Spectators\(^1\) of ten years ago spun a series of writings around art work variously termed “simulationist,” “neo-geo,” and “neo-futurist.” Reception of the “simulationist” work -- a reception which drew its philosophical strength from Jean Baudrillard’s theory of the *simulacrum*\(^2\) -- engendered a comparison between, for instance, paintings and technoscientific instruments of simulation (e.g., computer programs and techniques of cloning and gene manipulation). As a software designer I was intrigued by this theoretical convergence of painting analysis and high technology since it offered a possible means of rethinking digital artifacts through the problematics of painting and vice versa. Yet, the past decade has revealed a variety of weaknesses in strategies that employ Baudrillard’s simulacrum as a map of reception. Moreover, even ten years ago, many were skeptical of a comparison or “engagement” between high technology and traditional high art. Hal Foster voiced his skepticism about “simulationist” painting in this manner:

Can this work seriously engage issues of a technoscientific, postindustrial society in a medium, like painting, based in preindustrial craft?\(^3\)

\(^{\Delta}\) Published in the journal of *Art and Design* (May 1996): 80-92.
\(^1\) MIT Media Laboratory, 20 Ames Street, E15-450, Cambridge, MA 02139, USA; email: wsack@media.mit.edu
\(^2\) “Bakhtin described a transference or subjectivation operating between the author and the contemplator of a work of art -- the “spectator” in Marcel Duchamp’s sense. According to Bakhtin, in this movement the “consumer” in some way becomes co-creator;” Félix Guattari *Chaosmosis: An Ethico-Aesthetic Paradigm* Paul Bains and Julian Pefanis (translators) (Bloomington, IN: Indiana University Press, 1995) p 14
\(^3\) See, for example, Jean Baudrillard *Selected Writings* Mark Poster (editor), (Stanford, CA: Stanford University Press, 1988), pp 166-184

Hal Foster “Signs Taken for Wonders” *Art in America*, June 1986, p 88
More recently, some spectators have turned away from Baudrillard to the writings of philosophers Gilles Deleuze and Félix Guattari to theorize the work of a group of artists, oftentimes related to, but different than, the “simulationists” of the mid-eighties. For example, several authors in a recent issue of the *Journal of Philosophy and the Visual Arts* discussed painting with the help of a Deleuzean-Guattarian lexicon.\(^4\) I believe that this shift in theoretics facilitates a means of viewing painting not as equivalent, in some sense, to the artifacts and processes of high technology but, rather, as distinctly different than the kinds of work that scientists and engineers currently engage in.

For their part, the paradigms of techno-science place the emphasis on an objectal world of relations and functions, systematically bracketing out subjective affects, such that the finite, the delimited and coordinatable, always takes precedence over the infinite and its virtual references. With art, on the contrary, the finitude of the sensible material becomes a support for the production of affects and percepts which tend to become more and more eccentred with respect to preformed structures and coordinates. Marcel Duchamp declared: “art is a road which leads towards regions which are not governed by time and space.”\(^5\)

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\(^4\) See, for example, the art and artists discussed in the *Journal of Philosophy and the Visual Arts, Abstraction*, No. 5, (London: Academy Group, 1995). These include Pollock, Bacon, Duchamp, Richter, Lydia Dona, David Reed, Jessica Stockholder, Stephen Ellis, Fabian Marcaccio, Polly Apfelbaum, and others.

In the sentences quoted above, Félix Guattari emphases differences between technoscience and art. Moreover, elsewhere, Guattari articulates differences between his own work and the work of technoscience:

My perspective involves shifting the human and social sciences from scientific paradigms towards ethico-aesthetic paradigms.\(^6\)

I see an interesting tension between this emphasis on the divergence of the arts, sciences, and Deleuze and Guattari’s own work, and the convergences that have been emphasized by Gilles Deleuze and some translators and scholars of Deleuze and Guattari.

