architecture," Assemblage, no. 35 (Apr. 1998): 18-35 (22)

19 See: http://www.architizer.com/en_us/blog/dyn/27245/hejduk-hereafter/#.UTNLIaUR1gs (Accessed 21 Feb. 2013)

20 See: http://archrecord.construction.com/projects/bts/archives/adaptiveReuse/wallHouse/overview.asp ; also http://www.wallhouse.nl (Accessed 21 Feb. 2013)

21 On 26 Oct. 2004. See: http://www.architecture.com/NewsAndPress/News/AwardsNews/Press/2004/PeterEisenmanWinsTheJencksAward.aspx (Accessed 28 Dec. 2012)

22 Davies 2003: Loc. 454-461.

23 McLean et al., 2010.

24 Steve McCaffery, http://archives.chbooks.com/online_books/carnival/2_introduction.html (Accessed 31 Jan. 2011)

§ 4 Dissonance and Resistance

1. Formalist vs. Programmatic

Prior to Russolo, in the latter half of the nineteenth century, two opposing positions of the formalist and the programmatic [1] divided music regarding its disciplinary autonomy and self-sufficiency. Eduard Hanslick, [Figure 8] the nineteenth-century Viennese music theorist, propagated the formalist (often called *absolutist*) view in his seminal treatise, *On the Musically Beautiful (Vom Musikalisch-Schönen)* in 1854. He professed that music should simply consists of coherent musical sounds and structure, and as such, music is about itself and about what makes it musical.[2] Hanslick's view constitutes the kind of the musical discipline, in which no external references may participate, such as the representation of human feelings, or the verbal narratives of Melodramas. Hanslick finds no place for language in music, and for him music is not a language.

Hanslick argues that music is composed of the kinds of sounds and structures that are unmistakably musical, and that such musicality is universal. He also claims that such musicality is universal, because it is recognized and perceived, regardless of time or place. In contrast to Hanslick, Richard Wagner argues that music is an agent or a medium that *musically* binds together the discourses outside of what is purely musical. Wagner's leitmotifs emphasize "a musical fabric that faithfully follows the meaning and emotive import of words and events."[3] Such an import and its elements are inevitably reflective of the cultural environments, the site of the musical work's conception and composition. Therefore, Wagner's programmatic music is reflective of the cultural milieu in which it was situated.

Hanslick, the noted proponent of the formalist view, and a professor of music at the University of Vienna at that time, argues, "The representation of specific feeling or emotional state is not at all among the characteristic powers of music."[4] While speaking of why music is not, and should not be, composed to represent feelings or emotions, Hanslick sets out the criteria for considering works of art, and the essence of "definite ideas" that are unique to every art:

> Every art has its own range of ideas which it represents in its own medium of expression, e.g. tones, words, colors, stone. Accordingly, the particular artwork embodies a definite idea as beauty in sensuous appearance. This definite idea, its embodied form, and the unity between the two are the conditions of the concept of beauty …[5]

[Figure 8]
Eduard Hanslick

Furthermore, he concludes, "The measurable tone and the tonal system are, first of all, *that by means of which* the composer creates, not *what* he creates."[6] His treatise on the aesthetics of music criticized the kind of music that refers to unnecessary narratives, in order to contrive emotional and sensational effects. For Hanslick, such superfluous compositional devices culminate most notably in the works of Wagner, one of Hanslick's contemporaries and opponents. In Hanslick's view, the primary purpose of a musical composition is that it neither includes nor serves the purpose of human feelings, emotions, or any other matters outside of what is intrinsic to music. The composition of music and its encoding devices are expected to assert the autonomy of the composer's ideas and authority, and its form are based on pure notational indexicality and agency, rather than arbitrary emotive affectation. Thus, according to Hanslick, there is nothing to interpret or translate: music is what it *is*. Interestingly, Hanslick also observed that architecture, like music, is the only other art that has no prototype in nature.[7]

Looming over Hanslick's discourse is Wagner's *Gesamtkunstwerk*, which — apart from Wagner being an anti-Semitic, while Hanslick was Jewish — decisively laid a dominant musical dispositif for the time, and for generations to come. According to Adorno, even though Hanslick considered Wagner a master composer, Hanslick's criticism of Wagner was directed at his propensity for adding unnecessary, decorative elements and embellishments that concealed the poetic aim,[8] and for referring to mythological themes that appealed to cultural and ideological power.

In this Hanslick vs. Wagner debate, formal music vs. programmatic music, the most contentious element is between the essence of music and its discourse. Hanslick's position is formalist, in the sense that he believed in, and proffered the view that there is something exclusively

and inherently musical, a musicality, and that such musicality is self-sufficient, autonomous, and above all, universally recognizable. For Wagner, music is one element in the wholeness or completeness (as in *gesamt*) of the experience of his work. For example, in addition to the characterization of opera as *Musikdrama*, a work such as *Parsifal*, which premiered at the opening of Wagner's own Festspielhaus in Bayreuth, Bavaria, in 1882, Wagner called "Bühnenweihfestspiel."[9] Apparent in the construction of the term — "stage-consecration-festival" — meaning the opera was to consecrate the opening of the theater, what is important here is not only the drama, but also the ritualistic role the opera played in underscoring the Wagner's view of the theater and its cultural milieu. By distinguishing it as "Musikdrama," Wagner also developed a compositional structure that went beyond the historical model that persisted up to that time, in which a composition followed a fixed structure of movements and a mood for each respective movement.

In Musikdrama, the music is no longer limited by external structural predisposition, but instead follows its own logic of composition in relation to the language, narrative, dramaturgy, and other elements that contribute to the whole. In contrast to Hanslick's view of music as a self-contained and formal discipline — that music should focus on its own intrinsic conditions, and that the embodiment of music should be musical, rather than linguistic or narrative, for example — Wagner, with regard to Musikdrama and the Gesamtkunstwerk as an immersive embodiment of aesthetic experience appealing to all the senses, presents the role of music as a discursive practice that firmly supports the dispositif narrative. In this sense, music is a medium that carries and disseminates certain culturally specific content through dramatization and its staging. In addition, opera as Musikdrama developed a new frontier that focused on a non-repetitive progression of music. While the formal conventions largely developed in the Baroque period relied on thematized variations of certain central musical elements, by developing the music in parallel to the libretto, the text of the opera, music necessarily also became narrative, and therefore it became not only unnecessary, but also preferable to not rely on repeating or reiterating themes in the formal musical structure.[10]

The contrast between Hanslick's arguments for formal music that is reflexive only of its own unique content and technical innovations, and Wagner's, which relied on articulating extra-musical content is compelling. In Musikdrama, by splicing music and text together, music is no longer composed of themes of tonal organization and structure. Meanwhile, the narrative is written so as to complement the musical form. The verbal attributes of the text in relation to spoken language are altered according to the musical form. At the same, the vocalization also transmits the textual content that is sung by the singers, and listened to by the audience for the story.

In Hanslick's view, music is listened to as *music,* as nothing else, and language, if any, serves solely as a contribution to the musical form. The so-called "Melodrama" represents an example of the view. This was a dramatized musical form, in which the text simply overlaid the music. On the other hand, Wagner's Musikdrama originates from his view of Gesamtkunstwerk, in the sense that it attempted to consolidate different aesthetic experiences such as literature, music, drama, dramaturgy, fashion, architecture, and so on. In Wagner's Gesamtkunstwerk, all the elements involved contribute to pronounce the individual features, in order to arrive at the appearance of coherent whole.

One of Wagner's most vocal critics, Theodor Adorno, appears to empathize with Hanslick, denouncing the very programmatic nature of Wagner's musical dispositif in his Gesamtkunstwerk. In Adorno's view, the totality of Wagner's aesthetic, immersive environment is, in fact, a phantasmagoria based on isolated affective devices, contrived to intoxicate.[11] The supposed unity of Gesamtkunstwerk was imposed on the nineteenth century bourgeois society to exploit every single human organ, in order to mask the horrors of the reality of the industrial capitalist regime. Adorno's view of Wagner foreshadows the dispositif of the culture industry, and the regression of aesthetic experience. The latent danger of the programmatic and encoded forms of aesthetic presentation, open to politicization, is the ostensible totality of the aesthetic experience, which is also susceptible to the exploitation of the totalitarian dispositif.

While Hanslick's view of absolute music resonated through generations in its call for music for the sake of its own fidelity, Wagner's view calls for the wholeness of relations encompassing instrumental and operative totality. Hanslick's view, although compelling, leaves much that is vague and open to question regarding the validity and feasibility of an aesthetic discipline removed from the vagaries of its context. Even though he points out what may be inherent, and therefore consists of the universal in music, it is by no means easy to determine how it would be possible to consider the historical development of music that is disconnected from its given milieu.

In Vienna, during the Secessionist movement that began in 1897 — around the period when the phonograph was becoming efficient, and a few generations after Hanslick's *On the Musically Beautiful* — especially in Adolf Loos's work in the early years of the twentieth century, we see the continuing erosion of the archaic regime of social and cultural space, the *inherited* space that was composed of various apparatuses dedicated to the collection and representation of objects and mementos of historical institutions and dispositifs. For Loos, the sensuous fetish represents the archaic regime through ornamentation that permeated Viennese art and architecture of the

time. Loos defined ornaments as the remnants of artisanal and artistic periods that served the immediate confines of their time and the place, bearing little on the culture at large and posterity. Loos attempts also to radically revise the contemporary aesthetics through the "new art" of the new cultural dispositif. Loos condemns ornament, relating them to tattoos in his contemporary Vienna as indicative of "latent criminals or degenerate aristocrats."[12]

In his essay, "Ornament and Crime," coinciding with Luigi Russolo's 1913 manifesto, *The Art of Noises*, Loos emphasizes the relationship between a specific cultural milieu and its material evolution. Such a relationship underscores a given society's economic and political necessities of the period. Considering the political and economic changes that took place, beginning with the Industrial Revolution, Loos points out that the traditional relationship between the craftsmen and their products is no longer valid, because craftsmen are compelled to spend more time and energy in the realities of a mechanized world that severely devalues and appropriates (and reforms) such traditional craft products. From Loos's point of view, the evolution of contemporary European culture has unfolded in such a way that the innate human desire, physical and erotic, to adorn and fetishize oneself and one's possessions has reached a dead end, and offers no possible future:

> As there is no longer any organic connection between ornament and culture, ornament can no longer be an expression of culture. The ornament being created now bears no relationship to us, nor to any human being, or to the system governing the world today. It has no potential for development.[13]

In explaining Loos's contempt for so-called "applied" art, Toulmin and Janick state:

> … the very notion of applied art involved a contradiction in terms. The products of the applied artist were not more useful or functional artifacts, but simply heavily embellished utensils. Decoration was "applied" from outside to everything from beer mugs to doorknobs. In this, Loos perceived a mixture of fact and fantasy which was highly detrimental to both. The principles for designing objects for use should be purely factual and determined by the functions that the objects are to serve.[14]

Loos's position is not far removed from Hanslick's, roughly a half a century before. Loos not only sees ornament as superfluously programmatic and no part of it in the progress of architecture, but also holds it responsible for the undesirable conflation of functional objects and fetishistic embellishment. The cultural milieu of Vienna at that time in fact describes how the post-World War I dispostifs were transformed from those of embellishment to those of necessities. In consideration of Foucault's analyses of social apparatuses, and also with regard to the kind of transformations that

occurred at the dawn of the twentieth century in Vienna, Loos's view of art and architecture of that time identifies the connection between the new industrial apparatus and its codification process as providing the crucial impetus for the new, changed scope of art and architecture.

The cultural vision driven by the industrial apparatus that contributed to the demise of the pre-industrial political dispositifs suggests that aesthetic judgment and its autonomy were no longer dependent on an external authority, other than that which is innate in the artist himself. The old dispositifs imposed the judgment of power through aristocratic patrons or political authorities. They commissioned the work, but stood external to the actual substance of artistic work. Nonetheless they determined the viability of the given artistic work, regardless of the substance or the merit, or the lack thereof, because, after all, the judgment depended on the *taste* of the ruling class. The new dispositifs of technology claimed the domain evacuated by the demise of the old authority, and in the process, the aesthetic territories of the old dispositifs were cooled, disrupted, detribalized, and eventually, re-encoded in terms of the autonomist position asserted by the artists themselves.

Hanslick's formal music and Wagner's Gesamtkunstwerk essentially occupy two opposite poles of what constitutes musical work. Despite its continued influence for generations, Hanslick became a novel figure in musicological history, because he deliberately denied the music the manifestations of its own milieu. In light of the technological and cultural development since his time, it is no surprise that his theory of "the musically beautiful" lost much of its currency. The formalist view of music, or for that matter, the Kantian notion of the autonomous universality of any aesthetic discipline, propagated a position that rejected the relevance of the contingencies of political and social dispositifs, and the ways they are encoded. In short, Hanslick's formal view of music became untenable.

For over three decades, Wagner was one of Theodor Adorno's persistent foci of analyses and critiques.[15] In *In Search of Wagner*, written in London and New York in 1937–38, Adorno launches his most scathing analyses and criticism of Wagner's person and music. Adorno criticized Wagner of the stark contradiction among technical innovations,[16] phantasmagoria,[17] the presumption of ancient mythologies as being eternal,[18] and thus, the kind of totalitarian dispositif Wagner's Gesamtkunstwerk evinces. On the one hand, Adorno recognizes in Wagner's work the technical innovations of dissonance, polyphony, sound color, and highly articulated orchestration, while maintaining the connection to standing conventions of music. But on the other hand, for Adorno such technical innovations result in regression, and disguise Wagner's tyrannical worldview, because

his music is ultimately so engrossed in effects and ideological leitmotifs, of which central message is that the dominant power disositif always prevails. Before Adorno, Hanslick pointed out that all the tendencies in Wagner's work contribute little to the art of music, as the music itself is forced to recede into the background. By characterizing Gesamtkunstwerk as a phantasmagoria, Adorno criticizes Wagner's obsession with projecting the *appearance* of totality, while simultaneously devising various means by which he could render invisible the fundamental intent of production. For Adorno, it is crucial that Wagner's Gesamtkunstwerk be characterized as "the concealment of the process of poetic production"[19] as a form of phantasmagoria, in agreement with the views of Karl Marx and Walter Benjamin.[20] In sum,

> The whole no longer achieves unity, because its expressive elements are made to harmonize with each other according to a pre-arranged design, possibly of conventional nature. Instead, the different arts which are now alienated from each other and cannot be reconciled by any meaning, are yoked together at the arbitrary fiat of the isolated artist. The formal premises of an internal logic are replaced by a seamless external principle in which disparate procedures are simply aggregated in such a way as to make them appear collectively binding.[21]

Andreas Huyssen also argues that Wagner's pursuit of unadulterated transcendence, in its search for mythical, is fixated on totality and monumentality. For the project of transcendental Gesamtkunstwerk, "Wagner's conception of art, drama, and music participates in this widespread nineteenth-century imaginary of triumphal architecture, stable origins, and mythic groundings of the nation."[22] According to Huyssen, the most serious problem with Wagner's Gesamtkunstwerk consists of the totalizing, occultist narratives merged with the German populist ideology of the time, and architectural constructs. In the end,

> The key function of this vision of monumentality emerges here: it guarantees the presence of the dead without whose sacrifice there can be no new culture. The leitmotiv of architecture in ruins provides mythical closure to Wagner's romantic quest: what is being built is already a tomb, a memorial to failure and disaster.[23]

Huyssen also notes the power of the imaginary, the phantasmagoria, in the immediate aftermath of WW II.[24] During the war, the Nazi propaganda apparatus distributed postcards en masse, showing Albert Speer's designs for the Third Reich. The buildings on the postcards existed only in drawings and scale-model form. Even though the postcatds were not explicitly devised as media propaganda, the result was the same. The German public believed that Speer's designs

really existed, and that they were destroyed during the war, and that they witnessed the ruin of a grand totality, the great Germanic empire that would have lasted a millennium, although they were fictitious.

Speaking of Adorno's analysis of Wagner, Huyssen also notes that modernist music after Wagner, in its attempts to counter his ideology, occupied an uneasy position, in that the technical innovations of early twentieth century avant-garde music were already latent in Wagner's work. In that sense, the modernist music of Arnold Schoenberg and others since may be seen to consist of both "continuation *and* resistance."[25] So dominant was Wagner's position in terms of both disciplinary innovations and the ideological ramifications of Gesamtkunstwerk, that modernist music has been resisting his music ever since.

As was the case with Wagner's Gesamtkunstwerk, the way given dispositifs are codified depends on the power relations of the operative apparatuses of the society and culture of a given period. In the end, Wagner's music dreamt of a totalitarian dispositif in which the musical drama binds together music, mythical narrative, and dramaturgy that form a powerful multi-sensory apparatus[26] that enframe, and abet concealing, its ideologically charged process. According to Susan Buck-Morss,

> Phantasmagorias are a technoaesthetics. The perceptions they provide are "real" enough-their impact upon the senses and nerves is still "natural" from a neurophysical point of view. But their social function is in each case compensatory. The goal is manipulation of the synaesthetic system by control of environmental stimuli. It has the effect of anaesthetizing the organism, not through numbing, but through flooding the senses.[27]

Through its imagery and the way it is encoded in Wagner's program of Gesamtkunstwerk, architecture and its monuments have turned phantasmagoric and synesthetic. Even in Wagner's time, phantasmagorias were, due to their technological construct, endlessly reproducible, intermodal, could be printed on postcards for mass distribution, and, in today's terms, ultimately stored in databases.

The two radically opposing views of music and their ramifications suggest how we may approach the affective apparatus, which includes architecture, and how we contrast the ways a composition is encoded, the combinations of which lead to a form of disciplinary codification. We could consider Hanslick's ideal of absolute music as a discipline that is purely composed of its

own autotelic terms, and attempts to purge extraneous elements from its ontology. We could also consider Wagner's programmatic disciplinarity that conceives its ontology in terms of the dominant power dispositif that projects its own affective influence, in order to reconfigure the surface of spatial singularity. Architecture is situated somewhere between the two, in a place where practice is simultaneously its "formal premises of an internal logic," and "a seamless external principle" that is expected by the dominant power dispositif.

2. Dissonance and Dispositif

During the period of Hanslick and Wagner, in the second half of the nineteenth century, two crucial mediative inventions emerged, and initiated the dispositif-centric culture of today: photography and phonography. These two technological inventions came to mediate and transform the way we perceive our world, by providing a means of capturing and preserving image and sound. These two inventions allow us to suspend and transpose time and distance, as well as somatic features and intimacy, through captured images and sounds. With photography, since the development of optical instruments, namely the telescope and the microscope, the capacity to extract and extend our vision became portable, both locally and temporally. For many, the invention of the daguerreotype process made it possible to fix and carry the images of home and loved ones. Also, the subsequent development in photographic devices and substrates made it possible for anyone to witness the horrors of the American Civil War that raged in the US in early 1860s. [Figure 9]

Thomas Edison's phonograph, which could both record and play back sound, was originally intended primarily as an archival device[28] that could also capture fragments of memory, to be carried with one, and cherished. Edison's phonograph was first conceived to replace stenography for recording and replaying legal proceedings, the will of a dying person, and historical speeches. In other words, the initial intent behind Edison's phonograph was to advance the means of archiving, and therefore preserving particular moments in an individual's or a society's history. And it was designed so that one could take the recorded media, the portable and interchangeable wax cylinder, and listen to the sound on it whenever and wherever the mechanical playback device was available to play, amplify, and reproduce the sounds that were etched on the surface of the medium. In 1887, the phonograph was evolved to the gramophone by Emile Berliner, and replaced the rotating wax cylinder with a flat, round disc. The technology is essentially the same: the vibration of the sound was etched in a spiraling groove that, when played, would reverse the process, and reproduce the etched sound.

[Figure 9]
"Incidents of the War. A harvest of Death, Gettysburg, July, 1863"

The original intent of the recording device was similar to that of a printing press: to capture and inscribe for preservation and distribution. However, recording technology progressed over the remaining decades of the nineteenth century into the twentieth, along with the invention of radio broadcasting, and brought disparate sound spectrum into everyday household. It became the *hot* technology that disrupted and transformed the conventional exclusivity and uniqueness of musical performance by making sound of all kinds transcend time and place. Jacque Attali argues, "The phonograph, then, is part of a radically new social and cultural space demolishing the earlier economic constructions of representation."[29] In fact, the invention and proliferation of sensory augmentation technologies, which both photography and phonography are, the former for seeing and the latter for hearing, radically transform social and cultural space, and the fidelity of their replication eroded the authority of the earlier forms of performative criteria. One of the most notable features of destabilizing preceding technological mediation of the senses is its power to reform older media: The new medium not only reframes and reconstitutes the existing territories of the older ones, but also attempts to make the old media *better*, "because it fills a lack or repairs a fault in its predecessor, because it fulfills the promise of an older medium."[30]

Beginning with magnetic tape recording and editing, the new media also transformed reality by changing the scope, scale and pace.[31] In music, the technology and its new media also superimpose a unique potential: music is now separated from the presence of human performers, and expanded beyond the immediate locales of the performance. Furthermore, with the play-on-demand nature of music as mass media, the experience of music was released from the historically established rituals, and became a repeatable, often private and individualized activity. In the Western tradition, music

has come to represent a culturally significant event. Music has become an occasion so isolated from everyday experience that musical performances take place in special buildings, and the audience may be expected to wear special clothing, for example, and thus contribute to the ritual of the musical event further.

The invention of the phonograph dismantled the specialness of musical events on all levels of its historicity. It was no longer limited to a specific time and place, and became an integral part of everyday life. Contrary to Edison's initial vision of the phonograph as a historical, archival medium, it became a medium for the mass distribution and consumption of recorded sound. Through another technological invention, radio and sound broadcasting, one listens to storage media being transmitted on an extremely broad scale. Furthermore, such a vast scale of dissemination is achieved at the speed of light. The reality of the musical performance has been transformed in its scope, scale, and pace, as well as in its cultural position and rituals.

The scope, scale, and pace of musical performance, combined with the Futurists' aspirations in industrial machines as the means of not only of aesthetic potential but also of the inevitable overthrow of tyranny, and liberation from it, also include the mediatic development in which functional and the aesthetic considerations are identical: Aesthetics should mediate the functional, and vice versa. During the first two decades of the twentieth century, the grand-scale collapse of the old order in Europe advanced the age of popular democracy and politics, and the freedom from the regime of patronage of earlier periods, for example that of the Habsburg dynasty. In turn, this transformation was embodied in industrial production, as well as the production of fine arts, literature, architecture, and cinema.

By 1925, when sound recording technology was widely deployed and combined with reliable radio broadcasting, the sharp separation takes place between values that are entirely devoted to a certain medium, the recorded media (the content), and those that are devoted to making it useful, the reproduction devices (the presentation). This also marks the separation between the content of the work and the presence and status of its author-creator. The performance of music no longer requires the presence of the performer. Walter Benjamin's "aura" underscores this particular point in relation to the mechanical reproduction of works of art.[32] With the tape recording and playback, the musical work lost its aura, but expanded the influence of composers and musicians. The aura is redefined. The penetration of music into the everyday, through technological dispositifs, has created new forms of economic perspective for the profession, and resulted in a new professional environment, where

non-mediatized music became in effect as good as nonexistent.

McLuhan indicated that the proliferation of media was decisive in destabilizing the existing institutional order of music, in terms of both implementation and production. By McLuhan's time, not only had the mass production of LPs domesticated music, but the entertainment appliances, notably home stereo systems, radios, and televisions, completed the mechanization of domestic activities that started with the Frankfurt kitchen (*Die Frankfurter Küche*).[33] In this context, the evolution of magnetic tapes into portable cassette tapes was a decisive step in the destabilization process.[34] The magnetic tapes made it possible for anyone with a tape-recording-playback device to disassemble and reconstitute sounds and music. Especially, the sampled music as a genre emerged from vinyl LP records and turntables, and crucially, from how they were (mis)used. Furthermore, the cassette tapes provides a significant leap in the new dimension of music that made the culturally specific musical experience portable, inexpensive, and potentially empowering.[35]

The cassette tape encouraged a culturally specific assemblage, because it provided a physically intimate, personalized way of listening to music, best exemplified by Sony Walkman introduced in 1979, and by the stereotypical image of a black youth strolling the city with a large boom-box on his shoulder, blaring music that is supposed to represent his identity. This device-specific identification of self is empowering, because one could either erect an envelope by immersing oneself in the personalized sound space (the Walkman), or transgress and disrupt the space of social protocols and conventions (the boom-box). The vinyl LP's remained domesticated, and became cool, while the cassette tape became hot by being more intimately associated with the body, and by providing a capacity for matching and mixing to assemble a personalized set of music. The cassette tape disrupted the coherence of the vinyl LP's with its editability. The hard plastic disc physically imprinted with the sound signal offered no possibility of altering or extracting the recorded contents.

The experimental opportunities compensated, with the new techniques of magnetic tape recording, for what was lost with the electronic recording and reproduction of music. The invention of a recombinant medium involves nothing short of the revolutionary capabilities brought to vision by cinematic editing techniques. With sound, one could manipulate and alter the aural experience, and in fact, the specific art of editing, cutting and splicing sound fragments on tape, became one of the most significant influences on the music of the second half of the twentieth century. While the tape removed the scratching noise of the LPs, it made the sonic medium unstable – in terms of both the material substrate (thin plastic film) and the recorded content (magnetic intensities). The

formation of the sonic environment, however, throught the inherent fragility of the medium, took on a new level of articulation, making the storage of sonic information more immediate and more readily available.

We may similarly consider the effect of videotape on film. We may speak of the comparable influence videotape has exerted on filmmaking, transitioning it to the electro-magnetic realm. In this sense, videotape is the medium of pure temporal energy that is captured on a versatile substrate that simultaneously provides storage, retrieval, and recomposition. Unlike the medium of film, a video recording is not composed of frames, but of flows, continuously recording streams of light modulations, in a similar way as the flow of the senses. The sensor converts this into a series of magnetic signals that is recorded on the magnetic tape. Videotape transforms filmmaking in no less radical a way than magnetic tape did for sound. Videotape made the assemblage and production of moving images technically less cumbersome, and far more portable. The recording and (re) production of moving images became everyday.

Miniaturization also contributes to destabilizing effect of the newly emerging hot media.[36] For example, the digital audio tape (DAT) technology of the 1990s could contain pure digital sounds in a cassette about the size of a small matchbox. Similarly, video could be recorded on a Hi8 cassette that is no bigger than a DAT. The tour de force of miniaturization if the microprocessor, or the CPU, that consists of millions of transistor switches contained in a square about the size of a postage stamp. As miniaturization accelerates, we can also store several DVD discs (about 4 GB each) on an SD card, also about the size of a postage stamp. By closely relating them to the scale of human organs, the devices increasingly gain more influence, as they become more intimate and pervasive. The miniaturized devices of new media and communication specifically become not only personal, but far more importantly, emotionally calibrated and charged.[37] In this process of aesthecizing functional devices, powerfully aided by miniaturization, the industrial designer Hartmut Esslinger contends, "Form follows emotion."[38] Miniaturization and the resulting technological appendix to the human body produce a radically altered condition of not only media and content, but ultimately, also of the social, inter-human and spatial construct of the artificial environment.

The technological inventions that started with photography and phonography have transformed the way we document, remember, and relate to the world surrounding our bodies. They have also transformed the way we relate to and interact with one another. The transformations that occurred in spatial and inter-human terms also indicate the transformation of the way we consider

institutions and conventions. Starting with Russolo's Intonarumori instruments, the devices and the ways they are encoded and, ultimately, codified, illustrate how we desire alterity, the dissonant unconcealing of the masked face, with regard to the new affordances. In turn, the new forms of affordances destabilize and reform the historical invariants. The new forms of affordances have provided the sense of potential for alterity, and therein is the implied potential for resisting the hegemonic dispositifs of enclosed and protected territories.

As we have seen from the few examples presented so far, in the conception and composition of architecture, the influence of technology is not dissimilar to that on music. What started as the modernists' (e.g. especially Le Corbusier's) aestheticization of technology, reaching its ultimate fetishization in the so-called high-tech buildings, is now in a comparable state to the form of a Schaeffer's *Étude*: the architectural composition is firmly captured and encapsulated in the technological dispositif. What lies behind such an encapsulating technological dispositif and its codification has always been the potential for new assemblages, turning against the standing, hegemonic dispositifs. On a superficial level, such new assemblages, abetted by the new technology, are seen simply as the necessary disruption of the existing institutions and conventions of production, be it music, painting, or architecture.

3. Apparatus of Resistance and Liberation

In his manifesto, *The Art of Noises*, of 1913, Luigi Russolo declared that the ancient world was silent, but "In the nineteenth century, with the invention of machines, Noise was born. Today, Noise is triumphant and reigns sovereign over the sensibility of men."[39] Russolo attributes the conceptual beginning of noise to industrial development. In his proclamation, Russolo emphasizes the limitations of pre-industrial music, and praises the new aesthetics of the industrial, machinic dispositifs that appeal to *all* the senses of new man. The machines of the industrial regime brought about an entirely new class of sounds that he believed would fundamentally transform the institution of music. This transformation through the formal rationality[40] of a machinic organization also created new operatives of music, those who operate the machines that produce and/or reproduce music and sound in general, and whose influence now reaches beyond the machinic logic, both internal and external to the discipline.

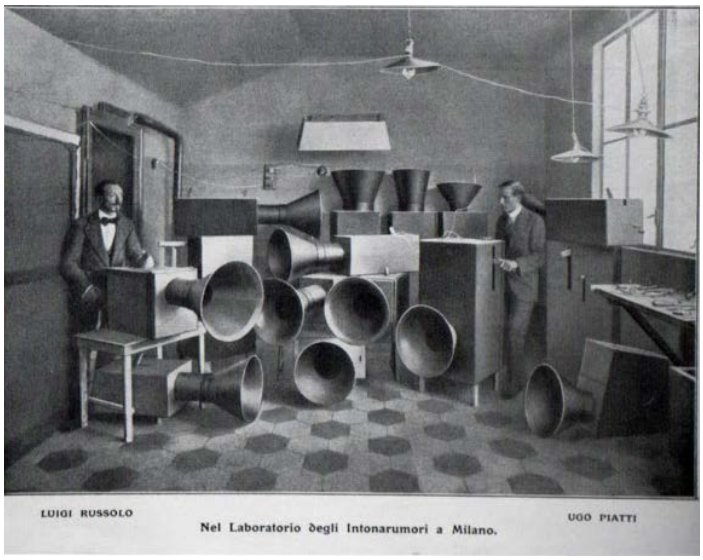
What distinguishes the apparatus-centric age is the technology of extra-mnemonic means, and machines that run on textual instructions. This also includes devices that extend not only the

human body, but more crucially, the senses and perception. In the twentieth century, the machine was seen as not only the instrument of repression, but also the agent of creativity. Futurism, one of the first instances in the twentieth century of the creative drive centered on machines, envisioned machines as the means of liberation, not only of creativity, but also of politics and ideology. The dissonant qualities of mechanical sound became emblematic of resistance and liberation. In his manifesto, Russolo proposed "noise music," derived from Pratella's manifesto and Marinetti's "noise poetry," and developed a variety of noise instruments and machines called "Intonarumori" [Figure 10] that he used in the first public performance in 1914. At the foundation of his noise-music or "MUSICAL NOISE"[41] is Russolo's criticism of the limitations of sound from the time of Pythagoras to his own day: Noise is unlimited, and arrives at the "confused and irregular from the irregular confusion of life...[it] is never revealed to us entirely and always holds innumerable surprises."[42] He further declares:

> … From the beginning, the musical art sought out and obtained purity and sweetness of sound. Afterwards, it brought together different sounds, still preoccupying itself with caressing the ear with suave harmonies. As it grows ever more complicated today, musical art seeks out combinations more dissonant, stranger, and harsher for the ear. Thus, it comes ever closer to the noise-sound.
>
> This revolution of music is comparable to the multiplications of machines, which everywhere collaborate with man. …[43]

In the manifesto, Russolo argues that the current musical avant-garde, even though seeking harmonic and timbral complexity through dissonance, fails in its task of renewing musical language. Orchestras are "hospitals for anemic sounds," he writes, capable only of a limited range of tones, or "a repugnant medley of monotonous sensations" for "the Buddha like listenres."[44] For Russolo, Futurist noise-sound should found new music. All the sounds of life, whether natural or derived from man-made devices and machines, should be incorporated into music. He also strongly encourages the development and design of new instruments capable of producing new kinds of noises, suitable to the *mise en être* of the now-expanded acoustic imagination of the composer.

Russolo's ideas destabilize and disrupt the historical conventions of music by interjecting mechanical noise, as man-machine collaboration, a new form of performance embodied in the machine that is more than the technical extension of the body. This questions the production of music that begins with the abstract notational process in which music is written in presupposition of auralization and performance of the notation, the score that is composed of tonal and temporal



[Figure 10]
Luigi Russolo and Intonarumori machines

signifiers, the origin of which as discussed previously dates back to the Medieval period.

Mechanical sounds are, by and large, incidental to, and the result of repetitious, automated mechanical operations. Thus, Russolo's introduction of mechanical sounds raises at least three crucial questions regarding the nature of the discipline. The first questions the presupposition that music is to be listened to for pleasure and for its own sake. Second, Russolo questions the purpose of performance as a way of instantiating musical experience. Third, it also casts doubt if the score as such inevitably determines the nature of the performance to a large extent, that is, barring the possibility of overriding liberties being taken by the performer, the musician.

Russolo disputes that the notation should precede the performance, as the musical composition approaches an expression of the instabilities of the machine age and the potentialities of such disruptive inscriptions, akin to, for example, the onomatopoetic poetry of Marinetti. Here, compositional inscription designates the form of an idealization process that requires particular instantiation. The inscriptive process of architectural composition is, just as in music, a process of the author instilling certain ideals that are conceptualized in each given project, driven by a certain desire to embody it in the work that is to be built.

We also witness notation-inscription as a process beyond the expression of pleasure as the primary purpose, as exemplified by such writers as Velimir Khlebnikov (1885-1922). His onomatopoeic, "beyonsense" or "*zaum*," writings reveal "phonemic and morphemic play can produce a poetic language beyond (*za*) mind or reason (*um*)."[45] Subsequently, Antonin Artaud criticized the Western theater for receding into a genre of literature, and called for its evolution

beyond such a subsidiary position.[46] In this regard, Marinetti's onomatopoeic poems destabilize and undermine the very coherent nature of writing, historically regarded as an idealization process that provides coherence to speech, to rouse raw emotional effects, and thereby to unsettle the reasoned and composed nature of inscriptions.[47] Russolo's Intonarumori machines and performances further reinforced the apparatus of the changing inscription-embodiment (or embodied experience) relationship, as the machines, once considered the quintessential products of idealized inscription practices, are directly deployed in order to undermine the very process of producing rational objects.

Russolo asserts that with the development of the modern city and the age of industrial machines, the traditional musical sounds (pure tones, the music based on the historical tonal system, the refined timbres of traditional musical instruments and their materiality, etc.) had become redundant, and exhausted of all their mysteries and hidden dimensions, whereas noise "still has new emotions to give us because our senses cannot so easily bare the elements that compose it."[48] For Russolo, noises are harmonically richer than music, and within them is the potentiality of liberation.

In Russolo's time, the sense of liberation laid in the neutrality, efficiency, and most of all, impartiality the burgeoning machine age appeared to presage: Through machines, humanity can overcome the hereditary rules that were centered on the whims of one person, and all the inconsistencies and unfairness associated with the centralized, arbitrary, and authoritarian power of subjectification, and build a better society. The machine age also foresaw another crucial ideal, exactitude: Through machines, humankind can now achieve the exactitude and consistency that will provide universal equity, and the kind of material culture that serves the masses. Russolo speaks of liberation from the old regime, and of the optimism that permeates the machine age.

Russolo nonetheless finds it essential to qualify noises under certain traditional guidelines:

> We dominate [noise-music] by transforming at will its pitch, its intensity and rhythm. We hear it suddenly become autonomous and malleable material, ready to be molded to the will of the artist, who transforms it into an element of emotion, into a work of art.[49]

Noise must be put to use, and extend the will of the artist, just as the will of the industrial machines and the determined pace of their urbanity. Here, even though Russolo envisioned noise as a celebration of the new industrial age in which machines drive social and political change, and therefore, the *new* music that epitomizes machinic noise will contribute to such changes, what Russolo in fact foresaw was the kind of art form that relies on a new domain of instantiating music.

And, the burgeoning implementation of the industrial, machinic dispositifs that dominated the twentieth century, and led to the kind of intermodal, hypermedia culture of today, procides such a new domain of productive impetus.

The Futurist movement exploited the timbre-words, so to speak, departing from the fixed preference for the materiality of classical language. This "parole in libera […] eliminated all the rules of versification, syntax, spelling, and typography."[50] Filippo Tommaso Marinetti, one of the founders of Futurism, published "The Founding and Manifesto of Futurism" in 1909, promoting "direct onomatopoeia" to "enrich lyricism with brutal reality." Later, he used his work, "Zang-Tumb-Tumb," [Figure 11] a parole poem recounting the Siege of Adrianople during the First Balkan War of 1912, to exemplify direct onomatopoeia: "[M]yddying huffing goaded oxen wagons pluff-plaff horse action flic flac zing zing shaaaack laughing whinnies the tiiinkling jiiingling..."[51]

In 1912, Francesco Balilla Pratella published "The Manifesto of Futurist Musicians," declaring that the elements of tonality and the monotonous rhythms of dance were simple details within a larger, polyrhythmic, enharmonic,[52] and chromatic atonal music (viz. Schoenberg). By "enharmonic," Pratella and Russolo broadly suggested, in terms of the technical meaning of the word, the place where a tone has more than one meaning, and fits into more than one differential register, vis-à-vis a tempered scale. Earlier in his manifesto, Pratella states that harmony "was born when each sound of the melody was considered in relationship to the combinations of all the other sounds in the mode of the scale to which it belonged."[53] Hence, "enharmonic" suggests a way of ordering music in which sounds do not have a single coordinate or a single meaning, but can shift their meanings, and be polysemic or graphemic. Moreover, Pratella goes on to state that "the values of consonance and dissonance are nonexistent," and Futurist music will be "similar to thousands of sea waves in uneven crests." For him, passion, expression, and also "crowds, great industrial shipyards, trains..."[54] would dictate the form of this new music, and at the center of this new music is the noise that would provide the means of resistance and liberation.

Beginning with Thomas Edison's phonograph, the development of sound recording, distribution, and playback technologies offers distinctive examples of how a new layer of a codification system takes its shape. More significantly, this development, for example, from LPs to mp3s, generated a new class of professionals — producers, programmers, and recording engineers — whose activities have fundamentally altered the nature of the composition and performance of music. In this regard, today, the new professionals' expertise in the codification, implementation, and

[Figure 11]
"Zang-Tumb-Tumb" Marinetti

operation of the apparatus defines the discipline's viability in both aesthetic and economic terms.

As happened in music as a discipline, with regard to the sophistication of sound recording technology, the rapid advances and penetration of digital technology also affect architecture along the similar trajectories of the apparatus and its codification. An apparatus-centric architecture consists of ever more complex collection of fragments that architecture is expected to include, in multiple contemporary societies, economies, geographies and climates. As a result, the possibilities of an architectural composition, in this sense — organizing and gaining certain knowledge or information about it, for instance — lie in the articulation of its apparatuses' interfaces. Moreover, every interface superimposes a distinctive codification regime built around a specific categorization, and with possible predetermined outcomes.

By means of codification and its interface, the new class of sound recording professionals has devised a regime of production and management of sound and music that is driven toward exceptional purity through an exclusionary process. This process seals the porosity of the medium from dissonance and noise, moving toward a seamless and hygienic state, which stifles dissent. Also, in architecture there exists a tendency for the kind of formal expression that increasingly emphasizes the seamlessness of conception and production at all levels of its enterprise, in terms of the ideological (the image), the political (the execution of the image), and the economic (the profit during and after the execution of the image). Behind this optimization is the intent to minimize the deviations between what is desired and what is not.

In this pursuit of seamlessness, the methods and techniques of apparatization and

codification must filter and attenuate what is considered dissonance, which is highly relative to a given value, and that value is established in the context of a particular technical regime, the purpose of which is to produce a range of effects. With regard to music, this apparatized process of codification has resulted in a perfectionism regarding sonic qualities, exceeding the state of actuality that was previously possible. Furthermore, it has also legitimized the insertion of extraneous elements that are deemed desirable, enhancing or necessary to counter dissonance, and to ascend toward the supposed perfection during the technical production stage. An autonomous layer of codified intervention determines the eventual characteristics of the resulting product, and qualifies it by the degree of this intervention. As a result of this apparatus driven perfectionism, presumably in pursuit of "the realistic," which may be reproduced in a living room, the music we listen to on a daily basis has become very far removed from the actuality of its initial performance. According to Allen S. Weiss, such perfectionism will eventually become "necrophilic" and "topophobic."[55]

Recording technologies in music have, through the apparatized process, come to determine the fate of the actual performance. The emphasis is on fluency in specific skills, vis-à-vis specific apparatus-knowledge. Additionally, in the conception and production of architecture today we see a new class of experts whose central role is dedicated to the codification and operation of the apparatus. If we reflect on recent tendencies of both architecture and music, specifically since the appearance of the first purely electronic sound generation in the 1950s, we see a process of codification, in the sense that the environment in which the sound occurs is constructed on the basis of rigorous technical operations. But the performances are detached from the presupposition of substantive narratives, or from mundane and serendipitous moments.

Returning to the mechanical reproducibility of works of art, of which Benjamin speaks, if we consider the roles of extra-somatic augmentation and extension of human sensory capacities as the defining modes of mediatized cultural formation, we may also consider the extra-somatic formation of aura. In other words, in Benjamin's mechanical reproducibility, the machine overshadows the author. Ultimately, the kind of machine involved in the production of the work of art determines and embodies the aura. For example, such a mechanical aura represents the industrial-capitalist culture that consists of identical, mass-produced, and flawless objects that are inexpensive and available to everyone. We endow seeming perfection and equity of machine-made objects with an aura. Whether they are reproductions or original work does not matter much: machines made them, and do not make mistakes.

In the case of what an aura may indicate in the digital age, if we were to suppose such a condition, the question is not only whether or not it is present in the extra-somatic digital apparatus, but also how it displaces and replaces the standing codification of cultural formation. We trust and find comfort in the cultural discourses that are formed by the digital apparatus and its codification that blanket over the messiness of reality. In this sense, the aura of today's cultural dispositif is composed of the pervasive and ubiquitous presence of the digital apparatus. We can paraphrase Benjamin that today the aura surrounds the sense of a cult that is so intimate, yet remains distant and invisible. As Benjamin points out, if the machine age has removed art from the cult-ritual value,[56] the digital age has recreated it for art.

The cult value of the digital stems from the technological capacity to make dissonance and alterity appear special, even to be celebrated at times, by capturing and lifting them to the surface, making them visible. The celebration of dissonance and alterity is imbedded in the tradition of technology that hails novel inventions as the progenitors of venturing beyond. But as soon as they are captured, their cult novelty vanishes, and withers away as quickly as such cult status was fabricated. The annexation process no longer involves physical incorporation, and is no longer a question of *vor-* or *zuhanden*, to borrow from Heidegger. Encoding and codifying a given work determines its presence and viability. Regardless of the content, the surface appearance determines the endorsement of a given work. And such endorsement indicates the viability of the work's value, in terms of whether or not the work can navigate the striations of the virtual space.

Notes

1 R. Murray Schafer, The Soundscape: Our Sonic Environment and the Tuning of the World (Rochester, VT: Destiny Books, 1994): 103.

2 Eduard Hanslick, *On the Musically Beautiful*, trans. Geoffrey Payzant (Indianapolis: Hackett, 1986): 72

3 Peter Kivy, Introduction to a Philosophy of Music (Oxford: Oxford University Press, 2002. Kindle edition): Loc. 2149

4 Hanslick, 1986: 9.

5 Ibid. 8.

6 Ibid. 72. (Emphasis in original.)

7 Ibid.

8 Theodor Adorno, *In Search of Wagner* (London: Verso, 2005): 57

9 Ryan Minor, "Wagner's Last Chorus: Consecrating Space and Spectatorship in 'Parsifal'" Cambridge Opera Journal 17, no. 1 (Mar. 2005): 1-36

10 Kivy, 2002: Loc. 2142

11 Adorno, 2005, 87

12 Adolf Loos, *Ornament and Crime: Selected Essays*, ed. Adolf Opel, trans. Michael Mitchell (Riverside: Ariadne Press, 1998): 167

13 Ibid. 171

14 Allan Janik and Stephen Toulmin. *Wittgenstein's Vienna* (Chicago: Ivan R. Dee Inc., 1996): 99

15 The following paragraphs on Adorno's view of Wagner are not meant to be a comprehensive survey of his criticism of Wagner. Neither are they meant to be an authoritative presentation of Adorno's philosophy in general. Rather they are cited here, in order to describe a specific feature of Wagner's work that Adorno analyzes. Adorno's work in question here, *In Search of Wagner*, was written in response to the rise of Nazism and the kind of totalitarian vision Wagner embodied in Gesamtkunstwerk. It is well regarded, for example, through the analysis of Andreas Huyssen, that Adorno's later work on Wagner, for example *Wagner Aktualität,* is said to exhibit a more temperate view. While Adorno felt compelled to speak counter to the Nazism of the 1930s, by the 1960s he felt that the threat posed by Wagner's ideology had subsided.

16 Adorno, 2005: 51-59

17 Ibid. 74-85

18 Ibid. 86-102

19 Ibid. 87

20 Ibid. 74n1

21 Ibid. 91

22 Andreas Huyssen, "Monumental Seduction," New German Critique, no. 69, Richard Wagner (Autumn, 1996): 181-200 (193)

23 Ibid. 197

24 Ibid. 199

25 Huyssen, 1986: 35 (Emphasis in original.)

26 Susan Buck-Morss, "Aesthetics and Anaesthetics: Walter Benjamin's Artwork Essay Reconsidered," October 62 (Autumn, 1992): 3-41 (22)

27 Ibid.

28 Attali, 1985: 91-92.

29 Ibid. 95

30 Bolter and Grusin, 2000: 60.

31 McLuhan, 1994: 7-8 &178.

32 Benjamin, 1999: 217-242

33 Nicholas Bullock, "First the Kitchen: Then the Façade" Journal of Design History 1, no. 3/4 (1988): 177-192

34 William J. Mitchell, *Me++: The Cyborg Self and the Networked City* (Cambridge: The MIT Press, 2003. Kindle edition): Loc. 1101-1105.

35 Mark Poster, "Everyday (Virtual) Life," New Literary History 33, no. 4, (Autumn 2002): 743-760 (752)

36 Mitchell, 2003: Loc. 30.

37 Manovich, 2001: 123-124.

38 See: http://www.forbes.com/asap/1999/1112/237.html (Accessed Mar. 2013); also quoted in Virginia Postrel, *The Substance of Style: How the Rise of Aesthetic Value Is Remaking Commerce, Culture, and Consciousness* (New York: Harper Collins, 2009. Kindle edition): Loc. 297.

39 Luigi Russolo, *The Art of Noises*, trans. Barclay Brown (New York: Pendragon Press, 1986): 23-24

40 Max Weber, *Economy and Society: An Outline of Interpretive Sociology, Vol. 1*, eds. Guenther Roth and Claus Wittich, trans. Ephraim Fischoff (Berkeley: University of California Press, 1978): 85-86

41 Ibid. 24

42 Ibid. 27

43 Ibid. 24. (Emphasis in original.)

44 Russolo, 1986: 25.

45 Quoted in Marjorie Perloff, *The 21st Century Modernism* (Malden: Blackwell Publishers, 2002): 123.

46 Antonin Artaud, *Selected Writings*, ed. Susan Sontag (Berkeley: University of California Press, 1988): 267-271

47 N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (Chicago: The University of Chicago Press, 1999): 93-93 & 193.

48 Russolo, 1986: 83

49 Russolo, 1986: 87

50 Michael Kirby and Victoria Nes Kirby, *Futurist Performance* (New York: PAJ Books, 1986): 28.

51 Marinetti, quoted in Russolo, 1986: 26-27

52 By "enharmonic," Pratella and Russolo broadly mean what we call microtonal; my understanding of the technical meaning of the word suggests the place where a tone has more than one meaning, fits into more than one differential register, vis-a-vis a tempered scale. Earlier in his manifesto, Pratella says that Harmony "was born when each sound of the melody was considered in relationship to the combinations of all the other sounds in the

mode of the scale to which it belonged" (Kirby, 1971: 160). Hence "enharmonic" suggests a way of ordering music in which sounds do not have a single coordinate, a single meaning, but can shift their meanings or are polysemic or graphemetic.

53 Kirby, 1971: 160

54 Pratella quoted in Kirby, 1971: 160-5

55 Allen S. Weiss, Breathless (Middletown: Wesleyan University Press, 2002): 82-84

56 Benjamin, 1999: 226.

§ 5 Emancipation of Dissonance

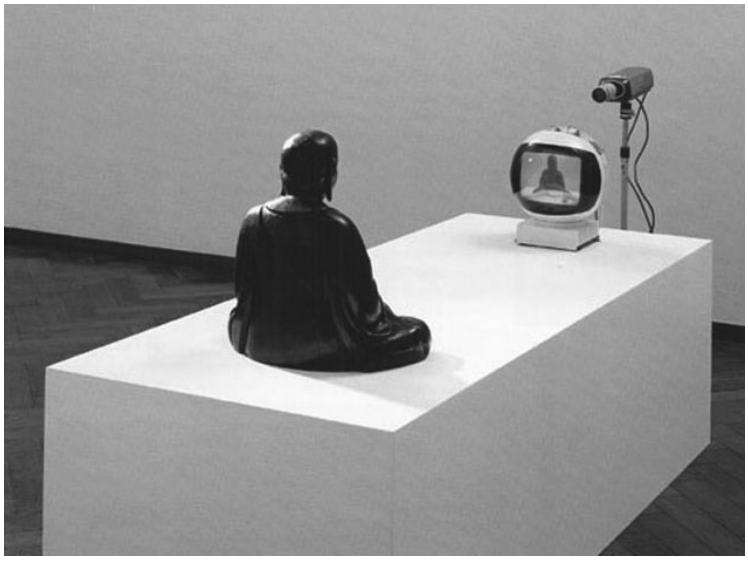
1. Performance as Alterity

How have the dispositifs of representation and simulation technologies become the dominant, and often overriding, modalities of architectural design today? Does architecture, being a compositional discipline , indeed represent, and therefore have no other recourse? In other words, does digital technology reinforce the supremacy of the visual representation in architecture? We discuss a short yet exemplary facet of music history that I believe demonstrates how the apparatized and codified aspects may be paired, using examples of works by Nam June Paik and John Cage, and help us reconsider the performance-instantiation relationship and its scope.

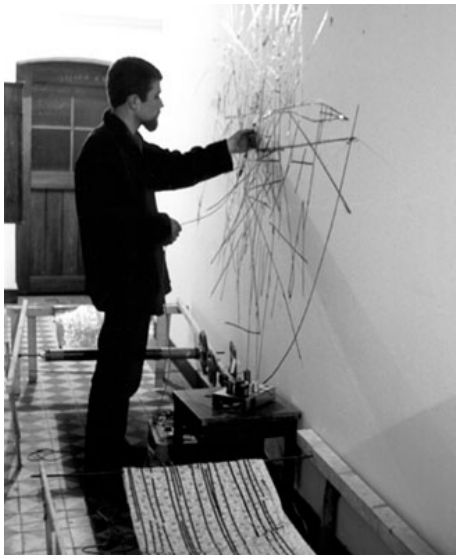
This discussion includes the notion of intentional misuse, which I believe Cage and Paik demonstrate — or at least use to question the legitimacy of aesthetic conventions — at the core of which is the point that a series of subversive experiments challenges and modifies the canon of a specific aesthetic dispositif. Two distinctive modes emerge, specifically with regard to Cage and Paik. In the case of Paik, the new medium of electronic imaging offers the kind of trans-local and trans-temporal capabilities previously unseen in visual art and music, and for Cage, technological advances expand the compositional possibilities, as exemplified by his use of magnetic audiotapes. Electronically reproducible media destabilize the reign of authoriality, and facilitate effectively the potential for combinatorial, chance-operation. Two of Paik's works that quintessentially demonstrate his vision of reflexive media are the Buddha watching himself on a television, [Figure 12] and the use of magnetic recording tape, which offers the possibility of the composition itself being the direct medium for instantiating sound. [Figure 13]

These two works by Paik establish the apparatization as the means of measuring the vitality of aesthetic work, and expanded the historical disciplinary discourse of visual art and music. Ultimately, the scope and potential of the digital dispositif in architecture consist of both the synaptic end of technological novelty, and, more crucially, its relationship to the consolidating system of apparatized design and production of architecture, in which the dispositif consists of reflexive devices, and the dispositif itself is simultaneously the composition and the instantiation.

Although our capacity to assemble, rearrange, and recreate the composition of architecture in countless variations indicate a pattern of uncontrolled production and the proliferation of cheap images and artifacts, it also presents an opportunity for a critical assessment of architecture and its



[Figure 12]
TV Buddha
Stedelijk Museum, Amsterdam, 1974



[Figure 13]
Random Access,
Galerie Parnass, Wuppertal, 1963

emerging intermodality. Architecture no longer stands for a representational-functional medium, and no longer subscribes to a worldview that consists of identicality, fixity, and definiteness. Architectural composition today consists of the means to mix, reorganize, and reconfigure various fragments in countless ways, and to help simulate the spatial experience. Whereas a mixing of parts and fragments that may be reorganized, reconfigured and varied in countless ways, the dispositif of architectural composition today is composed of the kinds of elements that appeals to aid simulating the experience of spatial conditions. Rather than entering the space of gaze and vision, architecture consists of multisensory experience, beyond privileged, yet disinterested, vision. With the emergence of projected drawings and notations, architecture departed the tangible and entered the visual. It is no coincidence that the era of projected drawings coincides with that of paintings on isolated sheets of canvas separate from the walls of architecture. Since the emergence of projected drawings, the artificial world has been encoded, codified, and inscribed around abstract ideals rationalities. Built architecture incarnates such extra-haptic idealization.

Here, I would like to entertain the question of whether and how architectural design and production, its narratives and symbolic qualities — most of all, its intermodal tendencies in the age of digital algorithms, and the seemingly uncontrollable stockpiling of fast, cheap, and out-of-control image making — could be considered through the notions of the apparatization process and codification. The term "convention," or the historical sedimentation of codification, refers to a process within which the pragmatic decisions of everyday practice rely on a pattern of play between the satisfaction of both private and public needs, and is therefore a bridge between the desire (fantasy) and the necessity (rationale) that an architectural work is expected to embody, or to apply Max Weber's classification, the substantive rationality.[1] Between these substantive polarities of desire and necessity, one could find a scope for the convention becoming the process of assessing how the volatility of the two may be accommodated and managed in a specific context. The term "context" may be highly problematic, as its definition inherently contains a set of assumptions that can never be made neutral, and therefore the subjectivity of organizing and classifying information becomes a question of authenticity and authorship vs. the objective common denominator.

The codification of the architectural dispositif by means of advances in digital technology may be considered as re-production, rather than the actual performance event. Sound recording/reproduction technology that determines the instantiation of musical performance has become determinative of the value of a given work. In the twentieth century, for the first time, the invention of sound machines made recording, editing, and remixing the ultimate techniques for recreating the

everyday reality of aural experience that had previously been reserved for the theaters of social and physical engagement. At the core of this enterprise of sound-recording and reproduction technology for daily consumption and entertainment was a new form of codification that demanded a certain rationality and expertise, quite unlike that required for actual performance and instantiation. It also created the ideological and economic criteria for specialists in distinguishing and isolating noise, the identification and classification of the undesirable, that which may be impossible to eradicate, but mitigated.

The history of extra-somatic music, sound recording and reproduction may even be understood simply as noise control. Furthermore, the idea of musical dispositifs — the relations of today's ever-present software-hardware combinations — that can actually distinguish, classify, prioritize and isolate sound and its sources expresses compelling implications for creative (or intuitive and somatic) processes for all forms of mass media that include architecture. Such an apparatus-centric dimension and its codification assume a level of automaticity that lies beyond the variables of the actual-analog or the object-form, in contrast to the object-event. Such dialectics of systematic organization, whether intentional or not, seem an inevitable outcome of the aesthetic production process, driven and made possible by the dispositif, the sole purpose of which is the reproduction and extension of manual labor, and ultimately, to seek the replication of nature.animate emergence.

Today architecture also depends on an apparatus-centric practice, in the form of algorithmically constructed models, drawings, and specifications, for its conception, composition, and execution. In architecture, we may also consider the extra-somatic dimension of the apparatized and codified conception process, relative to our capacity to produce, re-produce, and reconstitute elements of design as database. As attested by the countless studies of the symbolic and iconographic evolution of architecture, and its profound reliance on the codices of the past, we are engaged in the process of sampling, mixing, remixing, and reforming architecture every day.

More specifically, the point at hand is, as seen in the recording and reproduction of music, the classification and treatment of what we consider to be in the dispositif-centric architecture and its cultural formation. How can the conventions of the architectural notational system include reflexivity and compositional contingency as inherent parts of composition? Unstructured space, or noise-space, is not supposed to occur in architecture, if we consider architecture as *organized* space, as music is organized sound. Noise-space only occurs when architecture fails to accommodate the human sense

of safety, comfort, pleasure, and desire that surround human subjectivity.

The global popularity of certain types of music and of certain composers and musicians suggests a pattern by which certain architects and works of architecture could similarly flourish, not only under the banner of a certain reputation and prominence (which in itself is apparatus-centric), but also in broader terms of stylistic and technical composition. Today, the most striking feature of music, thriving predominantly in the recording and reproduction phases, is its capacity to reform and propagate itself, according to the inclinations of the producers and the musicians, and of the managers and the encoders of the production process. The resulting product of such an apparatus-centric process often determines the fate of the final instantiation of the performance itself. The apparatus-centric values establish the position and prominence of a particular performer and performance, and therefore, their economic viability. Allen Weiss points out:

> They all make mistakes; yet, quite simply, few release them! Thus splices are almost invariably a feature of recorded music: studio sessions include remakes (of entire pieces or entire passages, of certain sections or single notes — whatever is needed to correct an error); "live" concert recordings often consist of several concerts spliced together, with additional post-concert work recorded and spliced in or overdubbed when necessary.[2]

Also in architecture, this apparatus-centric process demonstrates a pattern of parsing existing materials, and extracts parts and fragments of a subject for reconceptualization and reconfiguration. In terms of its comparison to current digital algorithmic technology, today architects can extract and splice together numerous types of images generated by and collected from even more diverse sources that range across many segments of cultural enterprise and periods. Even though transcribing parts of designs from one project to another using vellum and other types of translucent media has been a common practice in architecture, digital algorithms not only drive such re-sedimentation and re-striation, but also even more crucially, made the process non-linear, and free of the need to localize the extracted source content. This capacity to hyper-spatialize the architectural assemblage – for example, the XREF function in AutoCAD, in a manner that resembles the operation of hypermedia – is made possible by the mark-up languages that facilitate the intermodality of various media contents.

Another seminal event in the music composition and production processes took place at the opposite end of the technological spectrum, and was also executed by Cage and Paik. Paik, one of Cage's students, is regarded as the father of video art, and Cage has been highly influential with his compositional method based on a random, indeterminate process intended to efface the authority

of the composer. Cage and Paik illustrate an example for architecture: each conveyed a very strong notion of exteriority, that is, of what may lie outside the singularity of their discipline according to historical accounts, and both resorted to techniques that intentionally "contaminated" the very insular conditions of their discipline. Both have also approached their work often by intentional "misuse" of various instruments of their choice, for example by placing a magnet in front of a TV set in order to produce the patterns of distortion, or by inserting random objects — stones, spoons, nuts and bolts — between piano strings.

In *Exposition of Music — Electronic Television*, his installation project in Wuppertal of 1963 at Galerie Parnass, Paik presented two variations of an interactive installation called "Random Access." The first iteration consisted of strips of magnetic recording tape mounted on a wall in a random, crisscrossing pattern, on which a performer (or a visitor) could rub the head of a tape player, thereby generating random sound patterns, depending on the particular movements of the performer and the other, "Schallplatten Schachlik."[3] The second piece consisted of stacks of records, a turntable, and a radio, and an invitation to viewers to play with the sequence of the records by moving the pick-up head of the turntable across, and up and down different LPs, and also adjusting the volume. This performance by Paik also issued a challenge, by proposing that the essence of music lies in the act of physical performance, however random and arbitrary that performance and its sound may be. The music becomes simply the result of the specific act and its performance.

The outcome of the performance as music-making did not conform to the standing conventions of *MUSIC*. The importance of this particular performance lies in its attempt to incorporate the mechanism of electronic precision, in contrast to the conventional principles of music composition and performance, thereby contaminating the consistency of the discipline. This is important in terms of both the technological apparatus and the resultant product that are both transformed into the contaminated and *noisy*, the music of alterity that reaches beyond the ideals of conventional music making, and counter to the burgeoning industry of the electronic reproduction of music as a process of removing extraneous elements from recordings through mechanized manipulation, as an interface between the apparatus and its abstraction (reproduced music) of a physical phenomenon (music played by a musician in real time).

In parallel with Paik's performance, Cage's *Prepared Piano* presents another compelling point about contaminating an instrument and its singularity. Cage inserted random objects between the wires, and altered the relationship of the domestic nature of the instrument. [Figure 14]

[Figure 14] John Cage preparing Prepared Piano

The intervention transformed the functionality that was at the core of its purpose: it became useless, in the traditional sense. The piano no longer served the purpose of the notation composed for it, but the very assembly, its physical reconstitution, made manifest the product of its (at this point highly questionable) utility as a *productive* musical instrument. In this particular case, the totality of a piano as an instrument with its own inherent mechanical logic was questioned, and its purity was contaminated (abused) by making it perform other functions. For Cage, the essence of composition resides "the destruction of the preceding codes"[4] and "the liquidation of the old."[5] On the other hand, in order to achieve the indeterminacy of his compositions, Cage's process was highly conventionalized in its own way so that it contained and accommodated the potential variables as an inherent operative of the process. By employing the *I-Ching* (also called the *Book of Changes*), various narrative fragments – the *oracles*, as Cage calls them – are organized in hexagram arrays drawn by chance. Cage describes his compositional process of indeterminacy in *Imaginary Landscape No. IV* (for 12 radios) and *Music of Changes* (for piano):

> Three coins tossed once yield four lines: three heads, broken with a circle; two tails and a head, straight; two heads and a tail, broken; three tails, straight with a circle. Three coins tossed thrice yield eight triagrams [...] Three coins tossed six times yield sixty-four hexagrams [...] read in reference to a chart of numbers from 1 to 64 [...]
>
> Charts are made of an equal number of elements (sixty-four) which refer to Superpositions (one chart) (how many events are happening at once during a given structural space); Tempi (one chart); Durations (n, the number of possible Superpositions, in these works, eight charts); Sounds (eight charts); Dynamics (eight charts).[6]

For architecture, the aleatory process proves compelling, as the production of architecture has turned to the precision and simultaneously mutative applicability of architectural imagery by means of digitally controlled research, composition, design, and engineering processes. Paik's magnetic-tape sound graffiti and Cage's prepared piano demonstrate the process of musical performance, and of a disruptive device for relating to alterity, antithetical to the technical virtuosity. Such a device necessarily functions under specific and localized conditions, but acts on a global scale by disrupting generalities and general specificities that traditional conventions accumulate. The two works also exemplify the idea that the process of alterity also implicates misuse (or *miscoding*), and the potential destruction of an aesthetic discipline that defies the subjectification inherent in the patronage of power dispositifs.

Architectural modernism was ultimately annexed to the formal rationality of market economy; corporate glass-box headquarters are now the best-known representative; this follows an established pattern in cultural practice, wherein the singularity of a discipline is domesticated according to its acceptability to the economic and political dispositifs. Eventually, this leads to the self-adjustment period of the so-called postmodern architecture, beginning in the 1960s, and to countless examples of iconic revisionism in an attempt to recuperate from what was considered the modernists' sins. Perhaps this was inevitable and necessary. Perhaps we are now entering a similar phase, in which the pursuit of hi-fidelity in the perpetual production and reproduction is relative to the development of technological apparatuses as the means of determining what is acceptable and what is not, that is, the managerial standard, and also as a precise measurement for systematic identification and the elimination of dissonance and dissent, the"noise-space" Allen Weiss describes this subjectifying aspect of the technological reproduction of music:

> Recording is always more than representation, bearing the stamp of *both the technical aspects of the apparatus and the stylistic demands of the technician.* We know that Thomas Edison […] could not stand complex musical textures or pungent harmonies; he found tremolo to be a distinct defect of the human voice, and believed that a voice without vibrato was preferable, […] and even wanted to know whether a tune could be written solely with thirds and sixths; and, in his scientific perfectionism, he detested "extraneous" noises, such as the squeaking of flute keys, the thumping of piano felts, the turning of pages, guttural vocal sounds – and even breathing![7]

The technical precision in reproduced music flattens the corporeal contingenies to minimum variations based on the abstract rationality of the reproducing apparatus. A rapid development toward abstract sonic purity spawns a technocratic performance that is in effect the codification of

systems. The codification determines a clear differentiation in an exclusionary process, and creates an exclusive, self-correcting managerial regime to determine the desirable and the undesirable. This occurs by means of endocing, and the inherent opacity to critique, other than whether or not something appears interesting as an end product. Such codes of digital technology are by nature insular, not only in their linguistic indecipherability, but also in their specific detachment from the contingencies of writing.

We have developed the technological means by which the process of architectural composition and production can accommodate and express the otherness, alterity. The cases in music suggets a unique opportunity for architecture: the apparatus of conception and composition, and the codification system determine the practice of composition. Yet, in both disciplines, the symbiosis of the codification and its execution produces specific differences that are dependent on many levels of individual interpretation. The uncertainties that reside in every aggregate of a performance produce the difference that is about the same object, but variable. Today, this is a critical issue, given the rapid spread of image-driven so-called lifestyles, in which architecture occupies a commanding position, the results of which would not be different from the criticism directed at modernist architecture and its ideology of technocratic, capitalist demand for the perpetual *new-and-improved*. In fact, the presence of alterity is critical, as when we make a case against McDonald's or Coca Cola as being emblematic of totalizing conformity. As the sociologist George Ritzer indicates with the term "McDonaldization,"[8] what matters is the way the apparatus is encoded and structured as an environment that is highly calibrated to the *desirable* experience.[9] Confronting such totalizing conformity, the technological means we have accumulated allow us to be empathetic both to the otherness, including the other ecologies, and to the others' capacities and powers, as in magic.

The technologization of aesthetic composition and the excessive enthusiasm for, and overreliance on, the apparatus, wherein the instrument's automaticity, the codification of which is mostly opaque and invisible, outweighs considerations of what cannot be easily enumerated and computed. The necessity of generative, formal rationality depends largely on the exclusive codification by means of software-hardware-network applications and systems, for this codification is designed to perform and produce a specific set of affects intended by yet another kind of author (the programmers), and what they choose to make visible. Whether or not this new codification system would grant yet another promise of liberation and freedom is highly questionable and remains to be seen. At the same time, this technological automaticity provides architecture with potential that is unprecedented, in terms of its vast, heterogeneous scope. Inserting the idea of various local

contingencies, the kinds of noise frequencies that somehow elude capture, into this process can take it a step beyond the lavish naming and narrow perspectives of a naïve panacea, which often results only in the thoroughly forgettable images of formal organs and appendages.

The intensification of apparatized sensory culture contributes to the numbing mix of perceptive environments, such as the excesses of dance clubs, or the so-called minimalist interiors where everything is monochromatic, where all performative qualifications of conception, composition, and production must pass through the bottleneck of the apparatus that inscribes a particular set of operations. The magic lantern of this codification generates a view in which we reside in the space of sanitized perfection that appeals to our senses. Perhaps this is the *Gesamtkunstwerk* circa the twenty-first century, as was the case with recording technology, given the cleansing power and rapid trasposition of disparate narratives afforded by today's digital design technology. Narratives were traditionally intended to refer to the anonic dispositifs (again, the version of events, royal, subversive, or otherwise prevailing) in fragments or in totality, in order to instruct and steer the cultural construct in a direction aligned with the general belief system of a given society. Our ability to use the technology's ability to parse, sample and reassemble disparate aspects in an aesthetics container makes the messiness of everyday appear clean and safe, just as Descartes' ordering system, at the center of which was the Sun King, the coordinate, (0, 0), ade the bloody realities of France in his time appear clean and safe.[10]

We see a vast array of reproducing technologies that necessitated a fundamental re-examination of architecture as a carrier of meanings and values,[11] attached to the institutional and/or sovereign framework of a specific dispositif. Stemming from certain technical developments — cassette tapes, CDs, sound file players, application software, printers, digital tablets, smartphones, etc. — we eventually see the contemporary genre of architecture that is entirely predicated on the remixing of images and geometrical fragments, that is, the architect as a managing editor and director, whose decisions are primarily based on the location and flow of fragments, and how they function within an assemblage.