Various writers have noted a convergence between Deleuze’s work and the scientific theories of complexity and chaos (developed in fields like physics and computer science). Brian Massumi, the English-language translator of Deleuze and Guattari’s book Thousand Plateaus, said the following in a recent article:

[Gilles Deleuze’s] work ... could profitably be read together with recent theories of complexity and chaos. It is a question of emergence, which is precisely the focus of the various science-derived theories which converge around the notion of self-organization (the spontaneous production of a level of reality having its own rules of formation and order of connection).\(^7\)

\(^6\) ibid, p 10

\(^7\) Brian Massumi “The Autonomy of Affect” Cultural Critique (The Politics of Systems and Environments, Part II) Number 31 (Fall 1995), p 93.
Manuel De Landa, in his book *War in the Age of Intelligent Machines* meticulously expounds on the ways in which Deleuze’s work intersects with theories of complexity, chaos and self-organization.\(^8\) Indeed, Deleuze emphasizes his own mathematical and scientific “borrowings” in such work as chapter 15 of his book *Logic of Sense*.\(^9\)

In the following essay I will play with these tensions of divergence and convergence which run through Deleuze and Guattari’s work. I am interested in investigating how the different theoretical machines and simulacra of Baudrillard and Deleuze and Guattari have been shaped into instruments of reception to allow a viewer to see parallels and differences between the artifacts of painting and the artifacts of science and technology. I understand various uses of Baudrillard’s theories as felicitous to a “reading” of painting which emphasizes its convergence with the products of science and technology. I use the theories of Deleuze and Guattari to explain a set of divergences that I see separating computer science and a certain kind of contemporary painting. Actually, it is more precise to say that I use painting to describe differences I see between the machines of Deleuze and Guattari and the machines of the computational sciences.

As an expository device I will rely on mathematician Alan Turing’s theory of machines to stand-in for all of computer science. Alan Turing was the “inventor” of computers and of artificial intelligence. In 1936, the Turing wrote a technical paper entitled “On Computable Numbers, with an Application to the Entscheidungsproblem.”\(^10\) Turing’s paper provided the “blueprint” for the

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\(^8\) Manuel De Landa *War in the Age of Intelligent Machines* (New York: Zone Books, 1991) pp 234-237


developers of the first electronic computers. It continues to be a seminal paper for all computer scientists because, in his paper, Turing mathematically demonstrated what can imprecisely be understood as the assertion that it is impossible to build a computer more powerful than a Turing machine; i.e., the theoretical apparatus called a Turing machine is capable of “simulating” all possible computers. Consequently, it is generally believed that to understand the limitations of computers in general, one need only investigate the specific limitations of Turing machines. Of course this methodology is not always employed by theorists of computation because they have identified a variety of other formalisms which are “equivalent” to Turing machines. However, it does mean that any precise argument demonstrating the limitations of a Turing machine could, potentially, have far-reaching implications for all computational media. Alan Turing is also considered to be the “father” of the field of artificial intelligence due to another article published in 1950 entitled “Computing Machinery and Intelligence.”\textsuperscript{11} Thus, it is often considered worthwhile, even today, for computer scientists to reexamine Turing’s original work.

In this essay I return to Turing’s original papers to compare Turing machines with the kinds of “desiring machines” that some painters are said to produce around Deleuze and Guattari’s theories. I outline a set of irreconcilable differences, or differends (in philosopher Jean-François Lyotard’s terms\textsuperscript{12}) which exist between Turing’s machines and Deleuze and Guattari’s machines. I think these differends can be seen or “read” in certain forms of contemporary painting. I understand this essay as an effort to create for myself (and possibly others) a means of viewing painting as divergent from the projects of technoscience and yet, simultaneously, involved in an “engagement” with technoscience; an

\textsuperscript{11} Alan Turing “Computing Machinery and Intelligence,” \textit{Mind}, Volume LIX, No. 236 (1950).
\textsuperscript{12} Jean Francois Lyotard \textit{The differend: phrases in dispute} (Minneapolis: University of Minnesota Press, 1988)
“engagement” which involves the use of art as a way of seeing possible alternatives to existing science and technology.

The differends that I identify are analogous to well-known formal problems that painters have been addressing for centuries. I can list them here: (1) Grids: While Turing machines are founded upon a strict attention to the “grid”, “desiring machines” are formulated in a smooth, unstriated space which can break the “grid”; (2) Signs: Turing machines assume a finite, fixed “alphabet,” while “desiring machines” and the painting which produces them is often concerned with the production of new signs, new marks, perhaps infinitesimally -- yet significantly -- different from the “alphabets” of other painting or (post)industrial processes; and, (3) Details: Turing’s definitions assume that one will ignore “inconvenient” or “unprofitable” details, while it is never a priori obvious for the functioning of a “desiring machine” which details are significant and which are to be ignored. The rest of this essay can be read as an expansion of these “formal” details of painting which, I believe, can lead to an investigation of ethical considerations like these: For whom is a particular detail unimportant? Who has the will and the power to produce a new sign? How are spatial divisions negotiated?