We move into the realm of architecture as interface device: It is not so much about the box (the *duck*), but about the device that we use in order to manufacture the history — both fictitious and factural — and other canonic or 'pataphysical narratives of a locale and its cultural domesticity (such *devices* used to be "signs and symbols," according to Venturi and Scott Brown). In this context, satisfying the programmatic functionality of a building also reflects the overall narratives of a given

site as a cultural, political, and economic entity. Therefore, in this new apparatized environment, architecture no longer serves a certain truth, but the affect, in the *perceived* dialectic between the subversive and the status quo, the dominant dispositif. The disappearance of cultural metaphors and narrativity[12] in architecture may be further attributed to the apparatization of architectural conception, composition, and production, and how various representational samples and fragments encoded into the reproducibility of architecture that are calibrated to induce the sense of embodied visceral experience.

The apparatization of architecture has also accelerated a production of buildings that is tantamount to the uncontrolled growth of fatty tissue, and results in an unhealthy, bloated, and eventually apathetic space, or to borrow from Rem Koolhaas, the "Junkspace."[13] For many architects, architecture is a matter of managing parts, that is, value engineering, the production and consumption process of which perpetuates itself toward the maximization of the design's value, per weight, per hour, per dollar spent, in a string of complex material and technical dependencies. The data that affect this value structure is the essence of the technician-manager's architecture. And yes, the data can indeed be sublime. Then again, there exist no data that are sampled neutrally, being just *there*, and this increasingly transformative data represent a particular narrative of a particular value system, if not the entire regime of their appropriation. Seen this way, the notion of architecture as a narrative and communicative medium presents legitimate ideological and political debates, whether or not an architect may assume a position of alterity, of which ontic role is to makes noise and to dissent.

The politicized position of an architect (simultaneously as the independent technician-manager of the product of his own labor) also raises another important question regarding the very central role of apparatized architecture. This relates to how we see architecture as the primary provider of comfort and safety (at least as intended), and how such a proposition has changed with the means of extracting and presenting the narrativity of architecture. Again, the consideration, and the possibility, of dissenting noise-space is critical. In architecture today, what do we classify as noise? Is there still such an entity? If so, do we suppress the noise without even thinking about it for a moment, seduced by the shining surfaces of our screens? Is it indeed the case that we voluntarily immobilize and enchant ourselves in awe of our accomlishments? What do we make of our architectural canons? In so doing, will we come closer to a pure architecture, akin to what Artaud proposed as "pure theater"[14] that is liberated from the text? Or is it the absolute architecture akin to what Hanslick envisioned in music? Or are we happy in the moments of the Wagnerain

phantasmagoria? Perhaps architecture, as a particular mode of being and thinking, will reveal more of its potential when we begin to examine its *buggy* moments, where the architecture aims at "the shrillest, strangest and most dissonant amalgams"[15] of forms. I believe the dispositifs of dissonant apparatuses and the misbinding slippages of codification present compelling opportunities.

Returning to the notion of liberation by technology, one notable feature is the horizontal striation of cultural consumption in general, and various forms of mediatic entertainment specifically, there exists a minimum, necessary, technological infrastructure at a particular locale. We may distinguish among the heterogeneous strata of individuation by subscribing to particular aesthetic tendencies and to other culturally identifiable entities. We share this predilection through particular membership, regardless of the locale. For example, radically different groups of people in far-flung corners of the world subscribe to the same globally popular cultural products, such as fashion, music, videos, movies, and the like. Many want to, and can experience those that are popular, in demand, or those that register as what everyone wants and should have, in order to obtain and boast of membership in a carefully managed and propagated culture of image and material possessions, in short, of the cultural and economic dispositif. In this dispositif of highly managed manufactured desires and pleasure, just as music has been managed to exclude noise, the local imagination is to be purged and extinguished. On the other hand, it also presents an opportunity to parse and reassemble locality, and to include noise-space, with its accompanying slippages and instability.

As in the case of music or cinema, architecture, too, do not lack in the membership striations created by the cult and fetish of enchantment. We can point out the buildings that are aligned with the straiation of money, politics, and power in the selective membership of wealthy individuals, corporations, and nation states that need to attract respect, just as we see the striation of pop music fans worldwide. In other words, what matter is affective experience rather than the preponderence of the content that has become rather cumbersome and inconvenient, in much the same way that marketing is increasingly focused on selling experience that is so visceral as it can be that the *thing* itself becomes rather secondary.

Enchanting architecture is most distinctive manifest in what came to be known as the "Bilbao Effect," and ranges from the now-halted construction boom in Las Vegas and Dubai to the biopolitical urbanization of China. Following the success and superstar status of the architects, the buildings and their supposed contribution to local prestige, and factual economic benefits, we see the archipelago of superstar projects dotting many metropolises. The problem is neither that such iconic gala projects

are designed and built, nor whether the reliance on such projects as a means of providing economic allure is warranted. They assume the referential position of affectation, and therefore have the cult value of status objects, with as much glitz, vulgarity, and violence as that which is associated with the vast variety of popular mass media. According to Jacque Attali:

> No organized society can exist without structuring differences at its core. No market economy can develop without erasing those differences in mass production. […] It itself becomes undifferentiated, goes anonymous in the commodity, and hides behind the mask of stardom. It makes audible what is essential in the contradictions of the developed societies: an anxiety-ridden quest for lost difference, following a logic from which difference is banished.[16]

In this regard for the potentiality of architecture, the apparatus-driven opportunities lie where the sources of alterity are located. One such source is the narratives that are specific, though not necessarily unique, to the potential for disrupting and subverting the dispositif through "the destruction of the preceding codes,"[17] "creative destruction."[18] When we consider the nature of specific narratives, whether canonic and royal, or subversive and *vulgato*, we find the mnemonicity and empathy of time and space. The potentiality of algorithmically encoded, apparatus-driven architecture resides in the permutations of mnemonic fragments that can actually pronounce and emphasize the disruptive slippages and uncanny misbindings, and thereby provide a means for embodying their volatility of dissonances in the space of alterity.

2. Cage, Boulez, and Stockhausen

When we regard music as a form of a spatial discourse, that is, a series of musical elements taking shape in space and forming an ensemble of musical experience, and therefore, as a system of interconnected relations between composers, musicians, and the intended audience, we may legitimately ask how such relations are constructed and maintained in the course of instantiating a certain performance. And, such relations may be constructed only if the work is performed and instantiated. In this regard, Arnold Schoenberg and the composers who were his contemporaries faced the problem of a diminishing tonal system that had, over the centuries, worked through its conditions of possible permutations. Noise in the form of dissonance previously considered indicative of madness, or of ineffable emotion, was increasingly utilized, gaining a visible if not entirely legitimized position with the appearance of Futurist music and poetry in the beginning decades of the twentieth century.

One of the significant differences between Schoenberg's philosophy and that of the Futurists is that Schoenberg saw his work as the logical development of Western musical tradition, whereas the Futurists rejected it. For example, Schoenberg experimented with atonality and with what is known as the chromatic scale, without a key center.[19] Here, Schoenberg's experiments in chromatic composition offer a distinctive case of blurring the deterministic compositional boundaries of the diatonic structure, that is, the clear distinction between the white keys and the black keys of a piano, in terms of major and minor notes. In contrast to the conventional diatonic scales, the chromatic scale uses the full spectrum of an instrument's notes, without any particular distinction in terms of their respective harmonic effects. Schoenberg brought the contingencies of dissonance into the domain of music by proposing that consonance and dissonance are a matter of degree, not antithetical to each other.[20] In this sense, Schoenberg's composition and theory may be seen as crucial developments in the notion of non-hierarchical and non-centric space, in relation to the burgeoning modernist architecture of his generation, and beyond. Schoenberg's compositional experiments stand in contrast to the conventional musical space up to his time, built around a key note in a tonal system, and the compositions of distinctive stages of introduction, development, and conclusion.

In his free-atonal period, Schoenberg's work was a departure from equating dissonance to noise, in that there was no tonal element to his work to stand in contrast to dissonance. In relation to historical practice, his work may be considered pure noise, because it conflicts with the generally established historical notion of what music is. On the formal level, what noise might have existed in his music did not manifest through contrasts or clashes with tonality. In a similar way to Marinetti's characterization of noise in poetry as a "demonstration of the dynamism of objects",[21] and as opposed to the way the conventions of syntax make poetry static, for Schoenberg noise was about interiority, emotive rather than cognitive. He could more directly construct the space of anxiety or passion with an idea similar to Marinetti's use of onomatopoeia and the death of syntax: "The destruction of the traditional sentence … will bring about the collapse of … stylistic unity." And thereby the Futurist poets will be able to use "every kind of onomatopoeia … that echo the countless of number of sounds made by matter in motion."[22]

Noise is already retained in the social relations and conventions composing objects. The problem is less noise than silence, indifference. Musical work is normally defined by certain criteria of autonomy, conventional objectivity, and self-sufficiency, within the given historical conventions and relations. This is to say, a given dispositif influences greatly the determinatives of composition, performance, and instantiation; hence, the artist's struggle with the work reflects the struggle within

the various (potentially conflicting) dispositifs and the accompanying codification the artist may try to (or have to) reflect in the work. The recording, commodification, and distribution technologies of music have endeavored to suppress dissonance and noise in pursuit of high fidelity and so-called "sonic realism," and of promoting commercial interests.

In his essay *Music, Language and Composition*, 1956, Adorno comments that Schoenberg's disdain for any attempt to reconcile the discontinuities between the diatonic and the chromatic scales (i.e. the lack of differentiation) lay in the compositional experiments to discover "… those extraterrestrial chords that had not yet been occupied by musical-linguistic intentions … in which the subject had not yet left any tracks."[23] Adorno asserts, "Schoenberg's compositions are the first in which nothing can actually be different from what it is: They are at once deposition and construction."[24] The passion of the composer expressed itself directly (but only momentarily) in the lack of repetition, and "no remainder of convention which guarantees the freedom of play."[25]

Whereas Schoenberg may have extended the evolutionary lineage of canonic European composers, John Cage, who did a stint as a student of Schoenberg, denied as a general condition the distinction of silence, noise, and music. The place for silence was in the composer, and in the performer. But there is no such phenomenon as silence in a living person. The existence of sound is universal in being human, and music as organized sound is also universal, especially when one accepts the potentialities of a universal, sonic presence and its space. The key point is not to regard music in terms of its historically codified forms, or in comparison to the notion os space inherent in architecture, but rather, in terms of the aesthetic potentialities residing in the raw, naked state of sound, to paraphrase Cage, to let sound to simply *behave*. What Cage indicates here is that, in spatial terms, the musical quality is immanent, rather than projective: The aesthetics of naked sound is inherent in its power to flow, to permeate through space.

Spatially, one problem with the foregoing view is that it becomes impossible to distinguish between its interiority and the variables exterior to it. For music to be understood as such — that is, music is not supposed to be just any sound that happens to enter our field of perception, but it is specifically and intently organized and composed to happen in a certain way — for the recognition of this otherness, the exteriority that surrounds the sonic subject must be recognizable by contrast. To this end, Cage's strategy is in fact an attempt to remove subjective intentionality, and to introduce organizational agency as the primary mechanism of the sonic assemblage, the chance operation. For Cage, the chance operation, or the aleatory process,[26] in a way comparable to an algorithmic

operation, removes the composer's subjective preferences and intentions, and thereby allows him to organize and compose sounds in a manner that enables them to *break out* in an environment.

Pierre Boulez contends that the notion of chance in Western music must "lie in the adoption of a philosophy tinged with Orientalism that masks a basic weakness in compositional technique; it would be a protection against the asphyxia of invention, the resort to a more subtle poison that destroys every last embryo of craftsmanship …"[27] Even though Boulez recognizes that the notion of chance in music composition "surely deserves to be examined at length, for it is too important a bifurcation in the idea of composition to be either underestimated or rejected unconditionally,"[28] Boulez provides a summary definition of composition that reaches the core of the Western musical canon:

> Composition chooses to approach as closely as possible the most perfect, smooth, untouchable objectivity. And by what means? Schematization, quite simply, takes the place of invention; imagination — an auxiliary — limits itself to giving birth to a complex mechanism which takes care of engendering microscopic and macroscopic structures until, in the absence of any further possible combinations, the piece comes to an end.[29]

He also argues that Cage's non-subjective chance operation forced the listener and the performer to take a more adamantly subjective position, because they must decide how to listen to his music, and what to make of it. By characterizing the chance operations in music composition as "coarse and elementary," Boulez suggests "… in addition to chance by inadvertence, we find a chance by automatism, whether this automatism tries to be pure or is accompanied by a notion of controlled bifurcation."[30] This view is not unlike the criticism directed at the notion of acousmatic listening proposed by Pierre Schaeffer, who pioneered *Musique Concréte* in 1949.

Boulez, one of the great proponents of the so-called "total serialism," argued in his essay, *Alea*, that such an ideal could be considered undifferentiated and silent. In his compositions, Boulez attempted to find a balance between chance and order. Moreover, his works carefully contain all aleatory elements. For example, in the scores for the *Third Sonata for Piano*, he includes arrows directing the performer. The performer can choose between directional arrows, to decide which path he will follow throughout the piece.[31] Cage remarked that Boulez "very strictly distinguishes between determinate passages and 'aleatory' passages in the same composition. As a whole, it becomes a drama between opposites …"[32]

Meanwhile, Edgard Varèse comments, in an interview in 1963:

> I got sick of the stupid phrase, "Interesting, but is it music?" … So I said that my music was organized sound and that I was not a musician, but a worker in frequencies and intensities. Now, with the electronic devices, people seem to think that this applies only to manipulating electronic sounds.[33]

In the same interview, Varèse also comments that he considered musical composition as a way of organizing sounds, and that science has placed, and continues to place, abundant possibilities at the service of the imagination. Having collaborated with Le Corbusier and Iannis Xenakis on the Philips Pavilion at the 1958 World Exposition in Brussels, Varèse is asking whether an artist should accept technology as a means of expanding the inscriptive possibilities, and whether technology will help establish the new territory and milieu of the musical discipline. At that point, the understanding of the discipline changes, regardless of the medium in which the artist works. In this case, regardless of whether it is electronic or acoustic, music has become an art of organizing sounds.

In 1951, prior to Varèse's statement, Pierre Schaeffer opened the studio for *Musique Concrète* in Paris. (Schaeffer was originally trained as an electrical and telecommunications engineer.) Karlheinz Stockhausen started working with Schaeffer almost from the outset. During his stint with Schaeffer, Stockhausen elaborated on the idea that if he could record and manipulate sounds with technology, he should be able to create music with synthetically generated sounds. And, Stockhausen summarizes that orchestral music is essentially a traditional art of mixing.[34] In *Four Criteria of Electronic Music*,[35] Stockhausen first posits, "New means change the method; the new methods change experience, and new experiences change man."[36] For this transformation of man by new experiences, he proposes four criteria: the unified time structure, the splitting of sound, the multi-layered spatial composition, and the equality of tone and noise.[37] Stockhausen described the criteria as the defining characteristics of electronic music, because they are possible only through the sonic assemblages afforded by the electronic devices.

Unified time structuring smoothes temporal discrepancy by neutralizing the perception of time. In this sense, the digital composition process, in either music or architecture, evens out spatial and temporal disparities by bringing the content under control, marking them up or encoding them for use and consumption in radically different contexts. The mark-up language facilitates the criteria Stockhausen proposed: splitting of content, multi-layered spatiality, and the distinction between the signal (e.g. discernible objects, value, culturally situated, etc.) and noise (e.g. extra-cognitive elements,

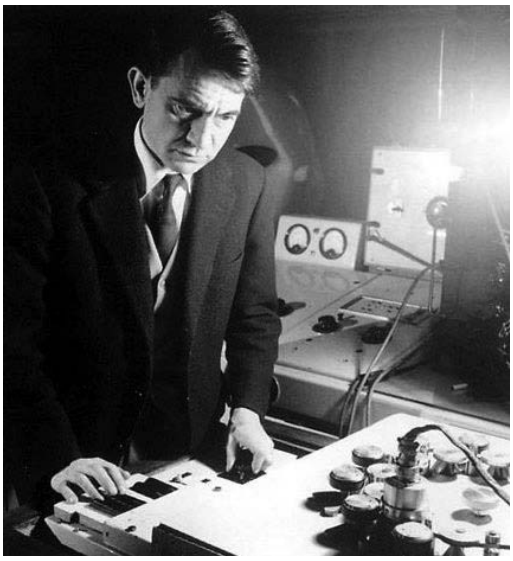
ambient, non-value, culturally segregated, etc.) is simply a matter of how the content is marked-up and prepared to be recontextualized. Such criteria are no longer limited to Stockhausen's electronic music. We can find them in all forms of content, as long as they can be marked-up and turned into transposable and scalable files and databases. The disjointed bits and pieces of content interconnected by relational articulation define digital space and its codification.

Boulez's contemporary, Stockhausen, established composition not only in the apparatized domain of sound composition and assembly, but also in the idea that composition continues to exist in, and despite, the technological framing of sound, whether musical or non-musical. Even though Stockhausen worked with analog electronics using vacuum tubes, Stockhausen's compositions in collaboration with the sound engineers of the time established the foundation on which digital algorithms remediate musical composition and performance. The process of incorporating Stockhausen's four criteria may be more effectively viewed in terms of digital algorithms, where the resolution of discreteness increases exponentially, for example, from 8-bit processors to 64-bit processors. Such technologically induced resolution makes it impossible to distinguish the disjointedness while maintaining the articulation at an equally exponential level.

Architecture is also confronted with the problem of whether or not one could substantively argue for the pros and the cons of the determinate and the indeterminate, and between the analog and the digital. The fundamental division consists of the positions of aesthetic work as the definitive object of an autonomous, essentialist discipline with its own unique logic and reflexivity, and as the recurrent instantiation of compositional contents composed of indefinately replicable digital files and databases. In digital files and databases, splitting and extraction of content, unifying the spatial and temporal layers, and managing source aggregates are not only even more possible, but also necessary.

3. Synthetic Sound

Since the invention of the phonograph, the typewriter, and the camera in the nineteenth century, and the subsequent machines of the senses have proven profound instances of technology that destabilized and decontextualized sound, text, and image. With the broadcasting technology, the disembodied content and its proliferation step further, synthesizing sound that is purely artificial, electronically generated sine waves. The artificial generation of sound brings forth a brand new ontology of music that does not presuppose performance in the historical sense, as purely electronic sound does not involve human physical performance in the way that historical instrumental music



[Figure 15] Pierre Schaeffer in his studio, 1948

does.[38] For electronically synthesized sound, the composer works in a diagrammatic way in relation to how the given equipment generates sound signals. He lays out and plans how the performer will operate the sound generating equipment. The resulting performance is played through amplifiers and speakers. Sound is generated through electronic circuitries and controls that are assembled and determined in a highly complex series of events that involve more than the composer's authorial intent, and the performer's direct physical engagement.

Prior to purely electronically generated sound, the tape recording initiated sound montage and the apparatus-centric formalization of sounds. The tape recording technology and the ensuing developments that produced electronic synthetic sound involve more than the assemblage behind the production of historical musical instruments. They cover a larger expanse of extra-somatic conditions that help produce culture. The music in this case explicitly repudiates Hanslick's absolute music that is supposed to be solely about itself. Furthermore, with synthetic sound and its incursion into the musical discipline, the authority of the composer's creative subjectivity and autonomy are also further undermined. The synthetic sounds and purely electronic means of generating sound transpose the realm of the music from the haptic to the purely aural, as well as seeking to further perfect sonic realism by developing the virtual imaging of a sound space comparable to a concert hall simulated by electronic devices. Although the physical presentation of musical sounds is historically an inherent part of musical discourse and its content, the electronic apparatization of sound-making synthesizes the possibility of musical content, and separates it from the physical performance.

In 1948, Pierre Schaeffer initiated sampling as a dedicated musical technique using magnetic tape recorders. [Figure 15] Within the context of the apparatization of music since the end of

the Second World War, Schaeffer, an engineer of the French radio broadcasting company, starts experimenting with electronic sound recording, manipulation, and composition, which he designates "Musique Concréte." Schaeffer's first composition for public performance, *Étude aux Chemins de Fer*, departs from historical music in four significant ways: the composition is technological; the performance could be repeated infinitely, precisely, and identically; the performance does not involve human performers; the composition relies on concrete, substantive sounds, rather than formal and abstract ones.[39]

For the first time in history, music could be composed, relying solely on technological procedures: field recording, editing, splicing, and playback. This involves no *written* process, as has been the mode of musical composition for a millennium. By relying on technological means, the threshold of discernibility is raised to a level beyond that of human hearing, removing the discrepancy and unpredictability of human instantiation from one performance to another. In addition, the composition emphasizes the kinds of sounds that are not special, as that they already exist in the sonic milieu.

Schaeffer envisioned a kind of music that is composed of the sounds of reality, therefore *concrete*, as opposed to the abstract music from the formal, composition-encoding process of writing scores. Schaeffer, being an engineer, came up with the idea that by using modern magnetic tape recording devices, one could record and capture the everyday sonic phenomena. The recorded sound fragments could then be manipulated and reconfigured electro-magnetically on a roll of tape, to express the everyday aural experience in a deliberate, special way. In sum, Schaeffer's work is the electronic descendent of Russolo's *Intonarumori*, and noise music is a device of resistance and change, in the similar vein to Guy Debord's remark, in 1963, that "electronic music could be seen as an attempt … to reverse the domination by the detourning machines to the benefit of language."[40]

To Schaeffer's work, we may also add the work of Dick Raaijmakers and Tom Dissevelt. [Figure 16] Raaijmakers and Dissevelt — the former using the pseudonym, "Kid Baltan"[41] — were resident composers at the electro-acoustics division of the Philips Research Laboratories, known as NatLab. Between 1956 and 1960, they collaborated on compositions using electronically generated sound fragments and spliced magnetic tapes.[42] In the history of music technology, and in the burgeoning electronic music of the time, their compositions presented a significant step in how music could be composed, produced, stored, and distributed, using electronic sythesization of sound signals. The magnetic tape recording was central to the work of Schaeffer, Raajimakers, and Dissevelt,

[Figure 16]
Dick Raaijmakers (right) and Tom Dissevelt (left)

and accelerated the radical transformation of music and its conception, composition, production, and distribution.

In 1928, the magnetic recording technology became practical.[43] The German engineer, Fritz Pfleumer, applied ferro-oxide powder to a paper strip, and by manipulating the magnetic polarities, he could record and store electronic signals on it. The eventual prominence of magnetic tape as the cutting-edge technology of the time distinguished itself from the phonograph, "until the tape recorder released it from its mechanical trappings."[44] Furthermore, recorded sound was no longer mechanical, but a part of the "world of electromagnetic field."[45] In addition to being able to record sounds without scratching noises, an inherent problem of the phonograph (sound-writing)/the gramophone (writing-sound), both literally engraving a substrate, the tape recorder revolutionized the recording of sound by also providing increased portability, the possibility of condensing a relatively large amount of sound information, and the potential for the so-called "post-performance production." In other words, the medium offered the potential for the full control of the content, and one could work on the content of the musical performance after the fact. Through a process of cutting, splicing, winding, and advancing the spool of magnetic tape, new structure and content could be created from existing materials, regardless of the original source and period. Thus, tape recording renders the ontology of music variable and unstable, whereas the technology concretizes the fleeting sounds of the everyday. In this respect, The significance of tape recording, initially an efficient means of storing electronic signals, cannot be emphasized enough.

The new storage medium of magnetically charged tape was the catalyst for the exceptional developments in music from 1950s to 1960s. One of the research centers devoted to the

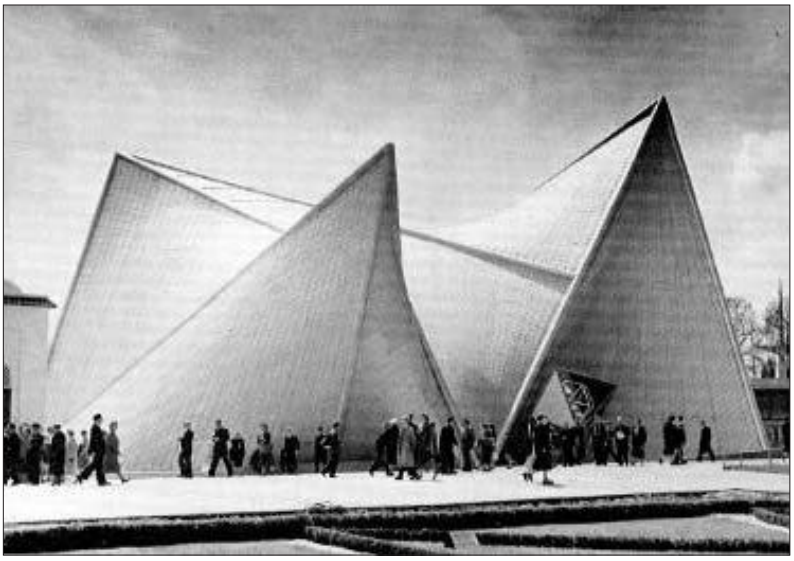
technologization of music was NatLab, the R&D division of Philips, in Eindhoven, Netherlands. The head of the acoustics department of NatLab at that time, Roelof Vermeulen, had the idea of producing electronic versions of the work of the composer Leopold Stokowski, who was at that time the musical director of the prominent Philadelphia Orchestra. In turn, Stokowski was interested in adding new sound by simply using microphones. Upon listening to the tape compositions presented by the American Composers Alliance at the MoMA in New York on 28 October 1952, for the first time in the US, Stokowski pointed out the crucial capability magnetic tape recording offered:

> Tape music is music that is composed directly with sound instead of first being written on paper and later made to sound. Just as the painter paints his picture directly with colors, so the musician composes directly with tone."[46]

Otto Leining premiered, or "played," in his own word, two compositions, *Low Speed*, *Invention*, and *Fantasy in Space,* and Vladimir Ussachevsky, *Sonic Contours*.[47] [48]

According to Stokowski, tape-recorded music eliminates the written score from both composition and performance, and in turn, the medium, the magnetic tape, is simultaneously the instrument of composition and performance. At the same time, taped music — or for that matter, any other type of music based on already-recorded materials — is not music at all, in the traditional sense of the word: it involves neither musicians nor the physical venues of concert halls (even though it *may* include both), and therefore taped music not only disrupts the social-ritualistic aspects of music, but also expands the scope of its audience. The tape-recording and -playback medium brought not only new sound effects and devices, but also the versatility and portability of storage. However, the new apparatus also disembodies music, that is, the music no longer requires a human body. Thus, the ontology of music has been radically changed, and for the first time, the musical discipline includes the kind that is not performed, but instead, broadcasted. The apparatized music is in fact a commodity, and has become fully annexed in the dispositif of exchange value.

Vermeulen became focused on the idea that electronics serve ordinary people, who cannot afford to attend live music concerts. The NatLab researchers, and their work on the potential of magnetic tape recording, eventually helped establish electronically generated and sampled music as a legitimate musical genre. Philips's research funding for electronic music was motivated by the prospect of mass-distribution of its music subsidiary's holdings, following its successful patents on magnetic tape recording technology and cassette tapes. The invention of cassette tapes expanded music's reach, by making music portable. With the cassette tape, the expanded venues and markets



[Figure 17]
Philips Pavilion, 1958

through which music could be distributed and consumed lead to the invention of the Walkman by Sony in 1978. Subsequently, Sony also produced the Discman for CD's and the invention of potable music devices leads further to the iPod, essentially a portable harddrive device designed to store and play sound files, by Apple in 2001.

Within the larger scheme of popularizing musical content, we can cite two important cases originating from the Philips NatLab. The first case combines architecture, music, and film, *Poème Électronique*, a multi-media pavilion designed by Le Corbusier and Iannis Xenakis for Philips. The pavilion was built for the 1958 Brussels World Expo, [Figure 17] shortly after Le Corbusier's first iteration of *Unité d'Habitation* housing project, *machine à habiter*, completed in Marseilles in 1952 (see § 6-2). The *Poème Électronique*, also the title of the composition by Edgar Varèse for the pavilion, was produced at the Philips NatLab. Le Corbusier specifically commissioned Edgar Varèse to compose the music for the pavilion, and Iannis Xenakis assisted Le Corbusier as the project architect and the liaison between architecture and music. The pavilion was meant to stage an eight-minute-long, multi-media event that was divided into seven parts, presenting projected images, electronic music, and light shows. This was the main exhibition of the pavilion, and demonstrated Philips's technological prowess at that time.

The second case is the mass-distribution of popular music. Philips wanted to determine whether it was possible to increase the popularity of electronic music for the consumer market. Dick Raaijmakers was appointed to research and produce popular music at the NatLab. Raaijmakers worked with Henk Badings, Jan de Bruyn, and Edgar Varèse. He envisioned that "Electronic music is music with no [preexisting] source. You had to create sound in a studio and edited it like a film".[49] He

eventually produced a purely synthetic composition, *The Song of the Second Moon*, and collaborated closely with Tom Dissevelt on further research of electro-acoustics. A new medium of music arose in which traditional musical instruments were replaced with electronic devices that not only replicated traditional instruments, but also brought about new sounds. The ensuing technological developments made it possible to replicate even the timbral qualities, the sound colors, of traditional instruments, and further reinforced the transformation: now one could play the violin on a keyboard.

Before the invention of an electronic dispositif such as the foregoing one, the composition and performance of music was seen as an assembly of a coherent whole based on the arrangement of specific parts (often historical) within the framework of given conventions, presupposing the use of institutionalized instruments (e.g. piano, violin, trumpet). With the appearance of the electronic apparatus, a large segment of music as a historical discipline becomes a process of assemblage. The resultant music is considered within the broader framework of a synthetic process, and a new convention appears, through what the apparatus interjects. The specifications of such synthetic apparatization have increasingly become typological and parametric. This shift is also evident in architecture. The new dispositif has emerged at the core of the discipline as the practice of invention, ever since the digital process became the dominant form of conception, composition, evaluation, and production of architectonic constructs. This is comparable to the deployment of devices such as Moog synthesizers for example, the primary operation of which is to devise the parameters of sine wave modulation in modular form, and to establish the relationship among the modules that are patched together in a certain field or matrix of acoustic conditions.

The technological inventions of the 1950s and 60s accelerated the development of an apparatus-driven culture. The key elements are the development of digital technology, and how the operation of the digital apparatus in architecture has become as crucial as it is in music. As a central means of conception and production, in contrast to the period of industrial apparatus, this new inventions created the new class of professionals dedicated to digital encoding, operation, and management. One insight into how contemporary digital technology and its processes relate to architecture, with regard to the concept of apparatization, may be framed by the notion of "flexible accumulation,"[50] in which the contemporary material production process is seen as a transition — from the 19th century industrial model — toward customized variations (as opposed to mass-production of identical objects); research- and design-intensive (rather than production-intensive); horizontal and expansive (rather than vertical and concentrated); and a reflexive mechanism for research, design, and implementation that is flexible and temporary. In other words, digital

technology satisfies the necessity, which arose during the 1970s and 80s, of loosening the industrial model and the labor relations of what came to be known as the "Fordist model."[51]

The formalist view of music such as Hanslick's, as well as Adorno's in part, could not have anticipated the quotidian the music of electronics has come to occupy. Despite Adorno's dissatisfaction that popular music, owing to its "piecemeal construction and interchangeability,"[52] cannot retain meaning and therefore becomes regressive, in fact, those very aspects of pop music have maintained the music's relevance in the discourse of popular culture. Even though at the heart of Adorno's criticism of, and disdain for popular music, and for jazz as well, for that matter, and of his view that music should be about itself, the question at stake is not so much about the music itself, but how it is apparatized, disseminated, and commodified. In other words, from a compositional point of view, we can analyze and critique the merits of the content based on various criteria for evaluation. We may also view a given musical or architectural composition for what it is and does within its autonomous logic. For Adorno's critique of music, exemplified by the music of Hollywood movies, it is crucial whether or not the presentation retains and enhances musical substance and value. However, the very nature of the mass-media on which popular music relies exposes the separation of the content and the presentation. Within the dispositif of mass-media, both Hanslick's and Adorno's views on autonomy as the essence of the musical discipline, and the notion that music should therefore assert its own critical and reformative role, are deprived of their cogency.

On the other hand, Wagner's vision of Gesamtkunstwerk, that is, the consolidation of aesthetic affects in the service of a larger cultural and ideological project, seamlessly packaged in enchanting design, anticipated the metastasizing effect of the discordant yet codifying techno-aesthetics of music. Thereby, the surface unity of Gesamtkunstwerk has been rendered untenable as a totalizing concept that is encoded according the logic of Wagner's dispositif and its apparatuses. In this sense, Gesamtkunstwerk becomes the symptom of the intermodal conditions and assemblages that consist of various mediating technologies. Furthermore, the fetish of totalizing power and authority implicated in Gesamtkunstwerk makes suspect the presumption of disciplinary autonomy, and highlights the technical and instrumental modalities on which the performance and instantiation rely. In Gesamtkunstwerk, Hanslick propounds that musical content is subjugated to a purpose other than music *itself*. Gesamtkunstwerk suggest that music serves an ideologically instrumental role, and is devoid of critical and reformative capacity. Music augments and reinforces the dominant power dispositif.

4. Contingency and the Psychogeography of the Everyday

One of the distinctive tactics of the Situationist International (SI) was the *psychogeography* through *dérive* and *détournement*, with the concept of *unitary urbanism*. The origin of the intent behind the psychogeography — that one should devise a means of distancing oneself from the familiar world — may be traced to Dada and Surrealism. Psychogeography is intended to encourage a highly subjective reading of an environment in which the activities are for their own sake without a pre-defined purpose, and as a means of rendering the serendipities of human encounters in the city. It is improvisation of subjective spatial formation, where the purposeless, itinerant movement through the city helps to "form an integrated human milieu in which separations such as work/leisure or public/private will finally be dissolved."[53]

Psychogeography generates alternative cognitive maps that were devised to critique and resist the post-WW II urban reconstruction and planning driven by the rational and functional considerations. Therefore, it produces a map that emphasizes the subjective view of reality, and thereby attempts to undermine the objective view of it. To produce a map to change reality, the techniques of dérive and détournement rely on intentional *misreading* to disorient the subject in the given urban environment with which the subject may as well be already familiar. They were not designed for their own sake, but rather as a way of exposing the hidden subjective consciousness of everyday life. Guy Debord declares, "Détournement radicalizes previous critical conclusions that have been petrified into respectable truths and thus transformed into lies."[54] By designating spectacle as essentially the manipulation of highly mediatic process with its concealed operations, Debord claims détournement maintains that "one's *distance* from whatever has been turned into an official truth."[55] This deeply suspicious view of the surface unity is not far removed from Benjamin's view of phantasmagoria in identical objects that are indefinitely reproducible and propagated. Détournement designates the tactics of decoding urban contingencies that are not unlike the aleatory process in music, and indicates an investigation, detecting, registering, and formulating architecture and its specific urban context. But for the SI, such an investigation must necessarily be at once factual and fictitious; deliberate and accidental; intellectual and emotional.