Turing Machines

It is an extended process of enculturation to arrive at the point where one believes that a Turing machine is “universal.” Roughly speaking this belief is tantamount to believing that anything a person can do, in a systematic manner, with a surface of inscription and a stylus, one can get a computer to do or at least to “simulate.” The full blown belief that engenders one to equate mental states to the coded states of Turing’s finite discrete state machines requires that one be dragged through the complexities of how David Hilbert, in 1928, challenged the
mathematics community to prove mathematics complete, consistent and decidable and how, in response, Kurt Gödel showed mathematics to be incomplete and inconsistent and how Alan Turing and Alonzo Church showed it to be undecidable. The ideological state apparatus that drags one through this quite stunning and impressive controversy is the School, or rather the University, as it acts upon computer science undergraduates. Turing’s and Gödel’s proofs both rely on techniques of enumeration and diagonalization invented by mathematician Georg Cantor over a century after Kant outlined his theory of the sublime. Kant’s mathematical sublime is a cognitive state and crucially relies upon a subject’s contemplation of enumeration and infinity. However, as the neo-Kantian Jean-François Lyotard points out, Kant’s “mathematical sublime” is not just one kind of sublime among many, it is just one way of describing the sublime. I do not know of a better way to describe Gödel’s and Turing’s preoccupation with enumeration which led them to the sweet-sorrow, the pleasure-pain, of making huge advances in the field of mathematics while, at the same time, undermining basic tenants of the discipline. Specifically, Turing’s

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14 The “mathematical sublime” is theorized by Immanuel Kant in his Critique of Judgement (New York: Hafner Press, 1951) pp 86-96


16 I think it is at least passingly interesting to note, as Lyotard does in the passage below, that the sublime forms a link between thinkers like Kant and the very different lineage of thinkers that Deleuze draws from to establish a theory of the subject which is not based on lack (e.g., Masoch, Spinoza, Nietzsche, and others). “Le sentiment sublime, qui est aussi le sentiment du sublime, est selon Kant une affection forte et équivoque: il comporte à la fois plaisir et peine. Mieux: le plaisir y procède de la peine. Dans la tradition de la philosophie du sujet qui vient d’Augustin et de Descartes et que Kant ne remet pas en cause radicalement, cette contradiction que d’autres appelleriaient névrose ou masochisme, se développe comme un conflit entre les facultés d’un sujet, la faculté de concevoir quelque chose et la faculté de ‘présenter’ quelque chose.” Jean-François Lyotard Le Postmoderne expliqué aux enfants (Galilée: Paris, 1988) pp 24-25.
handling of decidability, Hilbert’s *Entscheidungsproblem*, shows a way in which, with finite means and an enumerable infinity of steps, one can create an “unsolvable problem.” This, for the mathematics community, was the phenomenon created by an inward, reflexive turn -- an application of the rules of mathematics to the behavior of mathematicians -- that led to a giant crack, leak, *fuit* threatening to suck mathematics into the formless void of the “outside,” the unknowable, the *noumena*.

**Baudrillard and the Simulationists**

It is uncanny, in the Freudian sense, to see how the problematics of computational incompleteness, inconsistency, and undecidability are repressed in the everyday thinking of certain computer scientists and others who marvel at the capabilities and ubiquities of contemporary computational media, like “virtual reality” and the Internet. One hears over and over how practically anything -- sex, flight, reasoning -- can be “simulated.” Indeed, it seems to me that this is the bandwagon that Jean Baudrillard climbed on-board with the writing of his essay “Simulacra and Simulations.” Baudrillard tells us -- as Borges and the International Situationist, Guy Debord, did earlier\(^\text{17}\) -- that now the “map precedes the territory.”\(^\text{18}\)

... the cartographer’s mad project of an ideal coextensivity between the map and the territory, disappears with simulation, whose operation is nuclear and genetic ... genetic miniturization is the dimension of simulation. The real is produced from miniaturized

\(^{17}\) “All the time and space of [the worker’s] world become foreign to him with the accumulation of his alienated products. The spectacle is the map of this new world, a map which exactly covers its territory.” Guy Debord *Society of the Spectacle* (Cambridge, MA: MIT Press, 1995)

\(^{18}\) Jean Baudrillard *Selected Writings* Mark Poster (editor), (Stanford, CA: Stanford University Press, 1988), p 166
units, from matrices, memory banks and command models -- and with these it can reproduced an indefinite number of times.  