Debord defines dérive as "a technique of rapid passage through varied ambiences."[56] It consists of "playful-constructive behavior and awareness of psychogeographical effects."[57] Within the Marxist premise of the SI, the conditions of urban society assume an overriding sense of alienation that, from the outset, the contrived spectacles distract by manipulating the senses, in both general

(e.g. political rallies) and targeted (e.g. TV programs) ways. The spectacles are fabricated by capitalist society and its aesthetic judgments, based on exchange values. The targeted spectacles and subjective attention of the television start to occur daily with the beginning of regular TV broadcasting in Germany in 1935.

Debord's spectacle meets its double in Foucault's surveillance and dispositif. Even though Foucault did not relate spectacle to surveillance[58] —Foucault's spectacle indicates the historical rituals of torturing, destroying and discarding the human subject in public, explicitly demonstrating and enforcing the power dispositif, the state. Eventually, the technology of private screens evolved to combine both spectacle and surveillance in one apparatus configuration. The extent to which the television figured in both Debord and Foucault's thinking is uncertain. But both spectacle and surveillance imply an aggregate of technologies directed at tabulating and managing individuals by organizing the modalities of attention, from the dispersed to the focused. For Debord, this indicates a more sophisticated deployment, compared to earlier models, and a flexible arrangement of global power, adaptable to local conditions. By the late 1960s, the spectacle had penetrated, and come to dominate the production of everyday perception.

For Foucault, the functionality of the modern surveillance regime comprises the transition from the public spectacle demonstrating disciplinary power, to the making of monitored subjects. The new rationale of the power dispositif engendered the new modalities in which the power apparatus was put to manage the database of individuals, and in return, the individuals feel empowered through the appearance of identity and of the individual freedom of choice. For Foucault, from such organization and perception of individuation arises "the fabrication of cellular, organic, genetic, and *combinatory* individuality."[59] One example of such fabrication consists of "a flexible arrangement of global power adaptable to local needs and circumstances,"[60] as the notion of the flexible accumulation of economic and political dispositifs explains.

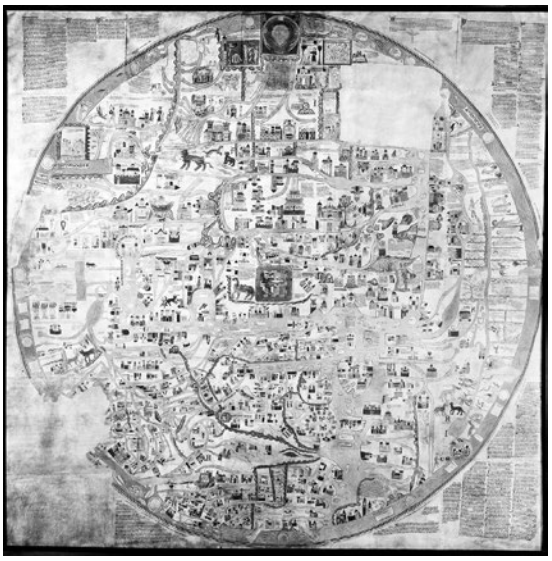
In this context, the dérive technique provides a disruptive resistance against the formal rationality of capitalism, and its manufactured spectacles of the bourgeois society. Such a disruptive regime consists of celebrating the uncertain, the unfamiliar, and the absurd. Dérive and détournement disrupt. Only when one finds a way to distance oneself from the spectacles and the fabricated familiarity of one's own existence can one be liberated from the pectacles, the dispositif's operations. During the SI's existence, 1957-1972, Debord regarded functionalist architecture as explicitly collaborating with the prevailing political dispositif that was determined to renew Paris by

destroying it. He remained abjectly averse to the functionalist urban policy that when the Pompidou Center, inaugurated in 1977, mounted a retrospective exhibition in 1989, he rejected the invitation, reminding Peter Wollen, one of the curators of the exhibition, that he "had sworn never to set foot in the building."[61]

In this sense, the informal tactics of dérive and détournement were intended to produce subversive experience of the city, and psychogeography as a form of navigation becomes the cognitive map that facilitates resistance and disruption. The SI's informal drifting induces alterity in the familiar. By intentionally misreading the routinized disposition of the city, one is liberated, by incantation according to Artaud, from the conventions of texts, images, and ultimately, language. Criticizing the language based conventions of the Western theater, Artaud counters it with the concept of the theater of cruelty, and shows how the essence of theater is revealed. The Western theater, Artaud argues, is subjugated to the rule of text.[62] The liberation from the text emerges from "a kind of unique language half-way between gesture and thought."[63] At the same time, a key to removing the functional and operative dominance of the text lies in incantation: the uttered, directly vocalized emotions, and the primal scream of delirium. In a similar way, Debord describes "the *insubordination of words,* their desertion or open resistance … as a symptom of the general revolutionary crisis of this society."[64] Having condemned the role of words and language as the agent of power and control, Debord declares, "… language always designates something other than authentic experience."[65] He further claims:

> Only a language that has been deprived of all immediate reference to the totality can serve as the basis for information. News is the poetry of power, the counterpoetry of law and order, the mediated falsification of what exists.[66]

One of Debord's collaborators, and the co-author of the pyschogeographies in the late 1950s, Ager Jorn, shared this opposition to functionalism.[67] Jorn, having painted the mural for Le Corbusier's *Pavilion des Temps Nouveaux* in 1937-38 as an assistant to Fernand Leger, remained adamantly opposed to functionalist architecture. Jorn's opposition is evident in his confrontation with Max Bill in 1953, when Bill was appointed to direct the New Bauhaus in Ulm. When Bill approached Jorn with a teaching appointment, Jorn retorted: "If Bauhaus is not the name of an artistic inspiration, then it is the name of the doctrine without inspiration, that is to say, dead."[68] Furthermore, Jorn claimed that the functionalists denied the "autonomous existence of beauty," and are false. For Jorn, the functionalism represented a false idea of the value of human objects, because they might not be



[Figure 18]
Ebstorfer Weltkarte, 1239
(Destroyed in 1943; reconstructed in the 1960s)

absolutely necessary, but are valuable in a relational way.[69] By this, Jorn implies that functionalism makes the "acquired value"[70] appear necessary, and excludes the relational value. "Modern man is smothered by such necessities … that render him incapable of living his true life. … *we are against any idea of the absolute necessity of objects,* also going as far as to doubt their effective utility."[71]

Concluding that functionalism subjectifies, and that modern society is subservient to the capitalist rationale,[72] Debord and Jorn resort to psychogeography, a kind of map-making that is at once cognitive and emotive, and ultimately political, to express reason through imagination and desire, and thereby subverts the worldview of the rational and the functional. Map-making as the inscription of an imagined world has precedents in historical cartography. Psychogeography can be situated in the context of the historical maps from the sixth to the fifteenth centuries, prior to the rationalization of cartography, when the map depicted both the micro-spatial – depictions of the *known* world and its territories – and macro-spatial, the *imagined* world, most notably, the Garden of Eden or Paradise.[73] Although the maps of known territories served the practical purpose of navigating geographical regions, the maps of Paradise were intended to project the ideal world of God's design. What is important in this process is not each entity individually, but the passage or link between the two.

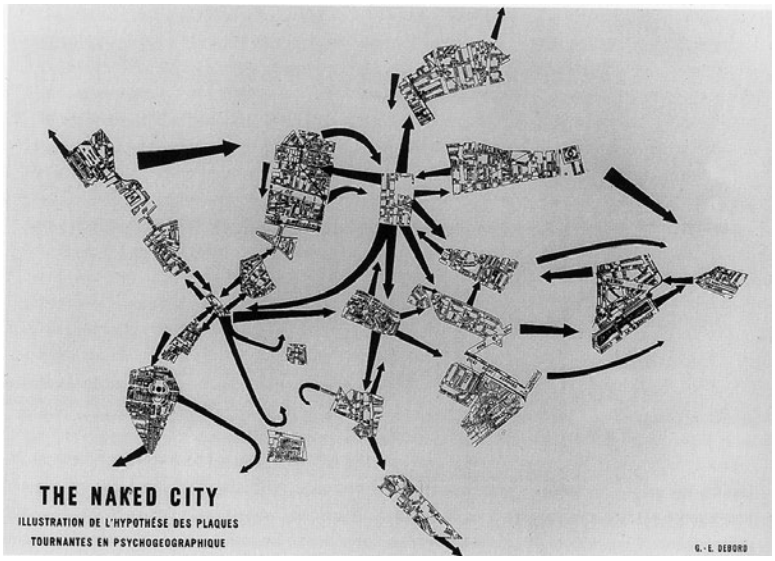
Historically, until the Enlightenment, maps served the purpose of projecting the appearance of the world in pictorial form, as a macro-spatial cartography of imagination, as depicted in the *mappa mundi.* [Figure 18] Another crucial feature of the mappa mundi prior to the fifteenth century is that "all measurements involving space and time lose their absolute significance, and the world of everyday life is transcended in a vision of multi-dimensional reality."[74] The maps showed not only

the pragmatics of the secular, geographical world, but also the speculation and constant revisions based on the burgeoning discoveries of the world outside the known Roman Empire.[75] Therefore, we may consider psychogeography in the context of the medieval maps that depicted not only the plane of the cognized, assimilated world, but also of the imagined consistency immanent in the dominant belief system of the time.

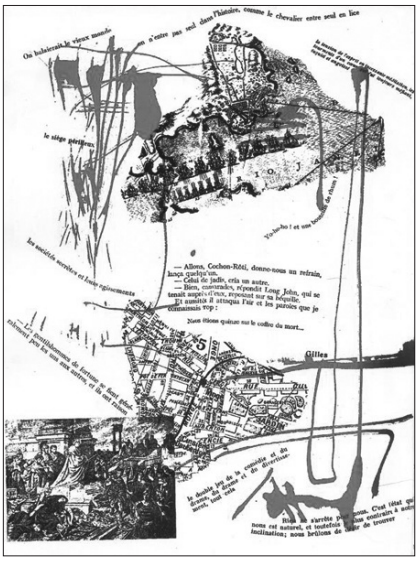
In the medieval maps, Christianity provided the plane of immanent consistency, whereas in modernity, such a plane was dominated by the rational, both abstract and substantive. Debord and Jorn claimed what appeared to necessitate the functional organization of space and society resulted in ideological decomposition and distortion. In response to such decomposition and distortion, psychogeography is an attempt to redraw the map of modern society by incorporating the rational, the irrational, and the imaginary in a way that collapses the experience of space and time, in order to expose its multi-dimensionality and the autonomous existence of beauty. For Debord and Jorn, such a map serves to disrupt and help to overthrow the decomposed, distorted ideology of functionalism, by unleashing its insubordinate, subjective micro-space over the macro-space.

It has been argued that the map precedes and produces the territory.[76] The map makes visible the geographical conditions and the sense of the territory. At the same time, the map is an agent that mediates the formation, rather than simply the depiction of, places and spaces. In this way, a map facilitates human interaction and the experience of the material world, and helps to provide a sense of meaning, the subjective, micro-spatial formation of a place that is composed of interactions with material entities and objects, and also with social and cultural conventions, and the way the personal milieu is encoded.

Debord and Jorn produced pyschogeographical maps,[77] *The Naked City* [Figure 19] in 1957 (the founding year of the SI) and *Mémoires* [Figure 20] in 1959, with the intent of subjective formation. Thus, the psychogeographical maps become a medium of resistance against power and its subjectifying language, the surface pattern of the city, "transposing maps of two different regions … total *insubordination* to habitual influences".[78] What Debord had in mind for the tactical use of the psychogeographical maps becomes clear in his earlier remarks in *Introduction to Critique of Urban Geography* in 1955. Such "apparently delirious proposals" should be "the systematic provocative dissemination of a host of proposals … combined with the constant depreciation of all current diversions."[79] Just as Artaud called for theater composed of "only forms, sounds, or gestures,"[80] "plastic and physical,"[81] unbounded and liberated from language, *The Naked City* of Debord and



[Figure 19]
The Naked City, 1957
Guy Debord



[Figure 20]
A page from Mémoires, 1963
Guy Debord with Asger Jorn

Jorn subverts the surface continuity and coherence presented by the official maps of Paris. Between the patches of Paris is blank space, "a vacuum that could be filled only by a delirious freedom and a splendid poetry."[82] The pattern of histories and pomp of Haussmann's Paris, which Debord calls "a city built by an idiot … signifying nothing"[83] is destabilized and hacked into patches of micro-spaces. For Debord and Jorn, such a delirious, intensely subject-specific formation of micro-spaces, mediated by psychogeography, plots a path to liberation from the phantasmagoria of the dominant power dispositif and its language.

Notes

1 Weber, 1964: 184-186.

2 Allen Weiss, *Phantasmic Radio* (Durham: Duke University Press, 1995): 36.

3 See *The Worlds of Nam June Paik*, John G. Hanhardt, Curator, (New York: Guggenheim Museum Publications, 2000)

4 Attali, 1985: 136.

5 Ibid. 137.

6 John Cage, *Silence* (Middletown: Wesleyan University Press, 1973): 57-58

7 Weiss, 1995: 35-36. (Emphasis added)

8 George Ritzer, "Can Globalized Commercial Architecture Be Anything but Highly McDonaldized?" in Ruth Baumeister and Sang Lee, eds. *The Domestic and the Foreign in Architecture* (Rotterdam: 010 Publishers, 2007): 123-145.

9 For example: Annamma Joy and John F. Sherry, "Speaking of Art as Embodied Imagination: A Multisensory Approach to Understanding Aesthetic Experience," Journal of Consumer Research 30, no. 2 (2003): 259-282

10 Toulmin, 1990: 45-88.

11 Here I use the term "carrier" referring to the concept of "Bedeutungsträger" by Uexküll. (Uexküll, 2010)

12 See George Lakoff, Women, Fire, and Dangerous Things: What Categories Reveal About the Mind (Chicago: University of Chicago Press, 1987)

13 Rem Koolhaas, "Junkspace," October 100, Obsolescence (Spring, 2002): 175-190

14 See Chapters 4 and 5, in Antonin Artaud, *The Theater and Its Double*, trans. Mary Caroline Richards, (New York: Grove Press. 1958)

15 Ibid.

16 Attali, 1985: 5.

17 Ibid. 136

18 Alan Liu, *The Laws of Cool: Knowledge Work and the Culture of Information* (Chicago: University of Chicago Press, 2004): 317-371.

19 For example, String Quartet No. 2, 1908.

20 Arnold Schoenberg, *Theory of Harmony*, trans. Roy E. Carter (Berkeley: University of California Press, 1978): 18-22. See also: Arnold Schoenberg, *Structural Function of Harmony*, ed. Leonard Stein (London: Faber and Faber, 1983): 193-194.

21 Filippo Tommaso Marinetti, *Critical Writings*, ed. Günter Berghaus, trans. Doug Thomson (New York: Farrar, Straus & Giroux, 2006): 111

22 Ibid. 117.

23 Theodor Adorno, "Music, Language and Composition" in *Essays on Music*, trans. Susan H. Gillespie (Berkeley: University of California Press, 2002): 119.

24 Theodor Adorno, *Philosophy of New Music* (Minneapolis: University of Minnesota Press, 2006): 36

25 Ibid.

26 Even though Cage is best known for the chance operation or aleatory process, in fact, he composed his first aleatory piece, *Music of Changes* in 1951. The composition was based on *I-Ching, the Book of Changes*.

27 Pierre Boulez, "Alea" trans. David Noakes and Paul Jacobs, Perspectives of New Music 3, no. 1 (Autumn- Winter, 1964): 42-53 (42)

28 Ibid.

29 Ibid. 43.

30 Ibid. 44

31 Paul Griffiths, *Modern Music: A Concise History from Debussy to Boulez* (New York: Thames & Hudson, 1978): 174.

32 Cage, 1981: 181.

33 Edgard Varèse and Alcopley (Alfred L. Copley), "Edgard Varèse on Music and Art: A Conversation between Varèse and Alcopley," Leonardo 1, no. 2 (Apr. 1968): 187-195 (194)

34 Karlheinz Stockhausen, *Stockhausen on Music* (London: Marion Boyars, 1991): 88-90.

35 Ibid. 88-111.

36 Ibid. 88

37 Ibid. 91-111.

38 Davies, 2003: Loc. 454-461.

39 Lowell Cross, "Electronic Music 1948-1953," Perspectives of New Music 7, no. 1 (Autumn/Winter 1968): 32-65 (42)

40 Guy Debord, "All the King's Men," in Ken Knabb, ed. & trans. *Situationist International Anthology* (Berkeley: Bureau of Public Secrets, 2006): 150.

41 The pseudonym is in fact the palindrome of "NatLab Dik."

42 See *Popular Electronic: Early Dutch Electronic Music from Philips Research Laboratories 1956–1963.* [4 CDs.] Tazelaar and Raaijmakers. The first collaboration resulted in the album, "Song of the Second Moon," in 1957, which included the electronic composition, "Sonic Re-entry."

43 The first magnetic recording device, Telegraphone, invented by the Danish engineer Valdemar Poulsen used steel wire. Poulsen patented it in 1898. See: http://www.recording-history.org/HTML/wire2.php

44 McLuhan, 2003: 371.

45 Ibid.

46 Quoted in Linda Ferguson, "Tape Composition: An Art in Search of Its Metaphysics," The Journal of Aesthetics and Art Criticism 42, no. 1 (Autumn, 1983): 17-27 (22).

47 Otto Leuning, "Unfinished History of Electronic Music," Music Educators Journal 55, no. 3 (1968): 42-49. (48)

48 Ibid. 44. Leuning also presents a short history behind electronic, synthetic music as follows:

E. T. A. Hoffmann, in the early nineteenth century, wrote in a story, "The Automaton," that any kind of musical sound, no matter how it was produced, was useful and dynamic material for musical composition. At about this time there were extensive experiments in the construction of speaking machines. Some of the pioneers were Kratzenstein (a Russian), Abbe Mical (a Parisian), and von Kempelen (a Hungarian). In the early nineteenth century, one reads about Koppen's "Componium," a kind of composing machine that (so it was alleged) played variations on tunes without ever repeating them. Hipp's "Electromechanical Piano" built in Neuchatel in 1867, Elisha Gray's "Electroharmonic Piano" demonstrated in Chicago in 1876 at approximately the same time Koenig's "Tonametric" apparatus (dividing four octaves into 670 equal parts) was demonstrated in Philadelphia, as well as Julian Carrillo's interesting theories of micro- tones and preoccupation with a ninety-six-tone scale (Mexico, 1895), bring us to the threshold of the twen- tieth century. In the last decades of the nineteenth century, Edi- son's patents for the phonograph, the development of various acoustical principles by Alexander Melville Bell called "visible speech," von Helmholtz's experi- ments using resonators and an accurate ear to analyze and synthesize voice-sound by isolating the component frequencies, laid the foundation for further work by scientists like Sabin, Morse, Lord Rayleigh, Dayton Miller, and Harvey Fletcher, all of whose experiments and findings influence us to this day. On March 10, 1906, Electrical World, a professional electrotechnical journal published in New York, de- scribed a demonstration of the "Dynamophone" that took place in Holyoke, Massachusetts, on that date. The machine-produced music, made by a group of 44 dynamos run by an alternating electrical current. L. Stokowski signed the editorial. The machine (also called "Telharmonium") was the largest musical in- strument in the world. It weighed 200 tons. The music was transmitted over telephone wires too delicate to carry such an array of signals, so that this "Extraordi- nary electrical invention for the production of scien- tifically perfect music" turned out to be impractical. The inventor, Thaddeus Cahill, had first presented experiments in 1900. Later ones came to the attention of Ferruccio Busoni, the Italian pianist-composer, when he read an article in McClure magazine, "New Music for an Old World," published in July 1906. Busoni was then engaged in writing his Sketch of a New Esthetic of Music, published in 1907. In this remarkable collection of notes he pointed out, among other things, the limitations of our musical system and expressed the thought that instrumental music had come to a dead end.

49 Ferguson, 1983: 17.

50 David Harvey, The Condition of Postmodernity: An Inquiry into the Conditions of Cultural Change (Oxford: Blackwell, 1989): 147.

51 Ibid.

52 Adorno, 2006.

53 Guy Debord, "Situationist Theses on Traffic," in Knabb, 2006: 69.

54 Guy Debord, *Society of Spectacle*, trans. Ken Knabb (Sussex: Soul Bay Press, 2009. Kindle edition): Loc. 2371

55 Ibid. Loc. 2384 (Emphasis in original.)

56 Guy Debord, "Theory of Dérive," in Knabb, 2006: 61.

57 Ibid.

58 Foucault, 1995: 216-217.

59 Ibid. 192. (Emphasis added)

60 Jonathan Crary, "Spectacle, Attention, Counter-Memory," October 50 (Autumn, 1989): 96-107. (105-106)

61 Peter Wollen, *Paris Manhattan: Writings on Art* (New York: Verso, 2004): 209.

62 . Antonin Artaud, *The Theater and its Double* (New York: Grove Press, 1958): 89-91. See also: "Oriental Theater and Western Theater" in Antonin Artaud, *Selected Writings*, ed. Susan Sontag (Berkeley: University of California Press, 1988): 267-271

63 Artaud, 1958: 89.

64 Debord, "All the King's Men," in Knabb, 2006: 150

65 Ibid.

66 Ibid.

67 Asger Jorn, "Against Functionalism" in *Concerning Form: An Outline for a Methodology of Arts*, trans. Peter Shield (Silkeborg: Museum Jorn, 2012): 37-52.

68 Ibid. 8-9.

69 Ibid. 22.

70 Ibid.

71 Ibid. (Emphasis in original.)

72 Simon Sadler, *The Situationist City* (Cambridge: The MIT Press, 1998): 8-11.

73 Alessandro Scafi, "Mapping Eden: Cartographis of the Earthlu Paradise" in Denis Cosgrove, ed. *Mappings*, (London: Reaktion Books, 1999): 63.

74 Ibid. 64.

75 Ibid. 67.

76 James Corner, "The Agency of Mapping" in Cosgrove, 1999: 222-223.

77 Together, Debord and Jorn produced five psychogeographical maps.

78 Debord in Knabb 2006: 11. (Emphasis in original.)

79 Ibid. 9.

80 Artaud, 1988: 268

81 Ibid. 269

82 Knabb 2006: 155.

83 Ibid. 8.

§ 6 Architectural Dispositifs

1. Discoded Space

If we accept the observation that industrial breakthroughs have a lag time of roughly eight decades,[1] Mies van der Rohe's and his contemporaries' vision of technologically modern architecture have its impetus in the second half of the nineteenth century. Especially in the 1860s – in fact roughly eight decades prior to the construction of Mies van der Rohe's German Pavilion in Barcelona (hereafter the Pavilion) – the inventions that are crucial to an understanding of modern architecture in the twentieth century emerge: the camera, kinetoscope, phonograph, typewriter, air-conditioning, elevator, longer-burning electric light bulb, and so on. The Pavilion, completed in 1929, demonstrates the configuration and construction techniques attuned to the industrial dispositifs. The Pavilion is a culmination, and a defining chapter of what Mies later characterized as the "crystallization of technology"[2] in architecture of the time.

The Pavilion encloses a new kind of space of fluid motion and reflexivity that foresees a radical departure from what may be viewed as striated space, in Deleuze's sense of the concept.[3] Here, what we see is not the kind of space that is defined by its boundaries, but by the connection and channeling of spatial flows, erasing and un-signing the compartmentalizing formal dispositifs that have historically dominated architecture. This is also to say that, up to this moment, the historical dispositifs of architecture were defined by the differentiation and striation within and without the various hierarchies. The design of the Pavilion radically reforms the nineteenth-century architectural dispositif by discoding it.

The Pavilion is anchored in the optimism of the future that the burgeoning technological advances and inventions appeared to promise. Mies's optimism of technology, however, was not directed at the functional ordering of human space, as such envisioned by the *scientific* management, but rather at delineating the essential spatial qualities in gaze and sensuality. Such optimism was embodied in the Pavilion, but in a manner that is at the other end of the technological spectrum from Russolo's noises of the machines. For Russolo, noises extend the bounds of human sensibilities, and contribute to a better-synthesized assemblage, whereas for Mies, technology and science represent freedom, spirituality, maturing, and ultimately, man's position in and relation to "objective nature."[4]

At the center of the discoded, hence latently anti-dispositif, formation of the Pavilion is a reflexivity that reveals both the potentiality and an implicit critique of modern technology. In the

Pavilion's case, the work of architecture is a process of revealing and pronouncing the specifically modern materials and technological capabilities. It is also the critique of the old architectural apparatus, and attempts to discode and depose the conventions of architectural codification, as well as the architecture as a body.

The Pavilion underscores the relationship between the program and the construction techniques arising from the duality of architectural production of his time — the technology itself and the appearance of the technology. (Venturi in fact reinforces, rather than negates, such distinction in the Pavilion.) The production and codification of new architecture are futile and unnecessary, as Mies saw in the modern metropolis the kinds of conditions, succinctly illustrated by Walther Ruttmann's *Berlin: Symphony of a Great City*, or Dziga Vertov's *Man with a Movie Camera*, which cannot be adequately addressed or controlled by any one codification system. Instead, he resorted to negating such codification, to discoding the historical architectural space so that the intensity of the modern metropolis would flow in, and take its own course. The Pavilion becomes a device for disclosing and illuminating modern life that helps overcome the old regime's architectural totality. This absence is comparable to silence, in which there exists no marked differentiation. On the other hand, the building façades and the construction techniques of the building must reflect (the appearance of) the logic and efficiency of industrialization.

John Cage appreciates Mies's strategy of discoding when he supposes that the Crown Hall at the IIT in Chicago would be the perfect space for his music.[5] Cage speculated that the space of the Crown Hall's architecture provided the latent potentiality of sound behaving freely, just as Mies had envisioned for the people inside it. For Mies, discoded architecture signifies an end of the architectural enterprise that historically depended on the compartmentalization (or *organ*-ization) of programmatic elements by devising a codification system that neutralizes and normalizes the discrepancies and inconsistencies of programmatic conditions.

The Pavilion also affirms the most distinctive tendency of the technologization of the body: dematerialization by the incorporation of idealized inscriptions. If we consider successive technological breakthroughs – from the Egyptian pyramids, to Greek temples, to the Roman basilicas, to medieval cathedrals, to Brunelleschi's *il duomo* in Florence, extending to today's algorithmic encoding of architecture – the most persistant tendency is ever-decreasing physical heft and presence. We explain this in terms of the increasing efficiency of material use, production, and assembly, stemming from the critical modern tectonic reasoning that intimately binds material, form and

technique toward a specific purpose. We may also explain the *thinning* of the architectural body in terms of the way the content is increasingly separated from the presentational. This is to say that in architecture, we conceive not only of an anthropomorphic entity, but also of the analytical aggregation of tectonic assemblies that maximize each individual part that comprise the body.

In Mies's two experimental projects – the office building on Friedrichstraße in 1921, and the glass skyscraper in1922 – and in a highly condensed form, in the Pavilion, the central agenda of modern technology and architecture is its tendency to dematerialize and recede, in terms of both the diminishing material presence, and the presentational that is appropriate for such dematerialization. Here, the presentational encoding indicates how architecture demonstrates to what extent it molts its material and physical heft.

In contrast to the architecture of the pre-industrial age, Mies identifies the new architecture with doing more with less, as the technological advances in material and construction result in higher efficiency and effectiveness of architecture. The *crystallization* of technology is explicit in the twentieth century, through the inventions such as automobiles and airplanes. They become less materially but their performance increases as an assembly. They are no simpler or lesser as a whole, contrary to the abuse of the dictum "Less is more." Sophistication and complexity increase, while the material presence decreases. The evolution of such architecture is embodied in the consideration of *mission criticality*, while maintaining an acceptable level of redundancy in today's technologically incorporated apparatuses. They have minimal physical presence, but maximal performance. This is to say that the dictum "Less is more" (whether it is indeed Mies's own comment, or Johnson's paraphrasing of Mies) pertains not so much to the so-called minimalist aesthetic, but to the performance-critical insight related to the given modalities of the technological codification and its material incarnation and presence.

In the Pavilion, we witness the above-mentioned dematerialization and discoding of the historical body transformed by technological maximization. Mies's architecture, not unlike Le Corbusier's, also exhibits the tendency to fetishize technology and technics. However, unlike in Le Corbusier's work, however, in the Pavilion we obtain a performance-critical view of Mies, and how he positions that view of technological development in architecture: floor-to-ceiling glass panes; slender columns assembled of steel angles and finished in stainless steel covers; precisely book-matched and mirror-polished stone panels, and so forth.

The functional program of the Pavilion is recessive, and the plan-diagram-notation

anticipates the routing that simply presents the *habitus* of new space that allows the body to freely behave, and at times free-floating, liberated from the social and cultural patterns of a mold that still prevailed at that time, embodying a new form of dwelling. The Pavilion presents a new spatial embodiment that discodes the conventions and rituals of body in space. It discodes the representational elements, so the outcome is "without an obvious tangible, or essential destination," and thereby becomes a *space in itself*."[6] It also celebrates the simplicity of technological components and construction as a means of liberating the perception of the building as a material entity, and as the embodied spatial experience that is anticipated and supposed to take hold in the modern age. But underlying the spirituality that Mies found compelling at that time[7] was a structure that is "technologically uninteresting"[8] in support of the highly refined sensuousness and luxury of its materials.

Ultimately, the Pavilion presents the potential of the modernist technological dispositif in terms of Mies's view at the time, that technology is spiritual and ethical: we can indeed do more for less. What has become a modernist cliché is in fact a succinct summation of the essential materialities modernism could have helped induce. The codification of architecture by technology delineates precise spatial conditions, in much the same way that a text is delineated by precise punctuation. It is compelling to consider the Pavilion in terms of its textual qualities,[9] of what it may signify. The Pavilion embodies a discoded space, in which punctuation, used as markers for sensuous empathy, destabilizes, perhaps even renders moot, whatever meaning we may try to excavate from the text, other than indicating proprioceptive potential. Furthermore, this view does not involve the so-called "minimalism," because the visually minimal affectation is achieved through a *maximal* assemblage (or *crystallization*, according to Mies). For that matter, the fact that Mies's *presentation* of the Pavilion as a building may minimal does not indicate the notion of the bare generic, either. On the contrary, the Pavilion is highly specific in the way it discodes domestic routines, and turns them into a highly affective space where the affect is not silent, either. The Pavilion is sensuous (*felt*) space that is pushed to its extremes. There is nothing minimal, generic, or silent about it. By discoding the compartmentalized, conventional, domestic space, and leaving behind only the potential, every element of the Pavilion radiates its affective power, unmediated.

2. Machine for Living In

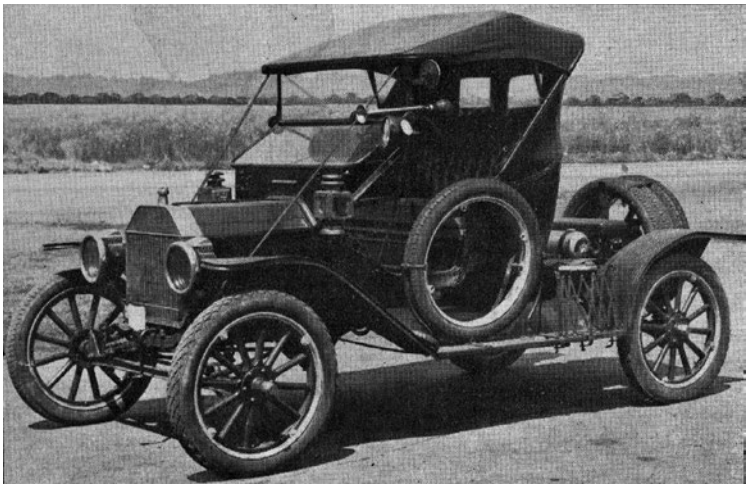
The dispositifs of power and control that used to impose primarily on the body now operate on the perceptive and cognitive dimensions of our mind through mediative technologies. The

discursive and formative position of architecture has shifted to the apparatus of the virtual. As a discipline that is dedicated to the production of human environment and its discourse, architecture relies on *a priori* conventions, means, and techniques that help to present, illustrate, and demonstrate the potentiality of programmatic instantiation and construction to come. Therefore, we may also define the instruments of such a priori conditions in architecture, and those that destabilized the existing dominant aesthetics in order to propel the modernist universality of the functional machines for the masses.

In the context of today's new mediative technologies, Le Corbusier's much-vaunted modernist announcement of the "machine for living in,"[10] becomes not a type of functional or instrumental contraption, but the encoded and codified processor. Modern life owes much to the aestheticization of machines through the work of industrial designers such as Raymond Loewy [Figure 21] and his contemporaries in 1930s, and the codification of industrial production embodied by the Ford Model T. [Figure 22] Although the hardware, the rationalized machinic, may contain the very basic yet coherent internal logic of functional configuration, it is variable and adaptable in relation to the changing nature of the context and its attributes. In the Unité d'Habitation (hereafter "the UH"), the staggered, split-level organization of each individual apartment facilitates variation within the unit, while projecting the variability from the *internal street*. Additionally, post-WWII homes began to incorporate machines that enhanced the quotidian, and helped to continue the momentum of the massive industrialization prompted by the war. Through such industrialization and the resulting mechanization, architecture too, began to be viewed as machinic. The public space that insures the smooth functioning of social relations is defined by a set of rational, technical specifications as architecture becomes socio-machinic.[11]

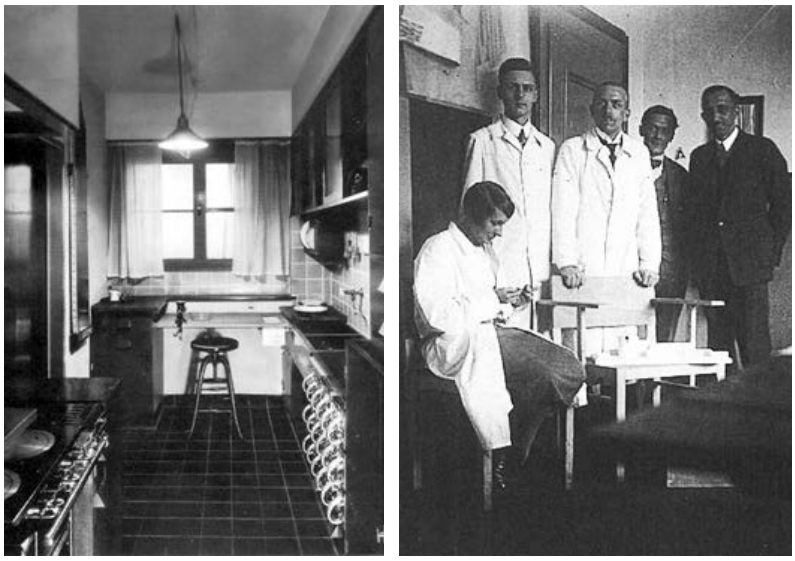
If architecture is a machine-for-living-in, both in terms of substantive functionality and instrumentality, such a view also implicates — in the sense of Latour's subject-object hybrid, discussed earlier — fetishizing functional objects, and of endowing them with a cultic position beyond the rationality of the functional. The disjunction between theory and practice also clears the ground for examining the role of architecture, contributing in particular to a dissolution of the boundaries implicit in the reading of physical-virtual, public-private, functional-fetish, and objective-subjective spaces. The notion of the machine is no longer that of an inanimate tool, but that which mediates and embodies desire. This change in the substantive relationship caused the ontology of architecture to shift, from an object to an apparatized operation of affectation. Since the WW II, appliances started to be fully integrated into homes, automate domestic chores, and provide personal

[Figure 21]
Pennsylvania Railroad Locomotive designed by Raymond Loewy, 1937



[Figure 22]
Ford Model T, 1911

[Figure 23]
Bauaustellung, Berlin, 1931



[Figure 24]
Die Frankfurter Küche and Margarete Schutte-Lihotzky, 1925-27

entertainment. In 1925, Le Corbusier presented his *Pavilion L'Esprit Nouveau*, turning the traditional house into the focal point of new architecture, also a key theme in *Die Bauaustellung* in Berlin in 1931, in which Mies participated.[12] [Figure 23] In 1925/6, Margarete Schutte-Lihotzky designed the first modular kitchen, modeled after the railway restaurant car, *die Frankfurter Küche*,[13] [Figure 24] to be incorporated in architect Ernst May's municipal housing project in Frankfurt. In 1927, *Die Weisenhofsiedlung* in Stuttgart, organized by Mies, in which Le Corbusier participated, showcased apparatized domesticity as one of the major focal points of modern living.[14]

The BBC's first broadcast of television programs in 1930, *Die Bauausstellung* in Berlin in 1931, and the Case Study Houses in Los Angeles in 1945, almost two decades after the Frankfurt Kitchen, share the theme of the new domesticity in the age of technology, and the apparatization of modern living networked in the urban power and communication grid, water supply, and sanitation. In 1936 Ernst Neufert published *Bauentwurfslehre*,[15] with comprehensive, anthropomorphic data for use in architecture, yet another event that facilitated the codification of technological domesticity. The series of developments shares the features of metricization and modularity that may be tailored to a specific functionality. It suggests that everyday life can be composed of *plug-in* modules that are standardized, mass-produced, and assembled to suit everyone, everywhere, in a consistent quality. The collective of such modules would form the architectural apparatus that fulfilled necessities and desires alike.

The UH included an array of shopping, sports, medical, and educational facilities, and a hotel and a communal roof terrace. With this project, Le Corbusier again confirmed, "A house is a machine for living in."[16] In his idea of *a city within a city*, everything works individually while relating to the

assembly as a whole. He appears to have thought of the city as a type of clockwork, in which each part has its own rhythm and function, yet when connected, they contribute to a larger, collective functionality. Thus, the idea of a machine-tool acts within the larger assemblage, through the modular construction of mass-produced parts.

Le Corbusier mentions Frederick Winslow Taylor,[17] and hypothesizes that the construction site should become an efficient factory. He declares:

> The house will no longer be a squat thing that pretends to defy the centuries and that is an opulent object manifesting wealth; it will be a tool like the automobile is becoming a tool. The house will no longer be an archaic entity heavily rooted in the ground by deep foundations, built "solid," and to which the cult of family, bloodline, etc. has so long been devoted.[18]

According to this vision, the UH may be seen as such a tool, for which the architecture of the technomic is rational and scientific. Furthermore, the UH was supposed to produce a new kind of socio-technic configuration through the way it residents use the building. What Le Corbusier disdains are, however, the unavoidable ideo-technic condition, even though automobiles, for example, had already become ideo-technic by then, despite his claims. Furthermore, by always including an automobile as a prop in the photographs of the buildings he designed, alluding to engineering and technology, Le Corbusier actually exploits the ideo-technic features of automobiles in order to promote the allure of his designs. Even though architecture-as-machine was designed to respond to the individual's needs in the context of the socio-technic and its inherent interactivity, the ideo-technic development started to counteract Le Corbusier's initial intent of the UH. The building was supposed to shape a social space that could accommodate the relationship between the individual and the communal, but the vision falls short as the UH fails to satisfy the socio-technic aspect. The vary failure Debord and Jorn criticizes in their anti-functionalist declaration that architecture should not be the functional machine.

In particular, through the UH's architecture Le Corbusier attempts to demonstrate how architecture plays a social and cultural role, through the modernist ideal of efficient, orderly, and hygienic machinery. Foucault identifies that such an ideal culminates in a society of power and control.[19] The UH comprises enclosed and individually segmented modules, with its centralized internal street, into which the individuals are *drawered*.[20] According to Foucault, for state dispositifs, a population is not just "the sum of individuals inhabiting a territory, but an object itself, with birth,

death rates, healthiness and so on."[21] In this case, Foucault reflects on the notion of habitat within the city that is a process as well as an event, and its inhabitants as a set of individuals who are objectified and enclosed within specific boundaries. Although Foucault does not explicitly segregate such event and object, in the concept of object-event, he emphasizes their interdependence. The machinic and the disciplinary in Le Corbusier's *machine á habiter* consist of individual units that are measured and proporioned in Le Corbusier's Modulor, and determined of the relationship to the whole bound together by the communal elements.

The architecture of the UH is a system of relationships that shifts from the social and economic to the cognitive and ideological. Le Corbusier's vision represents a certain ideal society in which everything and everyone is proportionally and harmoniously located. It embodies the vion of an ideal state. Everyone is compartmentalized in an efficient housing unit, and everyone is equal. The structure of the UH is naked concrete, *beton brut*, that demonstrates the aesthetics of unmediated materiality and its efficiency. The golden rectangle is testament to the ideal of perfect geometry. The overall façade is subdivided into smaller golden rectangles and punctuated by primary colors. One cannot help but recognize the sublime unity. Such a systemic view helps to understand how the architecture can consolidate the social, economic, ideological, and congnitive impulses in a totalizing package. In turn, this requires a base on which those interrelations may take place. Traditional territories and their technomic features are superseded, while in socio- and ideo-technic assemblages, the differentiation between public and private space starts to dissolve. Public and the private are affected by the ongoing interaction of physicality and virtuality of architectural composition and the resulting macro-space.

The intimate enclosure that defined the comfort of one's home, the individual's expression, also tends to constantly fold onto itself. The blurred boundaries of such inversions further imply an architecture that responds to a set of linked relationships following the varied logic of disparate codifications. The role of the architect shifts from composing the hard geometries and demarcations of physical enclosures, to selecting and assembling the surface interface of affectation, the *surfaceware* that may be renewed and replaced on demand in relation to the power dispositifs of a given period: the mimesis of both aggression and protection, and also of adaptation and convergence.[22]

3. Mediatization

Archigram, the architectural collective based in London, 1961–1974,[23] played a leading role

in disrupting the orthodox, high modernist architecture of the time by tapping on technological optimism, consumerism, and burgeoning cultural and ethnic diversity. At the same time, Archigram's presentational tactics provide a view of how the technological innovations of the post-WWII period reshaped the course of architecture at that time. Simon Sadler characterized Archigram as "Architecture without Architecture,"[24] the title of his book, for the very reason that Archigram's architectural speculations reflected the optimism (as well as all the more real Armageddon) and capacity of the time by embracing the newly technological dispositifs emerging after the WW II. The quotidian of growing technological content and presence appeared to prefigure the substantively *new* way of living. While the modernist architecture tended to advocate technology and technological objects through aestheticization and often fetishization, Archigram and its peers (namely, Norman Foster, Richard Rogers and Renzo Piano) discovere the pragmatic architectural language promised by the new technology. From Archigram's perspective, by deliberately splicing and confronting the significance of technological dispositifs of the time, architecture may be reformed through anti-architectural traits and functionalities by which buildings and cities become mobile, modular, adaptive, parametricized, literally becoming machines themselves, expressing liberal emancipation through technology.

Owing to the rapid development of consumerism, and with technological appliances penetrating everyday households, Archigram declared that the great changes in society demanded an equally great transformation of the living environment. As Mike Webb stated, "The engine behind Archigram's output was excitement over what this new world was going to look like."[25] Archigram envisioned the future that consisted of new technological capacities for shaping human living that augment everyday life, and of equality through mass-produced objects that would improve life of the masses. [26]

Archigram's embrace of technology as the de facto dispositif demonstrated that architecture might begin to venture out of its historical disciplinary singularity and contribute to the formation of more proactive, technological assemblages. This is to say that architecture may no longer be conceived in terms of its own supposedly autonomous discursive tradition, a conception similar to that of Hanslick's formal music, discussed earlier. Therefore, the formal view of architecture's internal order has tribalized the discipline, with members being identified by the codification of such insular tribal orders within the supposed disciplinary bounds that are historically inherited.

In the time of historically tribalized modernist architecture, the technological innovations

provided architecture with an overarching apparatus previously unseen in history, and with the means to respond to the changes in society that were taking place owing to the technologization and subsequent apparatization of domestic life. In the meantime, the Cold War accelerated the pace of technological development,[27] which in turn promoted the commercialization of military technology – such as the fiber-optic communication infrastructure against the EMP, the Internet, digital imaging, and video and satellite surveillance, to name but a few – thereby accelerating the technologization of consumer society.

According to Sadler, "In the 1950s and early 1960s, sections of the European avant-garde were slowly seduced by the market-driven confidence of the United States, its wealth and above all the brilliance of its popular culture — even more difficult to resist with the increased prosperity of masses of ordinary western European people."[28] In the 1950s, many European households acquired fully integrated indoor sanitation facilities, and subsequently, ordinary households began using private telephones, refrigerators, washing machines, and automobiles. Such appliances were connected to various infrastructure networks that constitute vast public projects, exemplified by the mobilization of the *Reichsbahn* and *Autobahn* in Nazi Germany, in the periods leading up to, and during WWII. Rapidly evolving sophisticated technology helped to establish the modernist avant-garde critique of society and its potential future. The struggle between the USA and the USSR for the technological, therby militarily strategic, superiority in nuclear armament and space exploration accelerated both the potency and the sophistication of technology. The technological context in which Archigram formulated their projects partly reflects the impact of the intensification of technology on society and urban living.

In the 1960s, when emergent technology came to be equated with consumer culture, the technologized, "plugged-in" households and individuals greatly facilitated Archigram's work. Technologically sophisticated household goods were "part of a larger shift in avant-garde concern in the 1950s ad 1960s, from the creation of singular 'works of art' such as paintings and buildings to the exploration of art as a living medium, as a way of structuring everyday life for all."[29] The technology since the 1950s and the ensuing vision of mass-produced goods generated the individualistic consumerism of the new society, characterized by the predetermined life cycle of goods. In the pamphlet, *Archigram 3*, of 1963, Peter Cook writes:

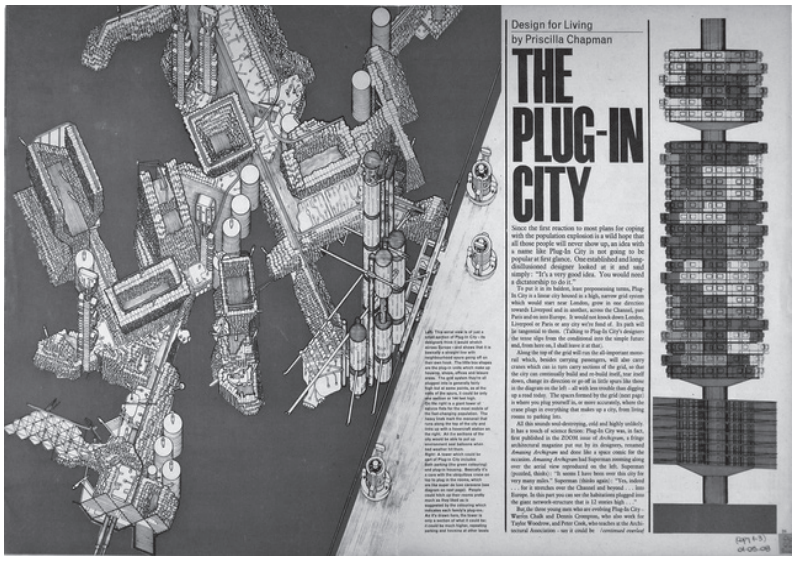
> Almost without realizing it, we have absorbed into our lives the first generation of expendables…food bags, paper tissues, polythene wrappers, ballpens, EPs…so many

> things which we don't have to think of. We throw them away almost as soon as we acquire them.[30]

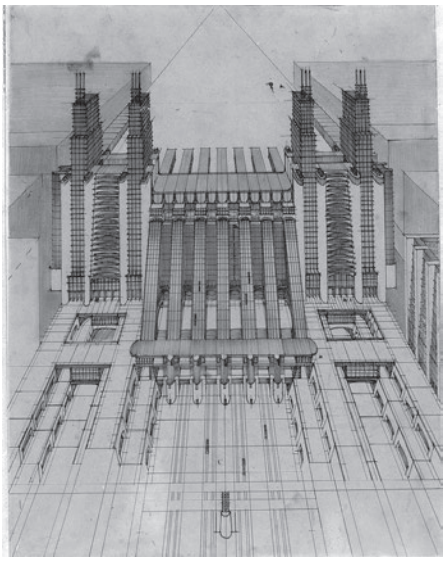
In a fashion reminiscent of Le Corbusier's technologization of architecture, but calling for the planned obsolescence of buildings, Peter Cook also invokes automobiles, and argues against the "masqueraded" permanence of architecture.[31] By the 1960s, Europe and Japan had economically recovered from the devastation of the World War II, and this was also a period of great social transformation, not entirely because of ideological conflicts per se, but according to David Harvey, in large part, because of the changing nature of labor and leisure, stemming from the declining Fordist economy.[32] Thus, Archigram was the first generation of architects in the new economy of flexible accumulation.

In 1963, Archigram initiated "the city as a living organism," the beginning phase of the Living City, a city that responds to the situations in time and space. Warren Chalk defines the city as a living organism that can expand and contract, divide and multiply, as needed by changing needs and circumstances: "Cities should generate, reflect and activate life, their environment organized to precipitate life and movement."[33] The city would have to be modular and mobile to respond to the changing programs, needs, and desires of the users of the present and the future. Augmented by the vision and possibility technology appeared to afford, Archigram developed the idea of the Plug-in City. [Figure 25]

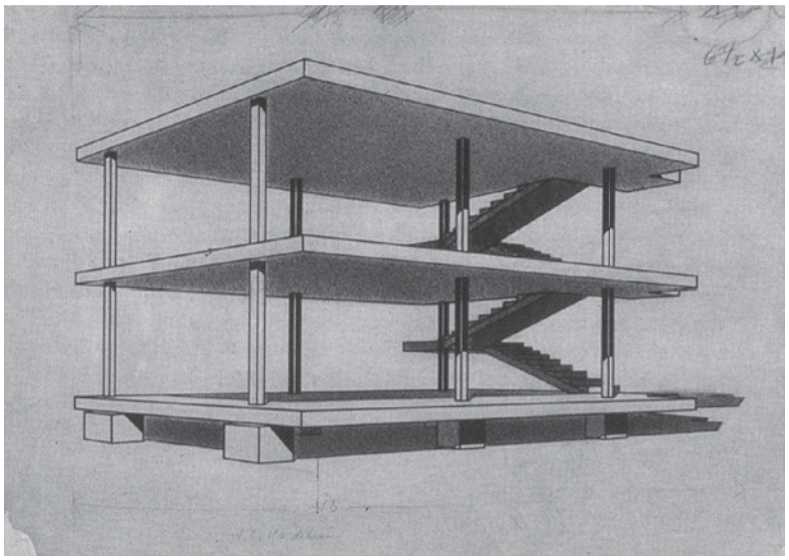
Antonio Sant'Elia envisioned *La Città Nuova,* [Figure 26] a modern city made possible by then-advanced means of mobility, such as elevators, escalators, and automobiles, and its form reflects the flow and speed of mobility of a macro-scale beyond the micro-scale of local street circulation of historical cities. *La Città Nuova* is no longer the city that has been formulated after the physiological model of the seventeenth century British surgeon, William Harvey, whose discovery of how blood circulation works eastablished the anthromorphic view of the city.[34] For Achigram, the city is active, mobile, and dynamic, the "metabolism" of which bypasses localized conditions, and becomes *hyper*. Based on the notion that architecture inevitably incorporates technological advances, in terms of its aesthetics and material production, Sant'Elia envisioned a multi-level, vertical, urban organization afforded by modern technology and equipment. With *Maison Domino,* [Figure 27] for instance, Le Corbusier sought to optimize the efficiency of framed structures for tall buildings with vertical columns and horizontal floor slabs that are free of the massive load-bearing walls, releasing the plan and the façade from them. Just as the structure of *plan libre* provided a highly flexible



[Figure 25]
Plug-in City, 1964
Archigram (Peter Cook)



[Figure 26]
"Stazione d'aeroplani e treni con funicolari e ascensori su tre piani stradali"
La Città Nuova, 1914
Antonio Sant'Elia



[Figure 27]
Maison Domino, 1914/15
Le Corbusier

spatial organization unencumbered by the structure, the configuration of Archigram's Plug-in City propounds expandability and mobility that are also disposable and renewable on demand.

Plug-in City, Archigram's representative vision of modern, technologized living, defines the technological sublime of the day as an agent for change, similar to the Futurist vision. Archigram has nothing in common with the potentiality of violence implicit in technology, as Walter Benjamin sees in Futurism: *Fiat ars – pereat mundus.*[35] But the Plug-in City proposes that potential for change is intrinsic to making the living units modular, expendable, disposable, and replaceable, that is devoid of the traditional emotional baggage. With mass-produced, modular plug-in components, the city would become highly efficient and serviceable. It would be remain flexible to adapt to changing environment, and fulfill the residents' needs and desires. It would be equipped with a crane for moving prefabricated dwellings, to allow for nomadic living in the future. David Greene underscored the idea that architects had a duty to increase personal and environmental choices: "More and more people want to determine their own parameters of behavior… People are less and less prepared to accept imposed rules and patterns of behavior."[36] The Plug-in City is an apparatus, which consists of hardware that is fixed and software that facilitates the exchangeable, serviceable functions.

The sociologist Ulrich Beck summarizes "reflexive modernization" as characterizing a self-iconoclastic or even self-destructive industrial society.[37] Beck refers to the industrial society that defined modernity. Modernity also stands for that which is determined by industrial production. Beck explains how the "constant revolutionizing of production; uninterrupted disturbance of all social relations; everlasting uncertainty and agitation distinguish the bourgeois epoch from all times."[38] As a consequence, the relationship between technology and architecture as a part of industrial production has intensified, not only in its physical disposition, which was transformed, but also in the aesthetic dimension, which is now part of mass-culture, even perhaps of Adorno's pessimistic notion, the culture industry.[39]

Archigram was convinced of the social changes through technologization, and of an architecture imbedded in, and augmented by technology that responded to human needs and desires. While considering architecture and its form of the period that descends from the language of industrial modernism, Archigram's work expresses the strategic vision to be eventually realized by the Internet. Even thought the intent behind the implementation of the Internet may have run counter to Archigram's expressed social and cultural credo,[40] the technology nonetheless reflexes back to the society that is embodied in Archigram's architecture of technologically codified world, which

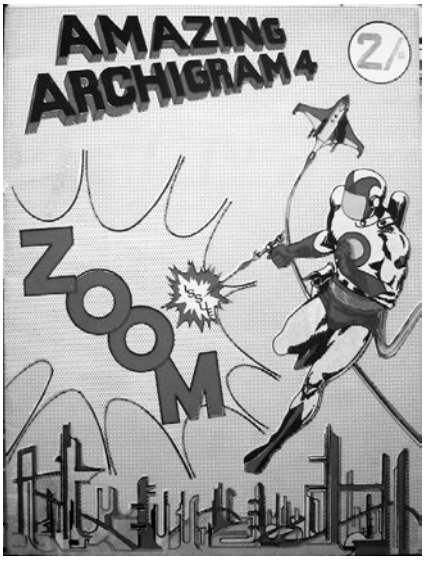
appeared to promise fast, easy, inexpensive, and open architecture, and by extension, individual freedom through the technological apparatus.

Archigram may also be seen in terms of the historical split between disciplinary autonomy and the need to address and situate the work in a given social milieu. In relation to Adorno's anaesthetic notion of the culture industry dominated by commodification and regression, Archigram's presentation of architecture resorts to the technological gratification and prestige, as well as to "the parody of aesthetic semblance"[41] that is explicit in the mass media thta stimulates consumer desire. Its presentation projects a view of architecture that is composed of mediatic elements that reinforce the fetishistic tendencies of the popular culture of the time. Deploying verbally and visually stimulating cartoons and collages styled after the pop art of the time, and by insisting on the feasibility of construction, Archigram's architecture is an annex to the dominant dispositif of commodifying the forever-new, unlimited growth.[42]

Archigram's work also attempted to establish the common ground between the irreconcilable poles of the avant-garde and the commodified art that embraces its position as a commercial product. The dialectics of aesthetic work, such as Adorno's, consists of the autonomy and autotelos of *art-for-art's-sake* that counters and resists external power relations, whereas at the other end of the scale stands the commodification, the *raisons d'etre* of which are financial profit and authorial fame. However, an architectural work, for that matter, virtually any aesthetic work, will never exist in such bipolar a position. It always occupies a place somewhere between. Therefore, the potency of architectural work lies in how such a middle ground is negotiated in relation to the prevailing dispositifs of a given period. Archigram's presentation appealed to the sensibilities of the emerging media culture, and expressed its radicalism, calling for timely obsolescence and expendability, diametrically opposing the historical assumption that architecture embodies *firmitas*, certain transcendence, if not eternity.

If we consider Charles Jencks's claim that modernist architecture ended – albeit only symbolically – with the demolition of the Pruitt-Igoe housing complex in 1972, Archigram was the inevitable outcome of high modernism's techno-fetish, and taunted it by resorting to a rhetoric intent on making architecture be technology itself, rather than employing it as metaphor:

> "A bold intuative [*sic*] gesture that eludes rationalisation a strip cartoon kick provides a visual jump-off point — a mental zoom boost — enables us to push aside architectural waste-matter so that reality may emerge."[43]



[Figure 28]
Amazing Archigram 4, Zoom Issue, Spring/Summer 1964

Unlike their Situationist contemporaries in Paris, who were convinced that society is manipulated by the fabricated spectacle that concocted what the masses presumably desire, want, and ultimately, believe, Archigram's mediatizing tactics actively immersed architecture in the creation of the spectacle, thereby seeking to subvert, and preferably, reform the spectacle itself. [Figure 28]

4. Simulacrum

Not only with Archigram and the mediatization of architecture, the 1960s was also rife with cultural developments and protest against the existing social and political orders. Attempts to change and even overthrow the standing dispositifs, most notably in Paris, May 1968, occurred on several fronts. Not only in Europe, but also in the US, the demand for social reform, such as racial desegregation, human rights and equality, women's reproductive rights, and so on, arose at a scale that could no longer be ignored. On the technological front, satellites came into use as part of the strategic military infrastructure, remote imaging schemes were drafted, and humans landed on the moon. In order to construct an indestructible communication network for command and control of the government and the military, the first research prototype of the Internet, called "Arpanet," was implemented. In short, the list of new technologies developed during this period, which became commonplace, is extensive.

As the culture of mass production, standardization, and identical copies intensified what Benjamin theorized as the mechanical reproducibility, new electronic media provided new tools to engage with information, management, and knowledge. Directly descending from Archigram's mediatized ontology, and against the backdrop of the technological and cultural tendencies of the

period, the Pompidou Center (hereafter the Center) represents several industrial, modernist agendas, along with the emerging mediatic formation of culture, in which content and presentation are misaligned.

The Center continues the modernist strategy of aestheticizing technology and machines. Just as Le Corbusier's allusions to airplanes and automobiles had little to do substantively with his architecture, other than as metaphor and *in spirit*, the Center demonstrates the architecture's aestheticization of technology par excellence. As Venturi mocks modernism as having replaced *rocaille* with rivets,[44] the architects of the Center ended up aestheticizing the implication of mechanical ventilation and circulation, even though there was a specific programmatic and functional rationale to provide open, unhindered floors. The architects ended up technologizing a cultural institution and projecting an image, a presentation that is radically out of place, in relation to the content the Center was supposed to serve.

Kenneth Frampton summarizes the Center as follows:

> … it is a brilliant tour de force in advanced technique, looking for all the world like the oil refinery whose technology it attempts to emulate. It seems, however, to have come into being with the minimum regard for the specificity of its brief … the scale of the building is quite indifferent to its urban context and that it is incapable of representing its status as an institution is consistent with the ideological position from which it stems …[45]

The ideological position of the Center is emblematic of not only the functional kind where the universality (and therefore adaptability) of technologically proficient architecture, but also of maximization by implying flexibility. By building the Center of independently manufactured parts, in a manner agreeable to flexible accumulation,[46] the building provides the most, in the smallest package. As Frampton points out, the building may emulate an oil refinery, aestheticize it for architecture, but it is actually an institution that was intended to accommodate cultural objects and events. According to Frampton, the architects practically had to design another building inside it, to compensate for the lack of wall space for exhibitions. R. L. Rutsky adds to Frampton's summary:

> Yet, in this imitation or reproduction of technology, technological form has clearly been separated from function; the building obviously does not function like an oil refinery; it merely abstracts and reproduces the "look" of a refinery, its technological style.[47]

To a large extent, technology, both a product and producer of human activity, changes our understanding of the environment with which the technology engages. Technology realigns humanity's relationship to the environment in such a way that it codifies itself, and the technologic codification mediates human affairs. The relations of human affairs are intimately conjoined to technologic networks. The Center is the most explicit and literal rendition of the technologic network, ca. 1970, and shortly after the purely academic and military beginnings of the Internet, the epitome of the modernity was still defined by its infinite branches of duct, pipes, and gangways.

However, in strong contrast to the image of the Center as an urban refinery, according to the architects, Richard Rogers and Renzo Piano, the Center was supposed to be "…a flexible container, and a dynamic communications machine made from prefabricated parts to attract as wide a public as possible by cutting across traditional institutional limits; a people's centre, a university of the street."[48] It is clear that the intent of the architects was to create a communications machine. This communications machine illustrates the social role that new media, augmented by new technology, played at the time. In the end, without screens and electronic signs, the communication machine ended up looking like an oil refinery.

Guy Debord opens *The Society of Spectacle*, of 1967, by declaring that once lived, embodied experience "has receded into a representation,"[49] in a vein similar to Adorno's notion of regression in art.[50] And: "*Fragmented* views of reality regroup themselves into a new unity as a *separate pseudoworld* that can only be looked at."[51] Debord asserts that our social interactions are mediated by images of interaction: "The spectacle is not a collection of images; it is a social relation between people that is mediated by images."[52] In many ways, the Center is a spectacle device that mediates the cultural activities and objects it is supposed to first accommodate through an external image. Its partially recessed and sloped plaza provides an urban stage for spectacles, with its sublime backdrop of ducts and gangways, the technofetish that has come to characterize the so-called "high-tech architecture" since Archigram. The mechanical and circulatory systems are pushed to the outside of the building in order to provide an unobstructed interior, and the structural system provides the maximum column-free spans.

Debord points out the passivity and subjectification of the human relationship to technology, and to the spectacle it manufactures. The spectacle, being a pseudoworld that can be only looked at, does not allow for dialogue:

> But the spectacle is not merely a matter of images, nor even of images plus sounds. It is whatever escapes people's activity, whatever eludes their practical reconsideration and correction. It is the opposite of dialogue. Wherever representation becomes independent, the spectacle regenerates itself.[53]

The Center is a representation of culture through the proxy of technology as its ruling dispositif. It is the type of a pseudo-world that Terry Gilliam's movie, *Brazil*, presented eight years later, in 1985, a dystopian society in which the most powerful apparatus is the city's utility department, which provides air, water, power, and sanitation. The high-style social club in the movie proudly displays all the fashionable ductwork as a part of its high society atmosphere. Naturally, the most dangerous criminal in Brazil is a rogue plumber.

We may also consider the urbanity of the Center is a way that is characterized as the polarized field of the spectacle.[54] In order to stage a spectacle, a football game or a chess match, for example, the spatial conditions must be polarized in such a way that the event may take place according to the codified conditions of the game, to the way the game is formally circumscribed. Here, the first and foremost device of codification is the formalized field that frames the territory of the spectacle. The first rule of the spectacle embodied by a football game is that the ball and the players must remain inside the demarcated field. In a chess game, the field of battle is demarcated by an 8×8 square grid, in which each piece has its starting square, and must follow the formalities of movement within, and bounded by the grid.

The site for the Center was divided in half longitudinally. The Center fills half the space, and the other half is an open public plaza. There exist a tension and an interdependence between the presence of the Center and the replica of this form in void, as its mirror image. The void of the square and the presence of the building are mutually dependent on one another as a precondition of the polarized field. The space is polarized and given potential energy, firstly through the inverse relationship between the presence and the void, and secondly through the sloped plane that gives the public space a sense of dynamic approach to the cultural refinery. By creating tensions such as these, the public realm is affected, and immediately involved in the affective spatiality. The delineated space succeeds in assembling dynamic and complex events. The square provides a stage on which daily life plays out against the expression of the technofetish *décor* of the Center. The assemblage of the sloped square and the building's façade makes social life and human activity part of the spectacle of the Center.

Jean Baudrillard claims, in his 1982 essay, *The Beaubourg Effect: Implosion and Deterrence*,[55] that the Center attempts to create a representation of culture, and thereby reduces the meaning of culture to an image. The machine image glorifies technology as an extension of culture. This representation degrades culture, since it oversimplifies it, and therefore presents a false representation. This representation is a fixed statement, which does not allow for elaboration or growth. Through this process, the meaning of culture becomes stagnant, and its development is thwarted. In a similar manner to that described in Guy Debord's critique, the spectator is subjectified.

Baudrillard calls the foregoing process "the Beaubourg Effect," by which the image of the Center is attributed to imploding the substance of culture. Despite the exhibition and promotion of cultural content, the Center exhibits that our experience of culture is recessive and often necromantic, not unlike visiting a royal tomb to marvel at the glory of the dead monarch and of the possible posterity. (Ironically enough, if a cultural tomb draped in the formal language akin to an oil refinery was not enough, in 1989, a pyramid, an explicit type of mortuary architecture, was erected to serve as an entrance to the Louvere.) Such presentation of the *impression* of culture prevents the actual substance from taking shape:

> "Beaubourg is a monument of cultural deterrence. By means of a museological script which is there only to rescue the fiction of humanist culture, the actual labor of the death of culture is enacted."[56]

Thus, for Baudrillard, the Center stages and celebrates the death of culture. This necrophilic tendency is expressed by the emptiness or *voided* spaces found inside the Center, as well as outside, on Beaubourg square. The voided space is often described as polyvalent, transparent, and modern, and the Center's heft produces a spectacle of the alien sublime on a monumental scale. Baudrillard describes the Center as an anti-monument that monumentalizes itself by decorating itself with ducts and pipes, an allusion to technics, but not really technological. The ducts, pipes, and the tubes of ecalators replace rocailles, to paraphrase Venturi.

The criticism of the Center's lack of a formal façade assumes necessity to embody cultural identity in the design of public buildings. Regardless of the debate as to whether or not such cultural identification by architecture is necessary or appropriate, the 1960's resistance and revolt against the status quo of the dominant political dispositifs, such as the events of May 1968 in Paris, explain why an architectural work specific to French culture was not built. The counterculture movements that were intertwined with the resistance against an authoritarian government suggested that the

protestors did not want their culture to be defined by the dispositif they were fighting. It seems clear that the Center as an architectural *body* and as a technofetish *image*, ultimately as an apparatized assemblage of the cultural ecology commodified and subjectified by the political dispositif of that time in France, is no coincidence. The questioning of the structures of society, technological developments, the development of new media, and how humans related to this new media, all contribute to an affective assemblage that culminated in the Center.

5. Communication and Affectation

In *Complexity and Contradiction in Architecture* and his subsequent elaboration with Denise Scott Brown of architecture as communication, Venturi argues for an architecture that is a communicative medium, and for his theory of the separation of the program-function (the content; the generic loft) and the affect-surface of a building (the presentation; the context-specific signs and decorations). Despite being credited as one of the most visible proponents of postmodernist architecture, Venturi himself insists that he is a modernist architect,[57] and tried to reform the language of modern architecture that has become "a bore," owing to uncritical and literal adherence to polemical slogans, such as "Less is more."

Fritz Neumeyer presents a short assessment of Venturi's theory in relation to Mies van der Rohe's architecture:

> Venturi's theory of complexity and contradiction affirmed the delight in contradiction but decidedly denied — though this has hardly come to attention — incoherence and caprice, as well as picturesqueness and excess. Apprehension of complexity in architecture does not stand in conflict with demands for simplicity. Venturi recognized that the buildings of Mies van der Rohe opened valuable opportunities for the development of architecture but also that their selectivity and formal language represented a limitation.[58]

Venturi cites Paul Rudolph, when arguing that Mies was able to design potent buildings by ignoring certain aspects of what makes a building. However, he contends that if the architect chooses to exclude important considerations, he risks separating architecture from the lived, embodied experience.[59] Here, the argument centers on whether or not architecture is supposed to actually *solve* any problems, and how such problem-solving capacities of architecture is vetted again its mediative and expressive roles. Another question is whether or not an architectural work, a communicative medium throughout history, according to Venturi, is any more or less than what it *is*, because or in

spite of the architect's decision to solve problems and/or to ignore certain aspects of a building.