Baudrillard’s essay excited a lot of interest within the circles of various painters and sculptures. It has been used, for example, to describe the pictures of the “Pictures” show organized by Douglas Crimp for Artists Space in New York and the art of the Metro Pictures Gallery artists of the late-seventies and early-eighties. Thereafter, Baudrillard’s “simulacra” underwrote the escape from East Village neo-expressionism by Peter Halley and other “neo-geo,” “simulationist,” “neo-futurist” artists. Enigmatically though it appears that these artists did not really believe in the powers of digital simulation the way, for example, the Russian Constructivists or the Italian Futurists subscribed to the age of industrial machinations earlier in the century. A technophilia, on the order of the Constructivists’, precipitated a renunciation of painting in favor of the métiers of industrial design, engineering, and documentary photography. Apparently, Baudrillard did not manage to even convince himself of the powers of digital simulation for, if he had, where now are the painters-turned-computer-programmers, the philosophers-turned-software-engineers?

Actually, in 1996, we all know the answer to this question: these former painters and philosophers are now in “digital multimedia,” an industry based upon a misunderstanding of Marshall McLuhan, even as its headlight publication, Wired, claims McLuhan on its masthead as “patron saint” of the

19 ibid., p 167
20 The “Pictures” show included artists such as Troy Brauntuch, Jack Goldstein, Sherrie Levine, Robert Longo and Philip Smith.
21 For example, Barbara Kruger, Robert Longo, Richard Prince, Jack Goldstein and Sherrie Levine showed at the Metro Pictures Gallery in the late ’70s and early ’80s.
22 Peter Halley, Jeff Koons, Ashley Bickerton and Meyer Vaisman all “escaped” from the East Village to the SoHo Sonnabend Gallery in 1986; others did the same soon thereafter.
magazine. McLuhan, in *Understanding Media*, claims that every new medium institutes new *ratios* between our senses. McLuhan does not say that new media are *replacements* for older media. Instead, McLuhan’s idea is that the introduction of new media serve as “extensions” to ourselves and, simultaneously, they “amputate” various capacities of subjectivity. Multimedia enthusiasts often believe in “convergence” of the media and that “bits are bits” such that any media can be translated into, and thus replaced by, digital media. Belief in the idea that everything can be translated into one (digital, computational) substrate -- rather than being a challenge to Clement Greenberg’s monomedia mania -- is actually an “extension” of Greenberg’s work. Greenberg’s belief in a vantage point from which any artifact can be assigned its proper medium, has its analog in multimedia’s subscription to the computer as the “universal machine” that can handle any new medium (e.g., video) simply through the addition of a new *codec* (compression/decompression algorithm) and display peripheral (e.g., a color screen or 3D printer).

Multimedia personnel aside (as a member of the MIT Media Laboratory, perhaps I need to step aside at this point too), I want to concentrate on those artists and philosophers who heard Baudrillard’s message, but who did not submit to the technophilia implicit in his essay. Instead, these painters continued to paint, the sculptors to sculpt, and the philosophers to write. In 1986, at the Boston Institute for Contemporary Art *Endgame* show, Baudrillard’s simulacra

24 “What I am saying is that media as extensions of our senses institute new ratios, not only among our private senses, but among themseleves, when they interact among themselves. Radio changed the form of the news story as much as it altered the film image in the talkies. TV caused drastic changes in radio programming, and in the form of the thing or documentary novel.

It is the poets and painters who react instantly to a new medium like radio or TV.” from Marshall McLuhan *Understanding media: the extensions of man* (New York: McGraw-Hill, 1964)


26 Peter Halley, Sherrie Levine, Philip Taaffe, Ross Bleckner, Jeff Koons, Haim Steinbach, General Idea, Joel Otterson, Jon Kessler, Richard Baim, Gretchen Bender, and Perry Hoberman were the artists shown at the Boston ICA *Endgame* show.
were seen as an escape from the essentializing, minimalizations inflicted on abstract painting and sculpture by the previous generations of conceptual and abstract artists. The “way out” was a refusal of the “real” for the “not-real,” the “simulacrum.”