In McLuhan's construct of hot media, the main proposition is that the construction and meaning of the message are largely dependent on the nature and techniques mandated by the medium that disseminates the message. Furthermore, this separation between the programmatic and the presentational is also closely connected to the distinctive tendencies of new media and the intermodality that is built into the language of encoding and codification. In this sense, the role of architecture include providing the means of mediative presentation in simplicity (as opposed to *simplification*, according to Venturi) accommodates the events and activities "in an inclusive rather than an exclusive kind of architecture." The inclusive architecture problematizes the context and its cultural narratives in such a way that "there is room for the fragment, for contradiction, for improvisation, and for the tensions these produce."[60]

Venturi's notion that the façade mediates between the functional programmatic (recessive) and the formal aesthetic (expressive) further reinforces the view that the message of architecture is what it communicates through inscription and incorporation. This communication includes both the visual reading of the façades as surface, and the embodied experience of the spatial configuration. In this proposition, Venturi's analysis of signs and systems forms the core of "architecture as a communicative medium." It stems from his observation that historically, the façades of buildings convey messages, and they are literally inscribed on buildings, in order to instruct the masses in the views of various authorities.[61]

Venturi's conception, and with Denise Scott Brown's parallel contribution to urbanism, maintains the view that the supposed functional program of a building changes from one period to another, and any architecture that is too specific to the functionality of a given period cannot stand the test of time.[62] Therefore, for Venturi, the situation that *accommodates*, instead of *solving,* the problem of the ever-changing notion of functionality and its mandates lies in the strategic decision to separate the modernist agenda of curtain wall systems even further, to the extent that the resulting aesthetic appeal is the contradiction between the programmatic and the presentational. In this sense, Venturi's construct of recessive functionality and expressive façade is, conceptually speaking, an extension of Mies's plan for spatial discoding, enveloped in the façades and construction techniques as manifestations of time and place, of *context*. Hence, Mies's strategy of the universal lies in the very absence of the context-specific programmatic encoding. However, Venturi presents the context as the constantly changing and fluctuating dynamic of mass media (the software) that have come to

supersede tangible material production (the hardware). Venturi emphasizes two points: "the variety inherent in the ambiguity of visual perception must be acknowledged and exploited," and "the purpose [of buildings] is far more complex and often inherently ambiguous [than any engineering project]."[63]

The foregoing view implies broader ideological ramifications: Venturi's proposition is that the exterior (façade) of a building operates with its own exressive logic of the time (if we suppose for a moment that such exists, or ever has) and such an expression is inherently dependent on the dominant regime (e.g., the façade of La Porta Pia in Rome, or the signs of Las Vegas) that defines the priorities of the time and the place. Venturi also asserts that the functional logic of the programmatic configuration requires new conventions. For Venturi, the new conventions reflect, as the term implicates, both the historical context and the state of mediative technologies. The neutral floor plan for redundancy and flexibility facilitates the conversion and provision of highly appealing and profitable image-making.

If the façades of a building operate within, and express the logic of the time (and if we suppose for a moment that today there exists such a logic of the time), then such an expression is inherently dependent on the dominant regime (economic, political, ideological, cultural, etc.) that defines the priorities of the period. In the meantime, Venturi proposes that today the functional-expressive relationship requires a new convention, called "the loft," a term that often alludes to the generic American industrial buildings of the late nineteenth and early twentieth centuries. For example, the factory buildings of New York's former industrial neighborhoods, with high ceilings and oversized structural bays, were adaptable to various manufacturing scales of the early twentieth century, and were adapted for residential purposes when the industries moved out of the city. In principle, Venturi's understanding of the loft — a generic, industrial open plan, coupled with flamboyant, urban façades — affirms Mies's pursuit of clarity through recessive discoding with expressive images, if not clearly the ideal of the universal space. The concept of the loft affirms Mies's discoded space, but added with the expressive façades. But contemporary expressivity necessarily includes the mediative technology that has accumulated image-making, Venturi contends, since the Mannerist period. In this case, The result is the opposite of Mies's self-effacing, discoded architecture: the expressive façade is a full spectrum of prolix, heavily encoded, fleeting, and contingent signs and symbols that are overlaid on a mute body. Venturi's twenty-first century mannerism comprise a technological apparatus that augments architecture with screens that display today's dominant narratives, which are no longer stereotomic inscriptions of, and radically different a kind from, of

temples, cathedrals, and palaces.

Venturi's notions of complexity and contradiction in architecture also resonates through the recent media theories with regard to their implications for the artificial environment imbedded in virtuality. For example, media theorist Lev Manovich equates Venturi's call for iconography in architecture with "information surface." In his view, today's interactive display technology makes "the information surface a potential space of contestation and dialog, which functions as the material manifestation of the often invisible public sphere."[64] At the same time, Manovich's position is not limited to the screen-based representation of narratives, as he recognizes that spatial articulation is itself a mode of communication. In contrast to the explicit use of architecture as a flat medium, that is, the decorated shed that communicates its purpose through its façades, Manovich contends that "the absence of information from the surface, articulated in the famous 'ornament is crime' slogan of Adolf Loos, itself became a powerful communication technique of modern architecture."[65]

For Venturi, the encoding of buildings with programmatic narratives is not only appropriate and justified in view of more-than-abundant examples of the historical role of architecture in advancing narratives, but also imperative, in order to "engage the electronic digital technology appropriate for the current Information Age, rather than an ornamental industrial *rocaille* deriving from the historical Industrial Age."[66] Arguing for the appropriateness of the age, Venturi argues that there exists no alternative but for buildings to fulfill the mediative role as public presences. The way buildings are encoded, verbally, iconically and/or symbolically, contributes to the making of a place. According to Venturi, the vitality of orthodox modernism had already ceased by the 1930s, and its theories became frozen in architecture.[67] For Venturi, communication holds the key to architecture that is appropriate for the 21st century.

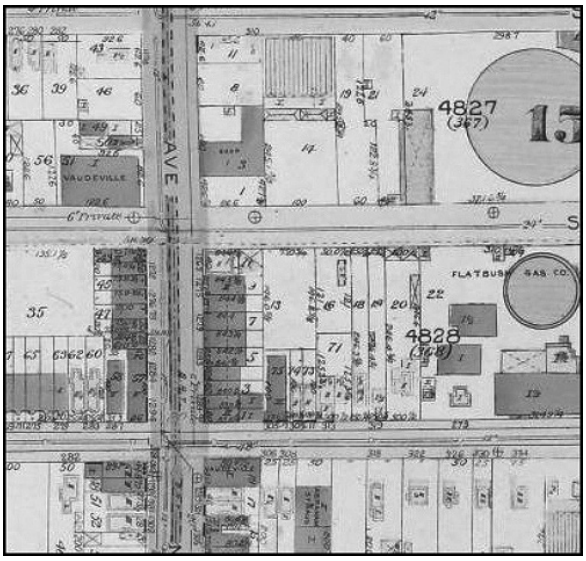
Venturi's mediatized architecture of sign and symbol systems can also be juxtaposed with David Harvey's "flexible accumulation,"[68] and the way postmodernism became accepted and institutionalized in the context of the political and economic transformations marked by the global deflation and energy crisis of 1973-5.[69] Through Harvey's "Grid of Spatial Practices,"[70] we may consider the polarities of mediation by architecture. On the grid, a grid of mediative volatility of spaces so to speak, Harvey puts "Organized spectacles; monumentality & constructed spaces of ritual; symbolic barriers and signals of symbolic capital" at the intersection of "Spaces of Representation" and "Domination and Control of Space". The spaces of representation, borrowed from Henri Lefebvre's *The Production of Space*, consist of "social inventions (codes, signs, and even

material constructs such as symbolic spaces, particular built environments, paintings, museums and the like) that seek to generate new meanings or possibilities for spatial practices."[71] And "The domination of space reflects how individuals or powerful groups dominate the organization and production of space so as to exercise a greater degree of control either over the friction of distance or over the manner in which space is appropriated by themselves or others."[72] Here, the symbolic capital is formed by flexible accumulation that, among its other features, is "characterized by the emergence of entirely new sectors of production, new ways of providing financial services, new markets, and, above all, greatly intensified rates of commercial, technological, and organizational innovation."[73]

Such new sectors and intensification, which contribute to the production of symbolic capital, are tied to the formation of spaces of representation, and the emergent class of spatial domination and control. Several new professional sectors have risen from the implementation of the W3 since Harvey's formulation of flexible accumulation, and intensified the influence of communication, information collection, and distribution, the so-called e-commerce, the social networks, and so forth. In this process, how new signs and symbols are produced, marked-up, and disseminated occupies the central concern. And such production and proliferation systems of new signs and symbols are in turn tied to the domination and control of spaces. If we accept that the flexible accumulation has become a defining marker of today's economic and political dispositifs, it is most vividly exemplified by the mediatic public places and their architecture. New York City's Times Square, or the Ginza District in Tokyo presents a striking example of Venturi's architecture of mediation.

6. Congestion and the Database of Affectation

Following Venturi and Scott Brown, Rem Koolhaas presents the notion of productive congestion in contemporary metropolises, in *Delirious New York*,[74] first published in 1978, one year after the completion of the Pompidou Center. The architectural dispositifs of the metropolis reveal the increasing programmatic demands and complexities that disassemble the singularity of a given architectural program and the social fabric. Koolhaas examines New York City, with its frenetic pace of urban development, which was codified by the Zoning Resolution of 1916 (hereafter, "the Resolution").[75] [Figure 30] The Resolution evolved to establish the standardizing grid, the sky exposure plan regulating tall buildings, and the clearing of land for Central Park. Koolhaas hypothesize that the quintessential characteristic of Manhattan's architecture and urbanism is the congestion in which various disconnected elements converge in an ever-changing, programmatic flux that is standardized yet variable.



[Figure 29]
NYC zoning map, ca. 1916

The city was encoded with standardized 200 foot by 600 (or 400) foot blocks, with a series of specifications categorizing the urban programs, horizontally, at ground level, and vertically, regulating building height and bulk. The horizontal programming is organized in R (residential), C (commercial) and M (manufacturing) zones, each assigned a number designating the permitted building height. The codification of the city came to embody the controlled chaos, congestion, and density that enabled the vertical and horizontal programmatic and ritualistic diversification, exemplified by the Downtown Athletic Club,[76] for example. The physical configuration of the Club is consistent with a typical Wall Street office building, in terms of its compliance with the zoning ordinance established fifteen years before the building's construction. But the programmatic content is organized as "a machine to generate and *intensify* desirable form of human intercourse."[77]

The programmatic diversification of the Downtown Athletic Club, driven by the articulation of urban culture and economic opportunities, offers a snapshot of the city in a vertical organization that is made possible not only by a cultural ecology rooted in the encounter between the Dutch and the Manahatta tribe, but also in the codification of the city, based on the assumptions overlaying the machinic assemblage latent in industrial capitalism. In this, economic rationality is conjoined with the cultural tendencies of the city that have come to depend on the performative composition of each block at ground level, and extended vertically. Therefore, "Each 'plan' is an abstract composition of activities that describes, on each of the synthetic floors, a different 'performance' that is only a fragment of the larger spectacle of the Metropolis."[78]

In the mechanized and apparatized architecture of the metropolis, the programmatic urban disposition runs vertical, and is no longer a coherent linear horizontal movement of old cities. This is

quite unlike, even diametrically opposed to, the totalizing architectural dispositifs of the ideal society the modernists envisioned, where, despite the tall buildings, the urban ideals were always viewed as a plan from above, as a map that would delineate new territories. And in the case of New York City, this codification of densification produces both horizontal and vertical serialization.

The constituents of composition and performance that are largely dependent on the characteristic of the content and its presentation come to life in the metropolis. The issue in question is not necessarily the mechanical assemblage of situations and objects, but the invention of conventions and apparatuses that are directed at a parametricized view of the performance and the recombinant logic of interchangeable types. Thus, Koolhaas's proposition is that the performative, rather than prescriptive, composition inscribes and incorporates disparate fragments, drawn and transposed from various sources, internal and external to its programmatic genre and venue. Koolhaas presents the composition and performance of architecture that lay beyond the intent of the architect or the composer. In other words, the production of architecture becomes an apparatized enterprise, the central task of which is to categorize, sample, edit, and re-constitute, by means of, and aided by the dispositif and its codifying logic.

With regard to Koolhaas's view of the programmatic architectural *mutt* of the metropolis, the most pronounced tendency of mass media today is exemplified by the encoding of the apparatus, without which the content cannot exist, and the presentation is impossible. As discussed in § 5, the origin of multimodal media as a genre may be traced to the ideas and techniques developed by Pierre Schaffer, and by those of the Philips NatLab, such as Dick Raaijmakers and Tom Dissevelt. The genre is also representative of the mediatized cultural ecology in which the construct of architecture (or music) is a wider reflection of the environment in which it was born. In turn, the environment is transformed by the aggregate of codifying apparatuses. Similarly, Koolhaas's architectural strategies identify not only the stockpiling of the fast, the cheap, and the out-of-control,[79] but also how architecture emerges from such an environment by actively immersing itself in it, by confronting it in generative terms, rather than trying to distance itself from the messiness of Junkspace in disinterested singularity. In this sense, Koolhaas's notion of productive congestion essentially indicates contextual database, a new form of architectural encoding that helps to produce the new semantics and syntax of architectural configuration.

Regarding the legacy of modernist architecture, almost eighty years after Le Corbusier's *machine for living in*, Koolhaas claims that Junkspace "is what remains after modernization has run

its course, or, more precisely, what coagulates while modernization is in progress, its fallout."[80] The demand for the satisfaction of sensuous desires determines modernism's course, and the apparatized architectural environment, with its ever-increasing array of machines, is needed to support it: "Air-conditioning has launched the endless building. If architecture separates buildings, air-conditioning unites them. Air-conditioning has dictated mutant regimes of organization and coexistence that leave architecture behind."[81] The Junkspace has become the context. So what is there left to relate to?

The constant disassembly and reassembly, decoding and recoding, perpetuate themselves, and generate an infinite stream of (re)iterations, in which accumulation dominates composition. Koolhaas would put it as, "More and more, more is more."[82] The endless production of Junkspace and the *stuff* that disappears into it as though it were a black hole signifies the terminus of a modernist architecture at the end of its old dispositifs, and at the beginning of new ones. We may no longer consider the evolution of architecture outside the snippets of cartoon frames, and without saying Yes! to all the junk,[83] to surface affectation that belies content, the Wagnerian phantasmagoria reincarnate. Likewise, returning to Beaudrillard's view of the Pompidou Center, "everywhere in the 'civilized' world the buildup of stockpiles of objects entails the complementary process of human stockpiling: lines, waiting, bottlenecks, concentrations, camps."[84] In Junkspace, the "supermarketing" of everything, and the enthusiastic "Yes!" offers no other recourse but complete co-optation, the autophagic culture of material production, accumulation, consumption, and discard. One may wonder why Koolhaas would present his projects in a volume with proportions resembling those of a medieval codex, under the totalizing industrial categorization of *S, M, L, XL*, in which the general taxonomy of the projects follows the industrial standardization of size. According to Koolhaas, "Bigness" consists of the breaks: "all these breaks – with scale, with architectural composition, with tradition, with transparency, with ethics – imply the final, most radical break: Bigness is no longer part of any urban tissue."[85] Hence, "Its subtext is *fuck* context."[86]

Two of the key elements in the architecture of affectation as a material manifestation of digitally encoded media systems are the selection process inherent in a database, and the generation of programmatic compositions from such a database. As Koolhaas discusses with regard to the Downtown Athletic Club, the programmatic composition of architecture conflates functionalities and aesthetic features, both of which are jointly directed at the user (or *consumer*) experience. In OMA's 1982 competition entry for the Parc La Villette in Paris, the programmatic composition derived from a montage of the park experience becomes clear. In the competition brief, OMA explicitly states, "The proposed project is not for a definitive park, but for a method that — combining programmatic

instability with architectural specificity — will *eventually* generate a park"[87] and that "Programmatic layering upon vacant terrain to encourage dynamic coexistence of activities and to generate through their interference, unprecedented events; or how to design a social condenser based on horizontal congestion."[88] By horizontally striating the programmatic environment, the design attempts to provide an immersive environment where the official programmatic brief is seen as a database, rather than a diagram or a narrative.

As mentioned previously, the Resolution is, in effect, the formation of a database of city-block uses under the simple headings of R, C, and M zones. By introducing separate categories for the ground floor use, and the building heights and bulk, the ordinance created a three-dimensional database space-event, in which countless variations of buildings and rooms may be plugged in: "It [The grid] proposes the conquest of each block by a single structure. … each floor, the culture of congestion will arrange new and exhilarating human activities in unprecedented combinations."[89] Using the plug-in analogy, the Resolution codified the architectural and urban development that is an abstract machinic assemblage, a radical departure from the traditional form of reiterating the inherited hierarchical and relational patterns. Seen as a database, the city's planning and formation become more abstract, flexible, and combinatorially diverse than the traditional model, as, by implementing the performative codification, rather than relying on cultural and economic affinities of inherited, biologically mediated cities, the potentialities of productive forces and slippages increase. In this way, the Manhattan grid established by the Resolution also presents an "unstable and unforeseeable combination of superimposed and simultaneous activities whose configuration is fundamentally beyond the control of architect or planner"[90] OMA's design for Parc La Villette also demonstrates such a database view, which increases programmatic density and combinatorial complexity, in contrast to the winning scheme by Bernard Tschumi, which was more textual and syntactic, rather than machinic.

One of OMA's recent projects addresses the programmatic surfaces charged with experience: the Prada Epicenter in New York, 2001. In this project, the surface program attempts to turn a retail store into a cultural institution, similar to a museum or a gallery, in order to establish a micro-space by imaging through surface. For the Prada store, OMA's own website introduction states that the store's design strategy was "to counteract and destabilize any received notion of what Prada is, does, or will become."[91] The store was conceived to project constant renewal, and therefore the ostensible dynamism of one of the Italian fashion scions. Paradoxically, the store's design resorted to subscribing to the image of the cultural (or cultic) highbrow of a museum, ironically at a property

that used to house the Guggenheim SoHo, now defunct. It is ironic that a museum-like fashion store would replace a fashion-store-like museum that went out of business.

In OMA's Prada New York, the strategy of counteracting and destabilizing the perception of the brand reverses the programmatic contamination that turns museums into shopping centers, and a shopping center into a museum, simultaneously. Thus, OMA asks, "What if the shopping *experience* were not one of impoverishment, but of enrichment?"[92] as museums used to be. Here, the keyword is *experience*, in contrast to simply *shopping*. What matters is providing an enriching experience, and by so doing, culturally elevating the concept of the consumer. Thus, this design strategy makes shopping culturally respectable, legitimizing it as a virtue, and endowing it with valuable cultural capital. Although deriding the degeneration of cultural institutions and the loss of enriching variety, in order to re-reify and re-diversify such cultural institutions, the Prada store is a carefully articulated and calibrated apparatus that is designed to intensify the image schema[93] that the dominant dispositif seeks to appeal to, the consumer economy and its marketing strategies. In addition, if we include J. J. Gibson's ecological theory of perception,[94] what we see are simply the surfaces and the mediated affordances, beneath which nothing is perceptible.

According to the theories of Gibson, Lakoff, and Johnson, the perception of surface and its cognitive place in the image schema of the environment would also determine our experience in relation to the established patterns of previous experience, the encultured worldview. In this sense, OMA's Prada New York consists of surfaces that are calibrated for the sense of "glamor,"[95] and of participating in it, in order to "enrich and transcend the shopping experience".[96] The store's surfaces deploy "experimental technology, intriguing materials, and innovative display methods,"[97] to achieve the glamor as a form of affective worldmaking. By enveloping the space and its occupants (the consumers, in this case) in alluring and glamorous surfaces, OMA's Prada store becomes a highly affective space, the form of which indeed follows emotion. And emotion sells.[98]

The power of the database resides in the way it greatly facilitates the combinatorial formation and calibration of cognitive objects and experience, in the way the digital composition and encoding capabilities are measured in terms of both the scope of the database, and their capacity to isolate, extract, and recombine the elements of the database. In such technologically augmented composition and encoding, the intermodality of the database is crucial for creating what is perceived as something *new*. In the same way that phantasmagoria demonstrates a surface unity that conceals the substantive process, programmatic surfaces are designed to be affective, and serve as the primary

means of articulating spatial experience for profit by affectation. The powerful combinatorial logic of the database of surfaces – regardless of whether they are images projected on screens or built into buildings – helps to insinuate the impression of the perpetually new, without actually producing anything new. Our cognition of space now depends on such interfaces of affective surfaces.

Notes

1 Siegfried Gideon, *Space Time and Architecture: The Growth of a New Tradition* (Cambridge: Harvard University Press, 1977): 208

2 Blaser, 2002: 17

3 Deleuze and Guattari, 1984: 7-19 (11)

4 Fritz Neumeyer, *The Artless Word: Mies van der Rohe on the Building Art*, (Cambridge: The MIT Press, 1991): 301

5 Cage, 1971: 40.

6 Jean-Louis Cohen. *Ludwig Mies van der Rohe* (Basel: Birkhäuser, 2011): 64 (Emphasis added)

7 Neumeyer, 1991: 213-214

8 Ibid. 362 n58.

9 Peter Eisenman, "misMISes READING: does not mean A THING" in *Mies Reconsidered: His Career, Legacy, and Disciples* (New York, Rizzoli, 1986): 86-98

10 . Le Corbusier, *Toward an Architecture*, trans. John Goodman (London: Francis Lincoln, 2008): 151

11 . For example, Richard Sennett points out this tendency in his discussion of William Harvey in the 17th century. See Richard Sennett, "Chapter 8: Moving Bodies," *Flesh and Stone: The Body and the City in Western Civilization* (New York: W. W. Norton & Co., 2012. Kindle edition): Loc. 3847-4277.

12 Mies declares, "The dwelling of our time does not yet exist." See Fritz Neumeyer, 1991: 310.

13 http://www.mak.at/jart/prj3/mak/main.jart?article_id=1339957568483&content-id=1343388632778&rel=en&reserve-mode=active (Accessed 13 Oct. 2012)

14 Beatriz Colomina, "The Media House" Assemblage, no. 27, Tulane Papers: The Politics of Contemporary Architectural Discourse (Aug. 1995): 55-66. (58)

15 The full German title is "Bauentwurfslehre: Grundlagen Normen und Vorschriften über Anlage, Bau, Gestaltung, Raumbedarf, Raumbeziehungen, Maße für Gebäude, Räume, Einrichtungen und Geräte mit dem Menschen als Maß und Ziel" Ullstein/Bertelsmann, 1936.

16 Le Corbusier, 2008: 151

17 See: Frederick Winslow Taylor, *The Principles of Scientific Management* (Public Domain Book, 2011)

18 Le Corbusier, 2008: 259.

19 Foucault, 1995: 195

20 In this passage, I do not allude to the Panopticon, but respond to Le Corbusier's conception of the UH as a series of drawers or plug-in modules that nonetheless relates to the cellularization, and thereby the disempowerment generated by the Panopticon.

21 Quoted in Stuart Elden, "Governmentality, Calculation, Territory," Environment and Planning D: Society and Space 25 (2007): 562-580 (566).

22 Roger Caillois, "Mimicry and Legendary Psychasthenia" trans. John Shepley, October 31 (Winter, 1984): 16-32 (18)

23 Here I have adopted the period given in Dennis Crompton, ed. *A Guide to Archigram 1961-1974* (New York: Princeton Architectural Press, 2012)

24 Simon Sadler, *Archigram: Architecture Without Architecture* (Massachusetts: MIT Press, 2005): 11.

25 Peter Cook, *Archigram* (New York: Princeton Architectural Press, 1999): 34.

26 Quoted in Reyner Banham, *Theory and Design in the First Machine Age* (London: The Architectural Press, 1960): 128.

27 For example, the DARPA is an R&D branch of the US Department of Defense. According to the official website, http://www.darpa.mil/our_work/ "The Defense Advanced Research Projects Agency (DARPA) was established in 1958 to prevent strategic surprise from negatively impacting U.S. national security and create strategic surprise for U.S. adversaries by maintaining the technological superiority of the U.S. military." (Accessed 19 Feb. 2013)

28 Sadler 2005: 7.

29 Ibid.

30 Dennis Crompton, ed. *A Guide to Archigram 1961-1974* (New York: Princeton Architectural Press, 2012): 66.

31 Ibid. 68.

32 Harvey, 1989: 141-142.

33 Crompton, 2012: 92.

34 Sennett, 2012: Loc. 3847-4277.

35 Benjamin, 1999: 242.

36 David Greene, "Gardner's Notebook" in Crompton, 2012: 307.

37 Ulrich Beck, "The Reinvention of Politics: Towards a Theory of Reflexive Modernization," in Ulrich Beck, Anthony Giddens, and Scott Lash, *Reflexive Modernization* (London: Policy Press, 1994): 2.

38 Ibid.

39 Theodor Adorno, *Aesthetic Theory*, eds. Gretel Adorno and Rolf Tiedemann, trans. Robert Hullot-Kentor (Minneapolis: University of Minnesota Press, 1997): 16-17.

40 The Internet's predecessor, ARPANET, was implemented in Archigram's period by the US Department of Defense's Advanced Research Projects Agency, hence the acronym, ARPA.

41 Ibid. 17.

42 One key proposition that shed doubt on this optimism, already in 1972, would be the computer simulation and publication, *Limits to Growth* by Medows, et al.

43 Crompton, 2012: 105.

44 Venturi and Scott Brown, 2004: 16-17.

45 Kenneth Frampton, *Modern Architecture: A Critical History* (London: Thames & Hudson, 1992. 3rd ed.): 285.

46 Harvey, 1989: 141-172

47 Rutsky, 1999: 107.

48 Deyan Sudjic, *The Architecture of Richard Rogers* (London: Abrams, 1995): 56.

49 Guy Debord, 2009: Loc. 412.

50 According to Rolf Tiedeman, the editor of Adorno's *Aesthetic Theory*, in which the notion of regression in art is formulated, the manuscript was by and large completed during the first half of the 1960s, contemporaneously with Archigram and the Situationist International.

51 Guy Debord, 2009: Loc. 412. (Emphasis in original.)

52 Ibid. Loc. 426.

53 Ibid. Loc. 500-513. (Emphasis in original.)

54 Brian Massumi, *Parables of the Virtual: Movement, Affect, Sensation* (Durham: Duke University Press, 2002): 71-72.

55 Jean Baudrillard, *Simulacra and Simulation*, trans. Sheila Faria Glaser (Ann Arbor: University of Michigan Press, 1995): 61-74; see also "The Beaubourg Effect: Implosion and Deterrence," October 20 (Spring, 1982): 3-13.

56 Ibid. 65.

57 Personal communication.

58 Neumeyer, 1991:xv

59 Venturi, 1966: 16-17.

60 Venturi, 1966: 17.

61 Venturi and Scott Brown, *Architecture as Signs and Systems for a Mannerist Time* (Cambridge: Harvard University Press, 2004): 24-34.

62 Baumeister and Lee, 2007: 270-273.

63 Venturi, 1966: 19.

64 Lev Manovich, *Urban Screens: Discovering the Potential of Outdoor Screens for Urban*

Society, First Monday, Issue 4, 2006 (Online journal: frodo.lib.uic.edu/ojsjournals/index.php/fm/rt/printerFriendly/1545/1460 (Accessed 3/2/2012)

65 Ibid.

66 Venturi, 2004: 17. (Emphasis in original.)

67 Venturi cites Henry Russell Hitchcock's 1936 statement: "What we know as modern architecture has reached completion and is applicable as an academic discipline." (Venturi and Brown, 2004: 17).

68 Harvey, 1989: 141-172.

69 David Harvey, "Flexible Accumulation Through Urbanization: Reflections on Post-Modernism in the American City," Perspecta 26, Theater, Theatricality, and Architecture (1990): 251-272 (252-253)

70 Ibid. 257

71 Ibid.

72 Ibid. 259

73 Harvey, 1989: 147

74 Rem Koolhaas, Delirious New York: A Retroactive Manifesto for Manhattan (New York: Monacelli Press, 1994)

75 See: http://www.nyc.gov/html/dcp/html/zone/zonehis.shtml#history (Accessed Jan. 2012)

76 Koolhaas, 1994: 152-160

77 Ibid. 152 (Emphasis added)

78 Ibid. 158

79 *Fast, Cheap, and Out of Control,* dir. Errol Morris, Sony Classics, 1997

80 Rem Koolhaas, 2002: 175.

81 Ibid. 177

82 Koolhaas, 2002: 176.

83 For example, Bjarke Ingels, *Yes Is More: An Archicomic on Architectural Evolution* (Evergreen, 2009)

84 Baudrillard, 1982: 8.

85 Rem Koolhaas, *S, M, L, XL* (New York: Monacelli Press, 1997): 502.

86 Ibid.

87 "Parc De La Villette, France, Paris, 1982." http://www.oma.eu/projects/1982/parc-de-la-villette (Assessed 4 Oct 2012; emphasis added)

88 Rem Koolhaas, ed. *Content* (Köln: Taschen, 2004): 73

89 Koolhaas, 1994: 125.

90 Rem Koolhaas, "Life in the Metropolis or the Culture of Congestion." in K. Michael Hays, ed. *Architecture Theory since 1968* (Cambridge: MIT Press, 1998): 328.

91 http://oma.eu/projects/2001/prada-new-york (Accessed 4 Oct 2012)

92 Ibid. (Emphasis added)

93 According to George Lakoff and Mark Johnson image schemas are "basic structures of sensorimotor experience by which we encounter a world that we can understand and act within." See Mark Johnson, "Chapter 7: The Corporeal Roots of Symbolic Meaning" *The Meaning of the Body: Aesthetics of Human Understanding* (Chicago: University of Chicago Press, 2007): 134-153. Also see Francisco J. Varela, Evan Thompson and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge: MIT Press, 1991). Further references may include: Mark Johnson, *The Body in the Mind Understanding* (Chicago: University of Chicago Press, 1987); George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind* (Chicago: University of Chicago Press, 1987); George Lakoff and Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and Its Challenges to Western Thought* (New York: Basic Books, 1999)

94 James Jerome Gibson, *The Ecological Approach to Visual Perception* (New York: Houghton-Mifflin Co., 1979)

95 Nigel Thrift, "Understanding the Material Practices of Glamour" in Melissa Gregg and Gregory J. Seigworth, *The Affect Theory Reader* (Durham: Duke University Press, 2010): 289-308.

96 http://oma.eu/projects/2001/prada-new-york

97 Ibid.

98 For a summary of how the view of embodied experience is applicable to marketing, see Gerald Zaltman, "Rethinking Market Research: Putting People Back In," Journal of Marketing Research 34, no. 4 (Nov., 1997): 424-437.

§ 7 Poiêsis of Imbedded Virtuality

1. Augmented Architecture: Inscription and Incorporation

The notion of embodied virtuality through apparatized image making has become increasingly complex and nuanced, with various levels of operative logic, and with the encoding schemes of various classes of devices. Even though we may recognize Mark Weiser's proposition that hardware will vary in scale, scope, and portability, ranging from tab-sized devices that one can wear on a lapel, to units as large as a blackboard or a television set. The software side of the story is anything but simple. Not only we have competing operating systems, but also the variety of task-specific software programs does not indicate that an overarching codification per se is taking place.

For architecture, we recognize digital systems, hardware-software combinations that are specifically designed to replicate and remediate the haptic-mnemonic analog processes. Various CAD, CAM and BIM programs reinforce the existing dispositifs of architectural design and production by making documentation and control of the project hyper-efficient, by automating time-consuming graphics, tracking the inventory of parts for various trades, and detecting potential conflicts between assembly and schedule. Such programs establish the intimate connection between the design process and its quantitative double, the database as exemplified by the ubiquitous spreadsheet files.

Another kind of augmentation requires more commitment to the encoding and inscription processes on the part of architects or designers. This category of encoding and algorithms is designed to address the specific, individual logic of organizing and handling information at the level of the specific programming language, such as Processing.[1] At the same time, these applications help to reach into complex geometries and systems that involve multiple curvatures and topologies. This category of software programs also includes those that were originally intended for other disciplines, such as filmmaking, scientific data visualization, and weather forecast. In short, we may divide the current, predominant uses of software programs in architecture into two major categories: a manually driven *tool* that enhances and extends the efficiency of physical labor (the technomic); the other, a formally generative practice that emphasizes specific algorithms written to produce specific affective presentation (the codeomorphic).

AutoCAD, probably the most widely used application software of the first of the foregoing categories, by and large replaced the historical and cultural conventions of hand-drafting on vellum. In line with the view that new technologies necessarily incorporate the existing cultural vocabulary,

AutoCAD is rooted in incorporating and extending the work of hand-drafting on vellum. It enables the clear, point-to-point construction of lines and geometrical shapes, facilitates layers for organization modeled after semi-transparent tracing paper overlays, and replicates the filing cabinet. It makes the numerical representation of a given building design easy and efficient, and automates many elements of manual drafting. For example, AutoCAD and other similar programs automate the often tedious, repetitious chores of architectural drawing, such as cross-hatching, stippling, pochés, and other repeating graphic patterns and elements, thereby incorporating the kind of functional feature that helps to save a great deal of the time architects previously spent crafting architectural drawings. In addition, the program's remediation of the conventions makes it easy to learn, and greatly facilitates the process of editing, revising, and updating architectural drawings on demand, layer by layer, according to the changes necessitated by project design and execution.

The programs such as AutoCAD augment design production in three crucial ways. The first is by enhancing economic efficiency, by introducing algorithmic tools for standardization, automation, and numerical quantification, making the architectural documentation process easier, faster, and cheaper. The second is through the library of digitally filed elements that may be inserted into the drawings on demand. These elements may be crucial construction details, or mundane such as furniture. By compiling the prescriptive pattern book, the architect is now able to automate potentially time-consuming elements of the documentation across various projects. The third crucial category of augmentation pertains to the way the architectural drawings and documents are stored, revised, and distributed. By taking advantage of the networked working environment for a given project, the work of various members of the project team may now be coordinated and consolidated in a single file. By organizing different aspects of the documentation work, by trades, for example, the precision of project coordination has greatly increased, and the potential for conflict, minimized.

AutoCAD finally brought the work of architects and engineers into the industrial dispositif that demanded efficiency, automation, identical copies, standardization, repeatability, and so forth. Thereby it made the architect's design work economically viable, and even profitable. In this sense, AutoCAD represents the first commercially popular software program that bridged the architectural profession's transition from the analog age to the digital one. However, the wide adoption of AutoCAD as the de facto standard of digital architectural drawings resulted in a profound reinforcement, and at times, ossification, of the instrumental and managerial aspect of architects' work — the reinforcement of the general industrial production regime, aimed at maximizing production efficiency and profit — and the mode of communication and dissemination of the project

content.