At the level of praxis, it was clear at the time -- in the mid-eighties -- that the artists understood Baudrillard’s message insofar as, if “everything is now just simulacrum,” there is no need to give up painting for computer programming because both are equally implicated in the processes of simulation. However, the rationale for this praxis stumbled in Baudrillard’s post-Marxist dialectics; specifically, in his implicit use of the opposition of the “real” to the “not-real.” Of course the critics caught on to this lingering dialectics immediately and teased the Marx out, often through Freud, in the figure of the fetish. To speak of, for example, Jeff Koons’ fascination with consumer items as fetish object seemed to make even good, vernacular, sense as one, for instance, talks of a “fetish” in the sense of an unhealthy obsession. Hal Foster’s essay in the Endgame catalog is a wonderful exhibit of a Freudian/Marxist dialectical analysis in action.27 Ultimately though the Baudrillardian rationale implodes in its lingering dialectics since, if everything is simulacrum, then what is this thing (the Kantian ding-an-sich, thing-in-itself?) that the fetish of simulacrum is replacing? A cathectic resolution to this tension was lurking in the English-speaking world in a translation of a non-dialectical, French articulation of the simulacrum cited in

ICA Boston Endgame: Reference and Simulation in Recent Painting and Sculpture (Cambridge, MA: MIT Press, 1986)

27 “So far I have argued that many of the significant redefinitions of the (post)modern work of art are in fact fetishistic responses to contradictions between different economies of the object; that many of these contradictions are in turn cast up by the dialectic of modernism and mass culture; and that it is these contradictions -- such as the one between functional product and dysfunctional art work -- that the readymade has served to articulate.” Hal Foster “The Future of an Illusion, or The Contemporary Artist as Cargo Cultist” in the catalog Endgame: Reference and Simulation in Recent Painting and Sculpture (Cambridge, MA: MIT Press, 1986) p 100
another article by Hal Foster on the “simulationists”\textsuperscript{28}; Rosalind Krauss’ translation of Gilles Deleuze’s “Plato and the Simulacrum.”\textsuperscript{29}

**Deleuze and the Simulacrum**

In his 1986 article for *Art in America*, “Signs Taken for Wonders,”\textsuperscript{30} Foster does not tease out the technical details which separate Baudrillard’s simulacra from Deleuze’s. I think though that tracing through Deleuze’s distinctions both (1) gives one another understanding of what it could mean for everything to be a simulacrum without recourse to the problematic, dichotomy of real/not-real, and; (2) allows one to grope through the vast, dark space which separates (e.g., Hegelian) dialectics from non-dialectics (e.g., the Nietzschean Eternal Return).

John Rajchman, in a recent article on painting and abstraction (entitled “Another View of Abstraction”\textsuperscript{31}) distinguishes Deleuze’s simulacra from Baudrillard’s like this:

... one can argue that ‘post-modernist’ art remains, as it were, haunted by the spirit of the abstract painting; it only repeats this game as farce, through quotation, parody, irony, alternating between mania and melancholia. Indeed the very idea of ‘appropriation’, and of what Baudrillard called the ‘simulacrum’, is fully impregnated with the tradition of melancholy and panicked reaction to Loss or Absence; in this respect it is quite unlike the idea of the simulacrum that a forgetful Baudrillard had ‘appropriated’

\textsuperscript{28} Hal Foster “Signs Taken for Wonders” *Art in America*, June 1986
\textsuperscript{29} Gilles Deleuze “Plato and the Simulacrum” Rosalind Krauss (translator) *October* 27 (Winter 1983).
\textsuperscript{30} Hal Foster “Signs Taken for Wonders” *Art in America*, June 1986
from Deleuze, which involves not a loss but an \textit{intensification} of the real, linked to a condition of things prior to Forms.\textsuperscript{32}

Unlike Rajchman, I am not a philosopher and so I hope I do not damage his explanation by re-reading Deleuze’s “Plato and the Simulacrum”\textsuperscript{33} and its repetitions (which can be found embedded in Deleuze’s books \textit{Difference and Repetition}\textsuperscript{34} and \textit{Logic of Sense}\textsuperscript{35}) in order to elaborate how Deleuze’s simulacrum refuses a dialectical interpretation.