In significant contrast to what the theory of hot and cool media might indicate, AutoCAD managed to replace and maximize much of the manual work of producing architectural drawings and accompanying documents, how they are reviewed, managed and revised, and how they are stored, distributed, and communicated to the various trades involved in a given project. In other words, AutoCAD actually ended up greatly empowering the historical conventions of file drawer types of project design and delivery. On the other hand, initially AutoCAD drawing files were not compatible with other applications. Therefore, at its inception, AutoCAD represented a simple transfer of the manual, analog work of preparing drawings to computers, without much possibility of transcoding or intermodal operations. Eventually, AutoCAD's file formats (.dwg and .dxf) became the de facto standards of the trade, making its drawing files interchangeable across different applications such as Adobe Illustrator primarily intended for graphic design.

Finally, completing the codification process, the US National CAD Standard was established.[2] According to the official website, "The United States National CAD Standard® (NCS) consists of The American Institute of Architect's CAD Layer Guidelines, the Construction Specification Institute's Uniform Drawing System (Modules 1-8), and the Plotting Guideline."[3] What should be noted here is that the NCS identifies three parts of architectural documentation as primary: layers, specifications, and plotting. The website also claims that "Use of the NCS will result in reduced costs for developing and maintaining office standards and the transfer of building design data from design to facility management."[4] Therefore, the financial motivation underlying the CAD systems is made explicit, and the crucial elements that affect the economy of architectural documentation consist of the foregoing three parts. First, the NCS established the convention of organizing the layers, essentially, the drawing file cabinet. By conventionalizing the digital filing cabinet, AEC (architecture, engineering, and construction) professionals could now share the consistent organization of the project files. Second, the process of writing specifications was standardized in template form, so that:

> Adoption of the NCS by the building design and construction industry is voluntary. However, several government agencies have adopted the standard, while dozens of public and private organizations are in various stages of implementation for the design, construction and operation of building facilities.[5]

Subsequently, a variety of other software programs aimed at design and engineering professionals appeared. The new applications offered not only the conventional drafting functions

and automated operations, but also the capacity for creating and working with objects in three-dimensions, followed by various algorithms describing and controlling the surroundings of the objects, such as backgrounds, lighting, material appearance, textures, and so on. More notably, these applications also started to offer various algorithms for the manipulation of complex geometries derived by stretching, compressing, twisting, shearing, and so on, in various combinations, and with various parameters. The digital algorithmic modeling and visualization expand and reinforces representation and image-making, of what we conventionally regard as realistic, or creating strategic surface effects that help create a sense of realism, affective and visceral.

It is significant that architects started using applications such as Maya, specifically intended for designing three-dimensional graphics, effects, and animation, capable of articulating and rendering surface definition of dynamic objects. Maya, designed by Alias Wavefront and marketed for the time-based 3D effects in movies, and first launched in 1998, was dedicated to the creation of three-dimensional visual effects for cinematic content production. When deployed by architects, it brings the affective qualities to the forefront of architectural representation. In 2005 it was acquired by Autodesk, the producer of AutoCAD, acquired Alias Wavefront, thereby legitimizing the role of affective design process in the AEC industry.[6]

In this discussion, the categories, or various classes of digital algorithms, specifically indicate the conflation of the apparatus and the specific encoding that makes the given device operable in the disciplinary context, which is itself a part of a broader cultural assemblage. The digital in architecture, as a part of the technological ecology, may be related to the cultural assemblage in extra-somatic formation, as proposed by Leslie A. White and Lewis R. Binford,[7] and suggests that they are entirely mute and without purpose, unless they are encoded and ultimately codified in such a way that binds together the constituent singularities. Appearing in roughly the same period as McLuhan's theory of media as an extension of human cognitive function, White's and Binford's formulations of archaeological anthropology, in 1959 and 1962, respectively, propose that cultural assemblages consist of subsystems. They essentially consists of extra-somatic means and processes of adapting, modifying, and implementing human organizations to the environment in physical, social, and ideological ways. Therefore, according to White and Binford, the cultural assemblage may be further articulated in terms of extra-somatic (that is, extra-haptic and extra-mnemonic) augmentation and extension.

According to the extra-somatic view of cultural formation, although human beings and all

other species innately rely on their direct physical capacities in order to deal with the environment and survive, human beings possess the capacity for making and developing tools that augment and extend their anatomy and physical capabilities. These include both simple tools, such as axes or hammers, and those that constitute the more complex classifications of technics.[8] According to Binford, the first class of augmentation and extension is the technomic, which is manifest in objects and artifacts "having their primary functional context in coping directly with the physical environment."[9] The technomic consists of the extra-somatic that augments the physical body in relation to the necessary task and the given environment. In direct response to environmental variables, the biological entity extracts and consumes natural resources in order to maintain organic stability and survive. Next, the socio-technic phase comprises the tools and artifacts that mobilize and organize individuals into cohesive relations and groups. The socio-technic class of the extra-somatic maintains social relations and groups, and further manipulates and develops technology. Finally, Binford proposes the ideo-technic class of extension. The extra-somatic objects of the ideo-technic class "signify and symbolize the ideological rationalizations for the social system and further provide the symbolic milieu in which individuals are enculturated in the social system."[10] To summarize, the archaeologist's discussion of extra-somatic technics consists of tools that: augment the limbs to extend the body's capability; maintain social groups's labor efficiently and collectively; and further reinforce the society's dominant ideology by producing symbolic and signifying artifacts.

Today's digital technology and the W3 codification appear to have entered the ideo-technic stage of its development. At first, digital technology was modeled after the human neural network, and conceived to make the process of human nervous system more efficient, consistent, and precise. Norbert Wiener, one of the founders of the first order cybernetics, describes the coneption of the intelligent machine:

> … it became cler to us that the ultra-rapid computing machine, depending as it does on consecutive switching devices, must represent almost an ideal problem arising in the nervous system. The all-or-none charater of discharge of the neurons is precisely analogous to the single choice made in determining a digit on a binary scale, which more than one of us contemplated as the most satisfactory basis of computing machine design.[11]

Thus modeled after the biological neural network, the intelligent machine was also initiated for the military use. In that context of the military potential, it assumes the control of the apparatuses that were deployed in order to overcome and extend the capacities of human body. Originating from the

concept of on-off neural function, the invention of the desktop computer, and especially since the codification of the Internet in the form of the W3 (World Wide Web), digital technology has come to eventually create the ideo-technic class of extra-somatic. It has emerged as the dominant apparatus both for the technological and the social aspects, and more importantly for the cultural formation.

The socio-technic stage of digital technology spans the implementation of the W3 standard in 1991, to the ideo-technic, with the emergence of its most distinctive multimodal device, the iPhone, in 2005. The technomic stage of embodied virtuality may be said to start with the implementation of the Internet, originally designed to address the seemingly urgent need to decentralize the information and communications systems for the purpose of the military strategy. In 1991, through the codification of the Internet for the masses, the digital apparatuses became socio-technic, in a substantially more influential manner than that of the historical extra-somatics, such as photography, phonography, cinematography, the use of telephones and telegrams, television and videography. This is attributable not only to the breach by splitting the categories of hardware and software of the medium-specific bounds that depended on specific, single-purpose machines, but also to the codification of the mode of participation and proliferation, in a way similar to the means by which transnational or interstate commerce is codified and regulated.

Just as we have witnessed ideo-technic formation through successive extra-somatic technologies throughout history, in one manner or another, each instance of technology has influenced the activities and content of a given cultural milieu. Each successive apparatus has also affected how the members of the social systems came to subscribe to the enculturation process the technomic facilitated. During the periods of the socio- and ideo-technic, the digital extra-somatics became rapidly deployed and imbedded in all aspects of society. They prompted the explosive virtualization of information, commerce, socialization, and ultimately, control. The extra-somaticization by means of digital algorithmic codification has reached a point where the pervasive and ubiquitous deployment of algorithmic apparatuses necessarily facilitates the emergence of the ideo-technic class of professionals and experts, significantly influencing the disciplinary discourse. In architecture, the first disruptive step was the departure from the production of drawings and notations[12] departed the sensuous mode, and now rely on the digital virtualization of drawings and notations that is specifically extra-cognitive. In architectural applications, we have also seen the development of digital extra-somatics from the technomic (drawings and notations as instruments), to the socio-technic (the ones that facilitate the collaborative conception and composition), and finally, to the ideo-technic, where the digital apparatus is directed to create and implement sensory

and cognitive, if not necessarily ideological, affectation that is designed to empower the status of the work and its author within the enculturating systems. As a consequence, the very use of a particular apparatus became a style that identifies the given author. Frank O. Gehry and Zaha Hadid come to mind. The former is the godfather of architectural *things* made of shiny skins covering an incoherent cadaver. The latter is the godmother of the *parametric style* that is *autopoietic.* If Hadid's architecture is *generated* autopoietically, why does anyone need her as the architect? The novelty and reputation of their work as being avant-garde in the digital age is defined by how quickly, efficiently and precisely they can conceive, compose, and execute their whims as affective images that are highly stylized.

Extra-somatic augmentation applies not only to the physical body, but also to the cognitive dimensions. Whether it is the computer screen or the building façade, the digital apparatus and its codification are calibrated to promote and propagate the ideo-technic implementation of codeomorphism beatified by the ubiquity of the digital dispositifs and their infrastructure,[13] as in the city of *Brazil*, in which ducts are replaced with data cables. Basic statistics show that in the European Union, the US, and Japan, the digital technomic infrastructure is so ubiquitous[14] as to be comparable to public utilities, such as power and water supply infrastructures (which are now managed, controlled, and distributed by the digital infrastructure). The current state approaches Weiser's view that virtuality should be so pervasive that its presence and use could be no longer consciously perceived.

Binford indicates that the pervasive penetration of technology, initially motivated by the technomic, compels the formation of the socio-technic and the ideo-technic. The Internet, with its W3 codification and codeomorphic content production, exchange, and distribution, is now the backbone of cultural formation and commercial transactions, and is also the medium that helps fabricate cultural elements that reinforce and ritualize social and political interactions. The digital infrastructure created a powerful space that is augmented by, and imbedded in virtual content and presentation.

Regarding the ideo-technic aspect of augmented space, the monitoring capacity of the spectacle and supposed immediacy of television are now folded into, and acutely intensified by digital intermodality. Television broadcasting is radically different from cinema, with regard to temporality and immediacy.[15] Whereas in cinema the experience is always understood as temporally removed from the scenes, television presents it in supposed real-time – especially in so-called *live* broadcasting – and blurs the specific temporality of the broadcast content. In addition, the separation

of contextual information from the event has made news broadcasting especially potent in the perception of reality. Since the 1930s, television broadcasting has formed an important part of the spatial apparatization process in both the publicly dispersed and domestically-focused domains. It has commanded the central spot, where the sense of time and place is formed at the domestic, subjective level, and it also becomes emblematic of that from which an apparatized home is derived.

Digitally augmented space is both equipped with mono-functional, technomic appliances and apparatized as a network of technological dependencies that are made possible by the codeomorphic formation of systems and territories. The codeomorphic formation may appropriate and incorporate traditional, culturally inherited forms and media, the socio- and the ideo-technic that is presented through the appearance of surface unity of interfaces. In this way, ideo-technically augmented space, with its virtual dimension, also compels the changes in the way the content of the space is formulated. As the relationship between humans and non-human interactions has been elaborated since the appearance of cybernetics in the post-World War II years[16] and William Gibson's novel of cyberspace,[17] the view of ecology, beyond the awareness of environment, consists of not only humans and architectural assemblages, but also of non-human entities and constructs that increasingly command a more prominent position. The technological collapsing between vision and hearing, and between speech and writing emcompasses the cyberspace of disembodied experience. This posthuman construct of ecology has contributed to the revision of what an environment is, and what the human role within it may entail.

2. Environmental Dispositifs

The concept of the ecological dispositif — the assemblage of the so-called sustainable design of artificial environments, in relation to the extraction and management of natural resources appropriated by the abstract rationality of market capitalism, diverging from the social and cultural milieu of the 1960s, and from the new economic landscape that emerged in 1970s, marked first by the wave of energy crisis — deserves special attention in regard to the changing views of architecture, and its position. The man-made entities, including those of architecture, are increasingly incorporated into, and regarded in terms of the ecology of ideological, political, and economic dispositifs. Two publications, *Natural Capitalism: The Next Industrial Revolution*,[18] and *Cradle to Cradle: Remaking the Way We Make Things*,[19] underscore such a shift of the human-centric perspective of ecology and environment. The former book argues that ecological innovations attuned in market capitalism provide the potential for more prosperity at a lower cost, by maximizing the efficiency

of the relationship between natural resources and artificial technics, thereby making human world sustainable. The latter argues that the industrial production and the use of products, including architecture, should form a closed-loop process, so that it consists of efficient *services* of production, use, and retrieval in which nothing is discarded and wasted.

In view of these two strands of arguments, architecture is increasingly expected to fulfill the roles of both a mediative apparatus for human dwelling, and maximizing the material and technical efficiency of market capitalism. Here the alignment with market capitalism is crucial for both *Natural Capitalism* and *Cradle to Cradle* because the former asserts that the onltology of sustainable development depends on the hegemonic market capitalism, and the latter essentially provides a view to maintain the consumption-based development by identifying the problem of waste. This situation pertains directly to the disciplinary substance of architectural practice that is composed of both its own autonomous aspects and the external imperatives. In this dualistic position of the profession, so-called "sustainable design" emerges as an agent that can satisfy both conditions. Sustainable design is supposed to situate architecture in the stream of ecological consciousness, from which a new logic of materials and technics is derived. Such an ecologically conscious design practice is also situated in terms of economic viability. It should conserve materials and energy, and help to alleviate adverse effects on the natural environment. But such practice is viable only if it generates profit.

In the context of potentially antagonistic interests and ideals, the questions and discussions surrounding sustainability came to the fore as a crucial part of architectural conception and composition. For example, in the book, *Green Architecture Now!*, from the Taschen publishing conglomerate's long-running *Architecture Now!* series, the editor states in the opening line of the introduction, "Green is the name of the game, no doubt about it."[20] The book is a collection of the so-called "green buildings," both literal and figurative, by sixty architects, including some prominent ones practicing today, representing most parts of the globe. In addition to the apparently diverse range of exemplary architects, the book also makes clear where and how to find the architects, by prominently displaying their addresses, telephone numbers, and email addresses. Although it is important to provide exposure to ecologically-minded works of architecture, it is also important to note how the notion of sustainability has been appropriated for conveniently abstract affectation, rather than engaging substantive debates that demonstrate what makes each respective design sustianbale. The book is only one of the countless publications that promote the consideration of ecological principles as a mandate of sustainable practice.

One of the projects featured in *Green Architecture Now!* succinctly illustrates the difficulties associated with the question of sustainability. The project is *Helios House*, a BP gas station in Los Angeles, designed by the Boston firm, Office dA.[21] The name of the project, "Helios," the god of the sun, and the sunflower, BP's logo, display a highly affective conjunction. This particular project raises compelling questions with regard to substantive disciplinary agendas and their affectations. First, notwithstanding the architects' intent and sensibility with regard to ecological concerns, does a gas station, as a building type, qualify as an example of sustainable design when the substance it deals with is at the heart of the concerns over environmental destruction? Second, located in Los Angeles, the city in which the project is located, in what manner does the project even begin to address the city's ecological culture (or the lack thereof) in a way that situates in context the practice of sustainable design? Next, with regard to its materiality, how does this building, clad in steel sheets, a material of rather high embodied energy,[22] in the absence of an explanation of the recycled content, qualify as an example of sustainable design practice? Finally, the building's cladding is said to have been *mass-customized* using the efficient computer numerical control manufacturing process. Besides minimizing costly manual labor, and potential, albeit marginal, energy savings in fabrication, how does this relate to sustainable deign? The bathroom in the gas station is said to have been finished in locally sourced wood and recycled glass tiles. Do the locally sourced materials and the recycled content somehow qualify the design as sustainable? To what extend is the wood can be characterized as *local*? And what is the proportion of the recycled content in the glass? Is the glass also *local*? Or is it-transported long distance? In that case, the evergy savingis gained from recycling will be defeated by the energy consumption during transportation. It is ironic that BP, the benefactor behind this ecologically conscious gas station, essentially an oxymoron, in an utterly unsustainable city, is found responsible for one of the most catastrophic environmental violations in US history. *Helios* provides neither the critique, nor the reformative perspective, and nor the kind of technological innovation *Natural Capitalism* calls for. Rather, it represents the kind of cooptation the architecral profession has increasingly chosen. Furthermore, a book such as *Green Architecture Now!* exemplifies the mediatization that captured sustainable design, and appropriated the rising demand of ecological sensitivity for positive image-making.

In this scheme, the building envelope doubles as a performative organ and as an affective apparatus. As an organ, it both helps to regulate climatic, thermal fluctuations, and projects the building's empathetic qualities, not only within the Vitruvian scheme involving *venustas*, but also as a biologically referenced technomic entity. Therefore, the development of architectural envelopes has

comprised both the climatic appropriateness and the affective qualities of a given building's design. The architectural envelope is expected both to shelter and preserve the interior conditions, and simultaneously to express an aesthetic construct.

The foundation of architecture consists of two archetypal views of providing shelter. The first one is the cave, where shelter is found in a cavity formed by erosion, excavation, the subtractive process, be it natural or man-made. Here, the enclosure is defined by the hollowed-out space in a solid. The second is the so-called "primitive" hut. It is an assembly that consists of a distinctive frame structure, reminiscent of vertical tree trunks and the canopy of leaves. [23] These two archetypes provide the principles of enclosure: a solid, load-bearing construction, analogous to cutting a cavity in a solid material — subtractive stereotomy — and the frame structure, analogous to constructing a skeleton of vertical and horizontal members to which covering elements are added, in order to provide a protected interior — additive tectonics.

The nineteenth century witnessed the theoretical proposition that conceived of architecture in the duality of structure and ornament. This proposition remained as the dominant view of architecture until the twentieth century, when the changing ideological tides compelled the rethinking of the profession. As a result, to return to the essential ontological state of architecture, architecture condemned and purged the superfluous surface presentation.[24] In this historic formulation of architecture's disposition, Karl Bötticher and Gottfried Semper provided tectonics as a form of aesthetics. For Bötticher, a student of Schinkel, architectonics is interplay of social and cultural, and material and physical forces. In that sense, there exists no *ideal per se* as understood in the classical view of the discipline, which pervaded much of European architecture since the Renaissance.[25] The amalgamation of these forces determined the purpose of architecture. For Bötticher, the balance of such forces is embodied in the ontological structural order (*Werkform* or *Kernform*), and expressed by the representational, spatial enclosure (*Kunstform*).[26] The Gothic structure embodied the ontology of architecture, whereas the façades applied to the structure functioned as an artistic and representational medium. Bötticher categorized architecture as a conjunction of the structurally essential content, and the programmatic organization and external affectation that reflect the cultural context. On the one hand, the pursuit of unifying Kernform and Kunstform (or of purging Kunstform) in twentieth century modernist architecture had much to do with the view that, as a textual entity, architecture was corrupted by the inconsistent and often decadent expression of the surface effects – in a similar vein to Hanslick's criticism of Wagner's music – disconnected from its essence. On the other hand, the bipartite view of architecture in Kernform and Kunstform

also provides the conceptual clarity that helped the understanding and analysis of architectural composition: architecture could be articulated as a state where the rational structure could converge with culturally pertinent narratives in a variety of conjunctions.

After Bötticher, Gottfried Semper, a student of Gauss, suggests "Four Categories of Raw Materials,"[27] and the kind of construction that is inherent in each one, categorized as the four classes of "textiles, ceramics, tectonics (carpentry) and stereotomy (masonry)."[28] For example, he describes textiles combined with plasticity (ceramics) and lattices (tubular construction and woven structure) as providing shape.[29] Semper sees textile weaving as a more sophisticated form of encoding multiple levels of the architectural envelope. Here, weaving provides the simultaneous layering of narrative, structural, material, and environmental aspects, which serve the purpose of architectural enclosure as mediation that is indivisible from its composition. For Semper, weaving also includes the cultural dimensions of construction, and thus architecture exemplifies the communal, ritualistic, and cultural processes that cannot exist in a certain ideal model.[30] Weaving suggests the potential for environmental envelope analogous to clothing (*Bekleidung*). Weaving, not to mention the ancient Greek technê that specifically indicates the woodwork of *woven* houses (Chapter 1), exemplifies the kind of architecture that is materially and technically empathetic to the environment.

According to both Bötticher and Semper, the building envelope, the Kunstform, is not only affective, but also mimetic and empathetic, in contrast to the cerebral nature of the structure. Thus, this conceptual construct expresses the conflation, the hybridity of the rational and the affective. In this regard, within the context of modernist architecture, from its beginning to the present day, Louis Sullivan's dictum has persistently defined modern architectural thinking: "form ever follows function."[31] It represents the union of form and function, where the functional criteria, a kind of *causa efficiens*, are determinative. Therefore, when "form ever follows function," a building's formal expression should reflect the immanent logic of its assemblage, in both abstract (design) and substantive (material and structural) terms, as "Where function does not change form does not change."[32] The objective is to achieve a union, or at least an agreement, between the interior spatiality and the exterior enclosure. In other words, the façades represent *venustas* that also reflects the building's *utilitas* and *firmitas*.

For the environmental performance of façades, the primary rationale of the modernist architectural envelopes has been directed predominantly at establishing an impervious membrane, in order to clearly separate the building's interior from the climate outside. This stems from

the modernist view that the unpredictable, and therefore undesirable, conditions of the natural environment must be kept outside, and that the interior must be kept constant and ventilated, in order to provide comfort and health; in short, the machine for living, the kind of an assemblage that is devoid of developing affinities. Furthermore, we may consider ancient Greek architecture within a long historical attempt to standardize, and thereby strive to perfect the assemblages.[33] Le Corbusier argued that the basic human disposition calls for adopting the performance of cars and airplanes.[34] The basis for this claim is the human's physical and emotional needs, which are shared as a general condition by everyone; in other words, the innate, perhaps even autonomic, desire for technology. In contrast to the hermetic bubble of the modernist envelope, which also forms a part of an ideological environment, the principles behind sustainable design suggest the kind of architectural envelope that is breathable and permeable. These requirements and propositions of sustainability contrast with Le Corbusier's vision of the outside as volatile and unclean, and that we should seal ourselves from it within the building, where everything is clean and conditioned for human needs and comfort.[35] How, then, do we reconcile the functional envelope with the mimetic-indexical membrane?

Irrespective of period and kind, architectural envelopes have had the common primary objective of protecting and keeping the external climatic forces from penetrating the building's interior space. At the same time, the building envelope façade also provides the medium for outward visual expression that is connected to a structural and programmatic logic — again, Böttticher's Kunstform vs. Kernform. Insofar as such Kunstform is concerned, the modernist curtain-wall envelope is a specifically engineered construction that is optimized and calibrated for visual affectation, climatic performance, and highly efficient assembly. Under the modernist model, the architectural envelope is essentially a mechanical apparatus in itself, which may be deployed to regulate and control exchanges between the interior and exterior environments, as well as for signifying the functional logic of the building.

A building may be mechanically sealed from the exterior if needed (e.g. windows, doors, vents). By means of thermal breaks and insulating layers, the thermal exchanges that take place between the interior and the exterior may be minimized. The modernist architectural envelope is regarded as a partition-barrier, rather than as having the solidity and thickness that the conception of a wall may imply. Yet, through the use of large glass panes, which became available in 1957, with the development of Pilkington's modern float glass production, the architectural envelope may be made visually transparent, letting in unobstructed natural light and outside views. In this sense, the modernist model of the curtain wall as architectural envelope, freed from bearing a structural load,

is both mechanical and optical, and provides a plane of formal rationality. The mechanical-optical device of the curtain-wall envelope separates the interior from the exterior, while simultaneously connecting them, in terms of the visual, if not entirely haptic, experience. As a model of a rationalized device, the curtain-wall envelope allows a very limited form of exposure to the surrounding environment.

Another crucial conceptual development in the modernist model is that the envelope is no longer intrinsic to the logic of the structure, but made to exhibit its own autonomous assembly and aesthetics. Even though the modernist architectural envelope may inform and allude to certain features and characteristics of the building's structure and programmatic organization, it no longer directly reflects them. Therefore, the role played by the architectural envelope in the appearance and expression of a building is independent of the structural composition of the architectural design, or to put it differently, of the ontological continuity in which materials and techniques are supposed to *unconceal* certain truths about the physical aspects of the assemblage. A case in point is Le Corbusier's Villa Stein, which is, by and large, a concrete structure with brick infill that is plastered over to appear smooth. In a similar manner, Le Corbusier also decided to *paint* in silver the Philips Pavilion, largely a concrete construction, in order to make it appear as if it were a metallic building. Here, the *appearance* of modern construction supersedes the building's essential substance. At that point, the ethical dimension, the tectonic *honesty* the modern architecture was supposed to embody, simply became affective verbiage.

The modernist envelope preforms the role of a crucial apparatus that is at once exclusionary-machinic and connective-optical, driven to optimize transparency and minimize physical presence, while serving as a part of various social, cultural, and political dispositifs. Satisfying these conditions is regarded as the essential design objective for the modern architectural envelope. In this view, the history of modern architecture is, as it happens, a history of shedding material heft, by making the physical construction lighter, stronger, more insulating, and more transparent. Although the combination of reduced materiality and optimized performance is by and large consistent with the key features of formal rationality — that one should produce the maximum function-performance assemblies with the minimum expenditure of materials and labor — the design of the architectural envelope also presents the building's environmental and aesthetic positions in the most direct manner: how to respond to climatic variations, and how to expresse form as an aesthetic configuration.

As an extension of the modernist curtain wall, Robert Venturi proposes a conceptual construct in which the architectural envelope provides an agent that is expected to contain and transmit certain content by means of flat, thin *readable* façades. As discussed previously, Venturi argues that throughout the history of architecture, façades have been contrived to communicate ideas and stories by applying signs and symbols – such as stone carvings, mosaics, and frescos – to them.[36] This development indicates a conceptual articulation of architectural façades in which the substantive separation of medium and content takes place. Here, the medium is the actual physical and material presence of the façades themselves, the architecture, while the content consists of visual effects, messages, signs, and other elements that are applied to the façades. The Venturian model of façades is designed for visual effects that communicate fantasy and desire, as illustrated in Las Vegas. They are conceived as media that contain information or stories about what the building does, means, or simply appears to be.

With regard to architectural envelopes pertaining to the environmental dispositif, the virtual provides a highly effective means of testing and simulating designs, whereas a biological understanding provides the basis on which the encoding for sustainability, for doing more with less, may be modeled. With the rapid development of these two areas of engineering, shorter product life cycles, shorter development times, and higher resource efficiency are just a few key terms that appear in the context of sustainable design that is focused on algorithmic and biological models.

Within the discussion of environmental performance, the primary purpose of the algorithmic is to measure, compare, and simulate the environmental conditions to which a work of architecture will be subject, and which codify many of the important variables of architecture. Software programs with a wide range of possibilities for simulation and analysis help optimize the performance of buildings. They simulate, visualize, and analyze a building's design-performance relationship in the framework of the architectural environment, as a part of the design process. For example, the software programs for energy analysis can help quantify the energy consumption of various cycles of a building along with the resulting CO_2 emissions. They can also measure and simulate the degree of thermal insulation, and heating and cooling loads. As a part of such simulated design environment, the processes mimetic of the biological and the organic characterize the use of material, functional, and structural configurations based on the solutions found in nature and by virtually replicate them. The features that distinguish biological thinking in architecture may be characterized as being divided into three main categories: material creativity, optimized production, and adaptability. As a general condition, the work of nature is held to be *beautiful* because each entity, whether living and

non-living, is formed in an appropriate place and composed of appropriate materials, according to the immutable laws of nature.

The rationale behind the bio-mimetic architecture, that is, the combination of electronic-mechanical and the biological, assumes the appropriateness of the autotelic and autopoietic view of nature and natural beings. It regards biological entities as appropriate templates that may be employed to encode architecture. Nature provides a key to architectural materials that are beautiful, durable, strong, highly efficient, and environmentally appropriate. They provide a wide range of applications in a flexible and adaptable way. Thus, considering these two threads in combination, the algorithmic-biomimetic anticipate the architectural envelope of codeomorphic and biomorphic sophistication, and, above all, a coherent ideological construct that addresses the material singularities and the codification of their relations.

The biomimetic model of architecture is based on the processes of natural selection, evolution, adaptation, and optimization. It attempts to abstract the principles that lie behind an organism's capacity to sustain itself by adapting and evolving its physiological composition in relation to its habitat, over time. This model proposes that architectural configurations are increasingly analogous to biological organs, for example skins that respond to environmental conditions, and function in specific ways, in order to achieve thermal stasis. For example, the architectural façade may be conceived as an assembly of dermal layers, each corresponding to a particular performance criterion, and optimized through biologically modeled virtual processes.

The biomimetic model advocates that the emergent process of biological ontologies and phyla has persisted and evolved over millions of years, and provides a highly refined template for the design and engineering of the built environment. The primary strategy of this model is to devise a certain degree of sensitivity and automaticity in the operation of the architectural envelope, with regard to the various parameters that contribute to the relationship between a building and its environment, both natural and artificial. At the same time, the notion of emergent and generative biological systems, often encoded in virtual models and simulations, references the kind of self-stabilizing, self-regulating, and codeomorphic configurations of architectural construct that is supposed to embody notions of material and structural efficiency, formal expressiveness, and environmental adaptability in one seamless package.

The three models of architectural configuration presented so far may be summarized as: the modernist envelope that informs the logic of the building's program, spatial division and structure

(i.e. "Form follows function."); the Venturian façades that signify, communicate, and affect (i.e. "Form accommodates function."[37]); the algorithmic, emergent and/or generative systems that respond and adapt to environmental conditions (i.e. "Form *is* function.").

3. Surface

The three models of architectural envelope elaborated in the previous section may be hypothesized in terms of surface. The first relevant conception in this discussion is what the analytic philosopher Avrum Stroll describes as the "Leonardo surface,"[38] named after Leonardo da Vinci's description of surface in his notebook. Stroll posits that a surface is not a material element, but an abstraction. It both separates and binds two distinct entities and states, such as air and water. The surface is the plane binding and separating air and water. Surface as an abstraction is also an interface. It is a shared ontological plane with no "divisible bulk," which differentiates between two given substances.[39] At the same time, the surface expresses the manner in which the substances fluctuate, relative to certain influences or forces; for example, the way the surface of a lake may ripple in the wind.

Architectural assemblage functions as a *surface-objectile*, to form a new conjunction, that indicates an entity for both the interior and the exterior of a building, an agent that demarcates a division, but at the same time inseparably binds the building to the external environment. Additionally, similar to the example of a lake surface exposed to wind, the architectural assemblage is a dynamic and indexical condition in which the interaction of the building and its environment is manifest in the resolution of the surface. We may conceive of an architectural envelope that embodies the dynamic exchanges that occur between the interior and the exterior, beyond materiality and form.

Based on the Leonardo surface, we may examine the environmental and the tectonic dimensions of architecture and its composition as mediation. One historical, mediative function of architecture involves the kind of building, and the kind of occupants that reside therein, by inscribing the façade. With images and patterns, the façades express, or at least embellishes, the underlying programs and encoding of a given building, its occupants, and its context, the extra-somatic enculturation. The environmental dimension is also apparent in this mediative function in terms of the materiality and construction methods that are characterized by the available resources and their extraction and consumption. The dynamic conditions that surround a building are mediated by the envelope. Conceived as a surface, the architectural envelope both reflects the external variations

through its materiality and use of local resources, and projects its internal conditions, through the use of images and patterns. We may conceive of an envelope that promotes a certain kind of equilibrium through mediation and interface.

In parallel to Stroll's conception of the Leonardo surface, the psychologist James Jerome Gibson notes that we perceive objects directly (or simply *pick them up*) by perceiving the surface.[40] Although the appearance of a given object's surface does not always coincide with the actuality of the object — for example, foreshortening or oblique views may radically alter the appearance of the actual geometry — Gibson posits that what we see when we encounter an object is the surface of an actual material. We visually perceive an object directly through a surface that does not necessarily indicate depth. Despite the fact that Gibson's view has been disputed as empirically unprovable, various surface conditions do contribute crucially to our understanding of the world in an ecological manner.[41] We can formulate a position, one that conceives of the architectural envelope as surface.

With Stroll's Leonardo surface, in combination with Gibson's theory of surface and visual perception, we can hypothesize the architectural envelope as:

(1) Immaterial, or a minimally material presence that belongs to both the interior and the exterior;

(2) An interface that mediates between the interior and the exterior, reflecting the relations and flows between the two;

(3) A membrane that at once separates and connects content, presentation, and presence, ephemeral and permanent, dynamic and static;

(4) A primary means of relating and connecting to the natural environment, and of situating the artificial within the network of relations called "environment" and "ecology."

Gilles Deleuze's fold and coil[42] also provide a useful construct that describes the relation between the interior and the exterior, describes the façade as an active agent. Not unlike Stroll's Leonardo surface, the fold offers a connection and an interface between matter and affectation. The fold articulates the connective tissue of two states — interior-exterior, object-environment, media-substance, subject-object, and so on — as a process of folding and unfolding. Thus conceived, the architectural envelope is simultaneously connecting and separating, permeable and impervious, constant and fluctuating. It designates a mediative mechanism of dialectical polarities that contours

the interstices. An architectural envelope conceived as a surface-fold may be viewed as a condition where two states co-exist in a smooth and continuous relation, where the conjunction of the two is indivisible. What is crucial is the physical manifestation of the architectural envelope as surface, working from the conception of materiality in an ecological sense.

We may speculate what such an ecology may mean in relation to the architectural envelope as surface. When we extrapolate from Gibson's theory, an ecology depends on how we visually perceive the composition of the world around us. This world is composed of surfaces that divide and join the media and the substances, surfaces that allow us to situate ourselves through invariants and affordances. We conceive of an ecology that consists of invariants that constantly identify our place in the physical environment. At the same time, we conceive of an ecology that also consists of affordances that allow us to identify and connect to the sensuousness that is the body and its assemblage.

Drawing from discussions of the model of biomimetics or biomimicry, it is appropriate to further consider the notion of mimesis in architecture. One of the problems inherent in the current use of the term "mimetic" is that it often refers to literally mimicking, imitating, and emulating certain natural organisms. Often expressed in instrumental and functional terms, this position — that we can imitate and replicate biological organisms, in order to satisfy our need, comfort, pleasure, and desire — distorts the fundamental issues of architecture as mediation, both sensory and environmental.

By focusing on what a biological entity does, or how it functions, the prevailing form of the biomimetic ignores what biological performance may come to be, in relation to our needs, and how. This approach focuses on solving or ameliorating our problems, and on providing synaptic excesses by developing the so-called "systems of interactivity." Ultimately, the lack of critical and renovating discourse results in focusing only on how pragmatic such biomimetic apparatuses might be in terms of satisfying our need for the form that follows affective emotion. In order to sustain our environment, or more accurately, our way of life, we must stuff our Junkspace with more junk that supposedly makes our lives easier, cooler, more fun, more productive, more prosperous, without the nagging, guilty feeling that ultimately, we may be committing suicide in the process.

The prevailing biomimetic view appears to argue for producing additional tools and implements, without attempting to tackle the fundamental cause of the unsustainable conditions inherent in our current patterns of technological development, transportation, energy, and economy.

An apt analogy may be that, instead of confronting the underlying causes of a symptom, the failing organs of the body are replaced, and the stagnating body is propped up by mechanical devices that perform each discrete function. To address the issue of sustainability, what matters is our relationship to natural organisms and environments, not the usefulness, performance, or affectations of such contrived mechanical organs, installed in order to satisfy our excessive needs, and to reinforce our dysfunctional "lifestyle." As Slavoj Žižek states, "The ultimate perverse vision" of the human body is that of a collection of organs as in those unique utopian moments of hard-core pornography," in which the body is "thus transformed into a multitude of 'organs without a body,' machines of *jouissance*…"[43]

It is one thing to learn from what a natural organism does to adapt and survive in an environment, but it is something entirely different to recognize it in terms of how and whether such replication is pertinent to our atrophied relationship to nature. In a sense, the foundation of biomimetics should be to interrogate how we and our built environment relate to other biological entities and their Umwelten. However, the common motivation behind biomimetics appears to be an extension of yet another version of the dominant natural history that consists of the man-nature duality. Therefore, it focuses on how to fix our problems, and on how to make our lives more convenient and entertaining, by fetishizing the organs deprived of a body, turned to serve the machines of jouissance, the dispositifs of market capitalism. This kind of biomimetics, stemming from our loss of sensuous affinity to nature, only reinforces the exchange value of how biological organisms can serve us, to maintain and continue our patterns of excess and waste. In such a conception, the so-called biomimetic design results in nothing but a teleological exercise that ultimately does not contribute to a sustainable condition. Such models may embody social, cultural, and/or institutional values and conventions, which suggests that mimesis as imitation means to repeat and replicate the original model. However, this view of mimesis presents a rather mechanical construct that is based on a mold or a template, without considering that the perspectival, creative, and/or generative in the process of imitating and empathizing. The recipient's corruption or contamination of the initial model produces something other than the model. In the classical sense of the term,[44] mimesis is equated with copying, imitation as representing and reproducing in the virtual. But the notion of poiêsis is the mimesis as a form of heuristic as well as empathetic capacity innate in human beings.

Walter Benjamin's view of mimesis[45] identifies a process that generates empathetic similarity in sensuous (e.g. onomatopoeia) and non-sensuous (e.g. writing) categories. According to Benjamin,

mimesis consists of both recognizing and producing similarities, and is a capacity for connecting with the surrounding environment and entities. One discovers and registers similarities first without any particular motive or purpose, without subjective reasoning, *felt* through body in a sensuous way. The subject's body produces the similarity. Sensuous similarity is the kind of mimetic capacity that may be directly imitated, unmediated, by the human body. Non-sensuous similarity is the mediated kind, or indicates no material physical entity that is to be related to, but by speculation through signification. This type of non-sensuous similarity is produced by an agency such as language, painting, music, dance, architecture, and so forth. Thus, non-sensuous similarity may be produced without the actual object from which mimesis arises.

In Benjamin's conception of mimesis, and by extension Adorno's, we may also speak of the environmental affinity and empathy as opposed to the kind of relations by subjugation and exploitation, and thereby "dissolve the contours of the subject/object dichotomy into reciprocity and the possibility of reconciliation."[46] Therefore, in Benjamin's conception of mimesis, we recognize the surface condition that is not mediated by signification, but indexical commitment in which the relations of poiêsis are registered materially. Given the sensuous nature of mimetic empathy, for Benjamin, the mechanical reproducibility and the ensuing loss of aura demonstrate a declining mimetic capacity, and the loss of affinity.

In the context of the discussion at hand, Derrida, reading Aristotle's *Poetics*, sees the work of mimesis as forming an intrinsic relationship with the way nature (*physis*) unfolds. One recognizes affinities in mimesis as a part of, and immersed in such unfolding of nature. Mimesis as the participation in, relating to, and empathizing with similarities is inherent in physis. and "*physis* includes its own exteriorization and its *double*. In this sense, then, *mimesis* is a 'natural' movement."[47] Mimesis is also the formation of metaphors, relating to Benjamin's non-sensuous similarity that is exemplified by language, which helps one recognize affinity to and empathize with others.

Analyzing Kant's distinction between nature and art, Derrida explains:

> Mimesis here is not the representation of one thing by another, the relation of resemblance or of identification between two beings, the reproduction of a product of nature by a product of art. … The artist does not imitate things in nature, or, if you will, in natura naturata but the acts of natura naturans, the operations of physis."[48]

Besides the reference to Aristotle's view of self-emergent nature, and to Kant's distinction between liberal or *free* arts (*die freie Kunst;* freedom, no exchange value) and applied or *paid* arts (*die Lohnkunst*;

necessity, exchanged for money), the key question is what it means to participate in the operations of nature's unfolding, which is specific to human subject and its Umwelt.

According to George Lakoff and Mark Johnson, mimesis stems from the duality of the human mind, which consists of consciousness and reasoning, the Subject, and the mostly unconscious disposition, the Self.[49] The Subject is "the locus of reason," and "metaphorically has an existence independent of the body."[50] It is the kind of state that is composed of universal experiences, and that "*exists only in the present*."[51] In the meantime, the Self may be multiple, the Selves, and "includes the body, social roles, past states, and actions in the world."[52] In this bifurcated scheme of the Subject-Self, the mimetic capacity is a projective modulation between the Subject and the Self, which is the basis for empathy. In order to empathize, we project ourselves on someone and/or something, and imagine them in our body as our own. We also would want someone to imagine or feel us in his or her body. Lakoff and Johnson claim that this imaginative projection and development of empathy is a form of "transcendence,"[53] in the sense that one ventures beyond his own Subject-Self construct. Yet such transcendence depends on the corporeal capacity, in other words, the imaginative projection of transcendence is autonomic in the way our mind depends on the body. The mimetic capacity for the formation of empathy is drawn from the exchanges between the Subject and what it perceives in the other, the alterity.

The various notions of mimesis present in common that mimesis effectively consists of empathetic exchanges and developing affinities. Mimesis does not provide the dichotomy between the actual and the virtual may be clearly delineated. Instead, mimesis is an indexical mediation that is a porous and permeable membrane, through which the subject and the object exchange shared (congenital) values and empathetic affinities. The membrane of mimesis can be understood as, not unlike the Leonardo surface, the index of subject-object intermodality, transcendence, or participation in the operations of physis. Thus, being mimetic provides architecture with a specific and concise view of architectural envelope as the mediator between the unfolding of nature, subject, and self, and the intermodality between subjectivity and the contingencies of its Umwelt. Along this line of thinking, it appears that ecologically speaking, mimesis and empathy do not pertain to imitating and replicating what biological organisms in an objective Umgehbung, the kind of environment that is simply *out there* and meaningless other than what is there for us to take. Neither are they about imitating the ways of biological organisms in an attempt to cover up the problems that are symptomatic of our conflict with physis. Instead, they are about how we situate ourselves, and establish an intimate relationship with the biological, natural environments. Uexküll demonstrates

that we cannot communicate with the other species's Umwelten. Nonetheless, our species' Umwelt overlaps with the others' and is intimately attuned to them. Disregarding this attunement, biomimetics is nothing but perpetual reiteration and versioning of copies' copies, which reinforce the human-centric, totalizing view of the world that exploits and destroys everything in its path.

Historically, architecture has practiced the aesthetic, affective composition of geometrical harmony, proportion, symmetry, and order, with respect to the prevailing dispositifs. Composition based on aesthetic conventions has been applied and practiced for millennia, in order to impart properties such as beauty, grandeur, and power to everyday objects, buildings, and cities; in other words, in built, artificial ecologies. In the historical context, the primary component of architectural design has been the architectural envelope and surface. The building interfaces with, and and engages with nature by developing the ways to apapt to it. The architectural envelope is also an agent through which we situate and establish our relationship, mimicking and enacting our presence in relation to nature. But how important are aesthetic qualities in the design of architectural envelopes, with regard to the issues of sustainability? For that matter, can we really discuss aesthetics in terms of sustainability? In this case, is the aesthetics of architecture a network of relations for finding the appropriate position for our built environment within the unfolding of nature?

Persistent demands for efficient and flexible architectural envelopes will continue to promote the use of new materials and technologies, in order to minimize consumption and conserve energy; in other words, to do more with less. In this process, efforts to compress increased performance of architectural envelopes into the limited and increasingly diminishing material presence will continue. At the same time, architectural envelopes will continue to be expected to express the affective intent of buildings and their programs. Central to the design of the architectural envelope is the question: How do we conceive of the envelope in relation to both our necessity for interiority and the ecologies, both natural and artificial, in which such interiority is situated?

In contrast to the conception of the architectural envelope as primarily a barrier, the concept presented here is based on the perspective that the architectural envelope is inherently mediative between the interior and the exterior. Not only is it indexical and tectonic of the building's form and content, but also dynamic and fluid in the fluctuating relationship between the building and its environment. However, the prevailing notion of responsive, adaptive, or mimetic architectural design appears to technologize and thereby commodify the natural world. The architectural envelope understood as a form of mimesis should be more reflexive and diagrammatic, than representational

and imitating.

If one empathizes with the natural Umwelten and organisms encompasses in them without being exclusively formal, it should be possible to find unique approaches that address the problems that architects currently face in the consideration of conceiving and composing architecture for the sustainable human Umwelt. The current approach, centered on emulating natural conditions in terms of contrived affectation, the *stuff* that accumulates in Junkspace, seems inadequate in regard to what architecture is supposed to mediate and to embody. The concept of the architectural envelope as surface, both abstract and physical, provides that it acts both as an agent of equilibrium between the interior and the exterior, and as an apparatus which mediates empathetic relations.

We encounter and approach a building in relation to its façades, the surfaces of architecture. In everyday life, we are surrounded by architectural surfaces that function in seemingly contradictory manners. They compel us to pay attention and admire their visual qualities, yet at other times, they manufacture abstract exchange values that are manipulative. In this relationship, we may criticize the apparent superficialization of the architectural envelope purely in terms of the visual and the optical, in other words, for the purpose of producing a (green) skin without the corresponding, substantive body, which is both hypocritical and mendacious. We may also criticize the fetishization of "interactivity" of architectural envelopes. In such instances, the architectural envelopes and surfaces serve as an extension of an architecture that is driven by the novelty of effects that soon exhaust their purpose. Both of these tendencies in the design of architectural envelopes and surfaces miss the essential point. The superficialization of architectural envelopes fulfills only the function of a mantle that simply covers up an increasingly excessive, obese body, while the mechanization of buildings and architectural envelopes fetishizes "the desubjectivized multitude of partial objects"[54] in the form of misdirected mimesis and interactivity.

If we return to the construct of surface as mediation between matter and affectation, the architectural envelope may be seen as the unfolding of various relations and forces between the building and its environment. This unfolding provides not only the aesthetic qualities of the building, but also an approach to the environmental conditions that ultimately dictate the terms of human Umwelt. This vantage point suggests the kinds of tapestries that display narrative, structural, material, and environmental expressions, while serving the purpose of architectural enclosure as the surface of mediation, indivisible in their composition. From this conceptual standpoint, buildings are enveloped in surfaces — not by skins — that should register and serve as an interface between

interior and exterior.

The foregoing conception of surface presents the structure, the envelope, and the façades of architecture as interwoven, and thus, the role of the architectural composition is no longer arbitrary in an authorial, personal, and fetishizing way. With this conception, the weaving and pleating of the envelope occur in the context of technical and technological empathy, through which the environmental variables of a given site are addressed, and the aesthetic qualities are imbedded. From this point of view, the performance and expression of the surface are not simply affective. The design of the surface is blended with the very essence of architecture in a way that radically departs from the position wherein the architectural envelope is seen as an additive drapery.

The ecologically conscious conception and composition of architecture empathetic to various Umwelten indicate the surface that helps to weave, pleat, and mediate the variables between the interior and the exterior, artificial and natural Umwelten. By imbedding today's algorithmic technology and its capacity for ecological mimesis, and with new construction techniques and materials, the construct of "surface" becomes synonymous with the architectural conception and composition itself. Seen in this light, the surface does both provide the agent of affectation, and embody the quintessential qualities of human space that resides in intimate relation to nature.

Notes

1 http://processing.org/about/

2 www.nationalcadstandard.org (Accessed 28 Dec. 2012)

3 http://www.nationalcadstandard.org/ncs5/about.php (Accessed 3 Mar. 2013)

4 Ibid.

5 Ibid.

6 We can also see this as a part of Autodesk's strategic decision to expand its market share into movie and animation industry. Whatever Autodesk's motivation may have been, Autodesk's acquisition of Alias Wavefront helped to incorporate affective form making in everyday design practice.

7 Leslie A. White, *The Evolution of Culture: The Development of Civilization to the Fall of Rome* (Walnut Creek: Left Coast Press, 2007): 8-15; and Lewis R. Binford, "Archaeology as Anthropology, American Antiquity," Vol. 28, No. 2 (Oct., 1962): 217-225

8 Here Binford makes it explicit that we should not equate material culture with technology. (Binford, 1962: 218)

9 Binford, 1962: 219

10 Ibid. 219-220.

11 Norbert Wiener, *Cybernetics, or Control and Communication in the Animal and the Machine* (New Orleans: Quid Pro Books, 2013, Kindle edition): Loc. 502-507

12 I characterized the hand-production of drawings and notations as haptic, as we can recognize a direct correlation between the use of the hand and its outcome, even though we rely on an extra-somatic tool, a crayon, a pencil, a pen, etc. In other words, if one presses the pencil firmly or lightly, the marks will be darker or lighter, accordingly, whereas pressing a key on a computer keyboard firmly or lightly will not change the resulting gradation of the printout, because the gradation of the digital output derives from an algorithm, not in direct response to the finger pressure. It is possible to emulate haptic responses electronically and algorithmically when one uses an electronic tablet and stylus, or a pressure-sensitive electronic keyboard, but this cannot be construed as directly haptic because of the algorithmic and interface agency.

13 Certainly this discussion ignores the severe technological disparity between the developed and under-developed worlds. However for the sake of argument, this discussion assumes a mature state of industrial capitalist development as a precondition.

14 For example, see: https://www.cia.gov/library/publications/the-world-factbook/geos/ (Accessed 21 Mar. 2013) In the EU, the statistics show approximately 500 million people (66%, or 320 million between 15 and 64 years of age), in 2011, there were 629 million cellular phones in use, and 247 million Internet users. In the US, with a population of roughly 300 million (76% or 228 million between 15 and 64 years of age), in 2011 there were 290 cellular phones and 245 million Internet users. In Japan, with 120 million (62%, or 74 million between 15 and 64 years of age), there were 133 million cellular phones and 100 million Internet users.

15 Bolter and Grusin, 2000: 185-187

16 For example, see Norbert Wiener, Cybernetics: or, Control and Communication in the Animal and the Machine (New York: Wiley, 1948)

17 William Gibson, *Neuromancer* (New York: Ace Books, 1984)

18 Paul Hawken Amory B. Lovins, and L. Hunter Lovins, *Natural Capitalism: The Next Industrial Revolution* (London: Earthscan, 2010)

19 William McDonough and Michael Braungart, *Cradle to Cradle: Remaking the Way We Make Things* (New York: North Point Press, 2002)

20 Philip Jodidio, ed. *Green Architecture Now!* (Cologne: Taschen, 2009): 6.

21 Ibid. 250-259

22 The US Environmental Protection Agency defines "embodied energy" as "The amount of energy consumed to produce a product, in this case building materials. This includes the energy needed to mine or harvest natural resources and raw materials, and manufacture and transport finished materials." (http://www.epa.gov/greenhomes/TopGreenHomeTerms.htm, accessed 10 Jan. 2013). According to GreenSpec, a British organization for the sustainable material specifications, steel in general contains roughly 20 MJ/kg of embodied energy. Even though this figure is substantially lower than aluminum (155 MJ/kg with 33% recycled content) and copper (42 MJ/kg with 37% recycled content), it embodies substantially higher level of energy than wood, masonry and cement products. (http://www.greenspec.co.uk/embodied-energy.php, accessed 6 Apr. 2013)

23 Marc-Antoine Laugier, *An Essay on Architecture* (1753), trans. Wolfgang and Anni

Hermann (Los Angeles: Henessey & Ingalls, 1977): 12. Also, Christian Norberg-Schulz, *Intentions In Architecture* (Cambridge: MIT Press, 1997 & 1965): 109-111.

24 For example, Eugène Emmanuel Viollet-le-Duc (1814 –1879) who is thought to have commented on architecture in such a bipartite scheme. See Anne-Marie Sankovitch, "Structure/Ornament and the Modern Figuration of Architecture," The Art Bulletin, Vol. 80, No. 4 (Dec., 1998), pp. 687-717

25 Michael Schwarzer, "Ontology and Representation in Karl Bötticher's Theory of Tectonics," Journal of the Society of Architectural Historians, Vol. 52, No. 3 (Sep., 1993), pp. 267-280

26 Ibid.

27 Gottfried Semper, *Style in the Technical and Tectonic Arts*, trans. Harry Francis Mallgrave and Michael Robinson (Los Angeles: Getty Publications, 2004): 109-111.

28 Ibid.

29 Ibid.

30 Mari Hvattum, "Gottfried Semper: Between Poetics and Practical Aesthetics," Zeitschrift fur Kunstgeschichte, 64. Bd., H. 4 (2000) pp. 537-546.

31 Louis H. Sullivan, "The Tall Office Building Artistically Considered," Lippincott's Magazine no. 57 (March 1896): 403-409.

32 Ibid.

33 Le Corbusier, 2008: 151

34 Ibid. 182.

35 Le Corbusier, Precisions On The Present State Of Architecture And City Planning (Cambridge: MIT Press, 1991): 66.

36 Venturi and Scott Brown, 2004: 24-25.

37 Venturi and Scott Brown, 2004: 153.

38 Avrum Stroll, *Surfaces* (Minneapolis: University of Minnesota Press, 1988): 40-46.

39 Ibid.

40 This theory is also termed *naïve realism.* Gibson's theory of *ecological* perception was criticized as an indemonstrable and therefore unprovable proposition.

41 Gibson's *ecology* consists of *invariants,* those that provide a constant reference, such as the horizon or the regularity of the paving pattern of a sidewalk, and *affordances*, our understanding and recognition as to what we can do with objects in situations around us. Furthermore, Gibson's theory rejects the discrepancy between appearance and actuality, and the sense of actual space is derived from the configuration of surfaces.

42 Deleuze, "The Fold," 227–247. With regard to the translation of "pli" and "repli" into "fold" and "coil," see the translator's note, 227. Also, Deleuze, *The Fold: Leibniz and the Baroque*.

43 Slavoj Žižek, *Organs without Bodies: Deleuze and Consequences* (London: Routledge, 2004): 172-173. (Emphasis in original.)

44 For examples, as found in Plato's *The Republic* and in Aristotle's *Poetics*.

45 Walter Benjamin, "On the Mimetic Faculty" in *Reflections: Essays, Aphorisms, Autobiographical Writings*, ed. Peter Demetz (New York: Schocken Books, 1978): 333-336.

46 Miriam Hansen, "Benjamin, Cinema and Experience: The Blue Flower in the Land of Technology" New German Critique, No. 40, Special Issue on Weimar Film Theory (Winter, 1987) pp. 179-224 (195)

47 Jacques Derrida, "White Mythology: Metaphor in the Text of Philosophy," trans. F. C. T. Moore, New Literary History, Vol. 6, No. 1, On Metaphor (Autumn, 1974), pp. 5-74 (37) (Emphasis in original.)

48 Jacques Derrida, "Economimesis," Diacritics, Vol. 11, 1981. pp. 3-25 (9).

49 Lakoff and Johnson, 1999: 268.

50 Ibid.

51 Ibid. 269. (Emphasis in original.)

52 Ibid.

53 Ibid. 565.

54 Žižek, 2004: 173. http://www.parametricbratislava.sk/

Epilogue

In the preceding chapters, we have examined the passages of dispositif, apparatus, encoding and codification as the defining elements of today's discursive formation over a vast expanse of contemporary society and culture. In the process, we have examined the precedents in music and musicology that provide compelling parallels for architecture. We have also examined how the apparatus-centric formation of discourse has transformed the practice of conception, composition and performance of architecture, prompting a radically altered mode of inscription, incorporation and experience.

The cases of music and musicology as well as of the examples from the recent theories of mass media we have examined provide the view of how architecture as a discipline has become embedded and entrenched in the apparatization of cultural production and the ensuing codification of its technology. While the architecture of pre-apparatization relied on the direct haptic mode of conception and production of architectural constructs, the apparatization and its codification has intensified the managerial aspect of architectural conception and production. As a result, apparatization brought the class of professionals of the discipline whose role has occupied an ever-increasing importance in the conception and composition process. We can even designate the class of architects solely within the regime of apparatization focused on image-making and manufacturing affects.

Such apparatization and technological codification of architecture, and therefore the appearance of those who manage the apparatus and the compliance with it, prove compelling in the way they eventually came to determine the fate of composition, performance and instantiation. In this new matrix of inscription and incorporation process afforded by digital algorithmic technology, the role of the architect is no longer that of the producer of contents, but the manager of images and affects. The operational logic of the apparatus has come to influence the architectural discourse in the way that overrides and surpasses the architect's physical-biological boundaries in the life of architectural work. The mediated and mediatic experience of architectural content more often than not supersedes the substance of actual built work. Also the mediated experience of the content as often determines the viability of the given work, and ultimately the marketability of a given architect, both as image commodities.

In contemporary architecture, the excesses in both material and abstract terms can be characterized in relation to the ubiquitous apparatization and its codification. The exclusionary

process that filters out the possibility of alterity operates no longer according to a prescribed definition, but in highly adaptive ways in relation to a given exchange value within the particular dispositif regime, both technological and ideological. Such a process produces specific affectation and experience of abstract exchange value that is purported to be embodied. In music, which has come to exemplify the pervasive art for the masses, this apparatized turn denotes the enunciation of certain sonic qualities beyond its actual state and further the imposition of layers that are determined by the functionaries, who neither composes nor performs, but operates the apparatuses, during its apparatized technical stage. The technical, apparatized intervention determines the consequential characteristic of the product outcome, and the consideration of the quality of the product is determined by the degree of affective apparatization and codification.

The apparatization of architecture is manifest in the rapid development and ubiquitous deployment of digital algorithms, in which the term smooth space has come to characterize its nature and tendency to develop in an increasingly separate path from what was once considered a reality toward its own idealized system of machination and state of existence. On the one hand, this is comparable to the development in architecture from Paxton's Crystal Palace to Modernist architecture — the architecture as an expression of new technology and the industrial ideals. The new digital apparatus of architecture takes into consideration that by means of the new apparatus it is entirely possible to inject new processes and phenomena (and therefore the new conception) of architecture. But on the other, this condition presented by the digital apparatization of architecture has also created a situation in which the spurious elements of the analog is purged and sanitized, further reinforcing and perpetuating the status quo hegemony of the formal rationality that is the "fallout" of the radicalized technologization.

The technologically apparatized and codified form of music provides an ample corollary to this case in architecture: the specific apparatus deployment and the way it is codified determine the finality of the architectural work, regardless of the implications on the posterity of the actual, in the very disjunction between the composition and the instantiation; between the inscription and the incorporation; and ultimately between the content and the presence. As in the case of music and sound recording and reproduction where the apparatized decision making process determines the degree to which an actual "live"performance is instantiated, and the condition which reinforces specific operative skills as well as the accumulation and expertise of a specific class of knowledge. Also in architecture today we see the new class of technician-managers whose sole role in the conception and production of architecture is dedicated to the execution of the codification and to

overseeing the implementation and encoding of the affective apparatus.

In the first third of the twentieth century, the pioneering artists and architects recognized the potentials of the emerging machinic apparatus and envisioned the new codification of liberation from the old hegemony not only toward the new language of artistic expression and content but also toward the transformative ideology in order to reform each respective discipline. However, very unlike the apparatization of music in the early twentieth century, the process of the apparatization of architecture is dedicated to further bolstering and enforcing the standing regime of affective enterprise rather than to the disruptive reform. The technological apparatization of architecture has not only brought on the so-called the architecture of alterity by means of the new form of encoding and inscription, but also more influentially accelerated and reinforced disciplinary commodification that is largely devoid of discursive content.

This tendency again holds a distinctive instance in music where the reinforcement of musical conventions has increased in its scope, scale and pace. In this scenario, the fringes of aesthetic alterity has been further marginalized and subjugated to the production of exchange value, while no one quite understands the use value. Certainly one can argue that through the process of apparatization and codification of digital algorithms, those on the margins of conventional legitimacy, too, have expanded the scope, scale and pace of their presence by relying equally on the contemporary hot media. However, the current form of apparatus and codification appears to privilege the dominant regime of the formal rationality in comparison to the substantive rationality. If there had ever been potentiality for such an assemblage, it appears to be Gesamtkunstwerk circa twenty-first century.

Quite unlike the Mannerist and the Baroque periods, and more relevantly contrary to even the twentieth century modernism when the role of the technician-manager was clearly delineated by its fundamental relationship to the disciplinary contents, both formal and substantive, and its closely conjoined haptic potentialities, the poiêsis of the virtuous hands, today the technical-managerial aspect of an architect's practice is largely framed by the limits of the apparatus and to the management of the work's compliance to the codification toward the production of the determinatives of the work. Perhaps that is not the point any longer. The epistemê in this case lies with the programmers and the engineers of such apparatization and codification. In other words, the disjunction of the work's content and presence is manifest in the conflation of technê and epistêmê that is no longer embodied purely in the author.

Ever since the advent of digital apparatus and codification that now occupies a large portion

of everyday life, the work of architecture has moved from the denseness of the haptic to the disjoint and discrete striation of space. Unlike what certain proponents of the digitally encoded architecture may propose as a way of embodying the smooth space, in fact the appratization and codification have solidified the striation of architectural assemblage. Just as in the network of technological codification, in architecture such codification has also come to reign supreme, to borrow from Russolo, in all aspects of its construct from conception to production and to use and to the production of value, from the ideological to its direct economic manifestation. Certainly this debate is not simply over what we have gained and lost, and neither is it whether or not there are any needs or possibilities of the apparatus and codification as having any consequence to the individual work's inherent value and posterity.

The emergence of a new apparatization and its codifying regime in architecture on the one hand opened the potentialities that are beyond the direct somatic assemblage and parses the denseness of the analogical world. Even the classical notions of epistêmê and technê have been rendered moot as the conflation of the two has been radically reinforced as the automaticity of the apparatus and codification has increased. This new and ubiquitous form of apparatus and codification operates in such a way that technê is once again one and the same as epistêmê. The production of discourse and knowledge in architecture appears impossible without the apparatus and its codification. And the production of discourse and knowledge appears in essence to be also the production of apparatus and codification.

This thesis has been an examination of the long-standing issue of dissonance as a form of alterity and more importantly as an expression of dissent. Even though the objective of this research does not include an extended assessment on its ideological ramifications, nonetheless it is clear as to what is at stake at this juncture in the relationship between the technological advancement and sophistication and the discipline has been transformed in the process. As we have already discussed, the notion of technê as a means of identifying and situating our relationship to the process of the self-emergent nature has been already articulated in Aristotle's time more than two thousand years ago. Such notion of technê of the antiquities has been turned into the modalities of material production and its management. Aristotle's view of technê and how poiêsis ultimately serves the purpose of such an ecological assemblage of the world and the role architecture within it is ever more crucial to the assessment of architectural work.

We can speculate that the ancient notion of ecological technê consists of signs and symbols

and how it has come to shape and articulate its space. We can also speculate that the space of perspectival vanishing points put an end to the dense space of symbols and signs, and granted the auratic authorship of delineated geometrical space. The formal apparatus of the geometrical space has evolved in such a way that it is no longer singular and interiorized. In the case of Heidegger's Ge-stell, we have seen the concern that the technology represents pervasive subjugation and making resource out of nature and human beings. Even in this overtly antagonistic view, we have seen that the technology and human beings form a much more intimate relationship with one another than simply being that of user-tool. In other words, human beings produces technology and its apparatuses but they also in turn change the irrevocably.

Just as human societies produce codification, establish institutions and enforce them in order to maintain order and perceived ideals, the technological disposifs are also organized, maintained and enforced by codifying their own abstract rationalities. The encoding languages of technological codification are, just as those of the societies, a collection of conflicting languages. Any one codification in any one language cannot perform the role of the universal and the various languages are not necessarily communicable with each another. One encoding language will leave its mark on what it produces. Through the codification of blocking out and transporting individual elements, such languages are connected with one another and made to exchange the and circulate semantic and syntactic contents.

By increasingly dislocating the interiority of aesthetic work, its processes and organs, as well as its intimacy with what may be seen as the ecological context, aesthetic work relies on the automaticity of the extra-somatic, extra-mnemonic apparatuses and the way they are incorporated and codified into the dominant power dispositifs. What results from this tendency is the formation of phantasmagoria in which not only the appearance is severed from the actual content there may exist, but also the formation of aesthetics work is incorporated into the technological dispositifs so that its ontology is dependent on them. Or simply as a form of interface, what one sees is indeed what one gets, nothing more.

The architecture of new affective encoding not only incorporates the modernist agenda of technologizing aesthetics work, but also aestheticizes the algorithmic intermodality of presentation separated from content. The presentation of aesthetically repackaged contents are encoded and calibrated to provide affective experience. What forms the basis of technological affectation is none other than Kircher's magic lantern that brings wonders into vision. The vision of today's magic

lantern, the algorithmic processes and intermodality also provide the surface unity by assembling aesthetic experience that is removed from the actualities of the content. In other words, the sphere of subjectivity is disjointed from the type of corporeal carriers and receptors that situates the subject so as to render impossible to ascertain the actual content and its discursive environment.

As the modernist avant-gardes have shown, one way to approach new technologies and to establish their relevance to the aesthetic work is to challenge the boundaries of the apparatization process. During the age of industrial machine, due to the mono-functional nature of the machines, such a challenge proved negative, that is, one had to either break the machine or build one that negates itself as a machine, the useless machine. The historical avant-gardes resorted to such tactics in order to challenge the bounds of conventions. However the algorithmic apparatuses presents a new possibilities as the machinic assemblages we see today are essentially subject-neutral. This is to say that the discrete electronics also made it easier to breach the criteria of apparatization.

We arrive at the current apparatus-centric age in which the discursive specifications are increasingly diluted and wrapped by the supposed novelty, the *cool*, and the manipulation and reconfiguration of knowledge fragments become the *de facto* standard operation of the knowledge profession. The global apparatuses, encoding and the eventual codification of different spheres of knowledge make it not only possible but also necessary that the newness of knowledge is perpetually extracted and reconstituted, or XML'ed, from the loose organs and body parts of the previous knowledge. In this view, architecture is no exception. The demand for novel excesses of memorable experience as well as for supporting the interests of the power dispositifs necessitates the perpetual newness and coolness of XREF'ed architecture.

In this sense, the emancipation of dissonance today lies in the encoding of the intermodality and in the slippages of the apparatus-encoding relationship. The opening of such slippages reveals the alterity of the given apparatization and new potentialities are presented. In architecture, dwelling only within the (re)presentational, affective regime of the apparatus presents nothing but phantasmagoria that is open to various forms of affective exploitation. The phantasmagoria that conceals the work process behind what the magic lantern projects has not receded. As Athanasius Kircher's magic lantern was dismantled by Descartes' codifying worldmaking, and as Foucault's dispositif brings about new form of rationalities that addresses urgent needs, today's algorithmically encoded apparatuses present an opportunity to split open the magic of the surface unity and reveal the actual processes that may reside in the discursive formation of space that we call architecture.

One key to splitting open the magic lantern in order to unconceal its innards is to be able to write and read codes and codification in such a way that they actually influence the very efficacy of the architectural embodiment. This is to say that the new apparatus of architecture should be able to embody bluntly the assemblage between humans and encoding systems without relying on the excessive *design-to-render* tendencies of the algorithmic in architecture. We should be able to establish a more succinct relationship between the manifestation of inscription and embodiment, rather than simply relying on the software affect that obscures the full potential for algorithmic automaticity. For that matter, the potentials in the new encoding of architecture lies in its direct calibration and conjoining with the somatic conditions as well as reforming the body's relations to establish the Umwelten. In this sense, the substance of architectural composition may lie in the way we encode it in the new language that exposes the internal workings of machinic codification. This also indicates that the new codification of architecture should overcome the frames of the affective projection in such a way that the image does not imply the finality of the given composition.

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Sang Lee is a licensed architect in the State of New York, and a registered architect in the Netherlands. He studied architecture at the Illinois Institute of Technology, where he received the degree of Bachelor of Architecture with Honors, and at the University of Pennsylvania, where he received the degree of Master of Architecture. After his studies, Lee worked as a junior designer at Mitchell Giurgola Architects, Philadelphia; Frederic Schwartz Architects, New York; and Venturi Scott Brown & Associates, Philadelphia. Subsequently, Lee worked as a staff designer at William McDonough Architects, New York, from 1991 to 1993. In 1994 Lee joined the Studio Daniel Libeskind in Berlin, Germany, where he served as a senior designer, leading various projects.

In 1999 Lee started his independent practice in New York, where he was engaged in experimental and theoretical projects, as well as small and medium scale residential and commercial projects. From 2000 to 2003, Lee served as an adjunct faculty for the Chair of Paul Philippe Cret Practice Professor at the University of Pennsylvania. In 2005, Lee joined the Faculty of Architecture and Built Environment, Delft University of Technology, where he has been tenured since 2007.

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In addition to his appointment at TU Delft, Lee has also served as a visiting faculty and a critic, and lectured in various institutions and universities, including the Southern California Institute of Architecture, Bauhaus University Weimar, Columbia University, Pratt Institute, Università IUAV di Venezia, Aarhus School of Architecture, Bergen School of Architecture, and Oslo School of Architecture.

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