Firstly, Deleuze makes a distinction between Hegel’s dialectic and Plato’s (as it is demonstrated in the \textit{Phaedrus}, the \textit{Statesman}, and the \textit{Sophist}).\textsuperscript{36} Hegel’s dialectic moves from \textit{thesis} to \textit{antithesis} to \textit{synthesis}. Yet, at the moment of the formulation of the antithesis, the \textit{negation} of the thesis, what would happen if negation is an impossibility? For Plato, the contemplation of such an impossibility never arises because negation is \textit{not} the operation invoked to produce an alternative to the thesis. Instead, Plato relies upon the invocation of \textit{myth}.

Thus the myth constructs the immanent model or the foundation test, according to which the claimants must be judged and their claim measured. It is on this condition that division pursues and achieves its goal, which is not the specification of concept but the

\textsuperscript{32} \textit{ibid.}, p.17.
\textsuperscript{33} Gilles Deleuze “Plato and the Simulacrum” Rosalind Krauss (translator) \textit{October} 27 (Winter 1983).
\textsuperscript{34} Gilles Deleuze \textit{Difference and repetition} (New York: Columbia University Press, 1994)
\textsuperscript{35} Gilles Deleuze \textit{Logic of Sense} Mark Lester (translator) Constantin V. Boundas (editor) (New York: Columbia University Press, 1990)
authentication of Idea, not the determination of species but the selection of lineage.37

From a post-Vladimir-Propp38, post-Lévi-Strauss39, post-Algirdas-Greimas40, narratological vantage point, one can see that any given myth can be canonized, or idealized, as a composition of functions, actants, or roles; for instance, the roles of hero, villian and helper and their interactions; statesman, lover, or sophist; or, even some of Hegel’s dramatis personae, like the roles of lord and bondsman. Thus, invocation of a myth allows the conceptualization of not just one alternative (the negation), but many which are all interrelated in some narrative and functional structure. Plato then uses the mythic, narrative structure to establish an ordering on the alternatives. Last, for Plato according to Deleuze, in any such ordering of preference are the simulacra, roughly those personae who belong to other myths not selected or who belong to no myths whatsoever.41

Deleuze’s move from here is quite clear and hinges on a question of this kind: What if there are no such myths or idealized forms? What if, instead, such myths are in continual flux and can only be seen as singularities rather than similarities to the situation at hand? This is Deleuze’s skepticism which creates

41 “We can thus better define the whole of the Platonic motive -- it is a matter of choosing claimants, of distinguishing the good from the false copies, or even more, the always well-founded copies from the simulacra, ever corrupted by the dissemblance. It is a question of insuring the triumph of the copies over the simulacra, of repressing the simulacra, of keeping them chained in the depths, of preventing them from rising to the surface and “insinuating” themselves everywhere.” Gilles Deleuze “Plato and the Simulacrum” Rosalind Krauss (translator) October 27 (Winter 1983) p 48
the possibility that all the alternatives are semblances or simulacra and no idealized ordering on the alternatives is possible. This shift in focus pushes the simulacrum, the subject without place, the nomad, into the fray. Thus it is the Zarathustran figure, the voice from the wilderness, who is left -- not to order -- but to invigorate and intensify chaotically the various forces in play.

The disorder, de-founding, effondement from which such simulacra emerge is, in opposition to Plato’s idealized Forms, a formless a priori that precedes everything and connects everything much as Henri Bergson said the “life-force,” élan vital, is said to flow through everything and thereby problematize any subject/object divisions.

**Desiring Machines**

If I can be permitted one more dip into the deep pool of Deleuzean philosophy I will finally be in a position from which I can explain how this juncture of painting and philosophy differs from Turing’s machines on several crucial points. To describe this position I must first swim into the textual flows employed by Gilles Deleuze and Félix Guattari in the *Anti-Oedipus* to shape their “abstract machines.” It is these “abstract machines” which have been used by contemporary critiques and painters alike to distinguish some of the newer abstract painting (by for example, Lydia Dona and Fabian Marcaccio) from the mid-eighties Baudrillardian “simulationist” work (of, for example, Peter Halley and Sherrie Levine).45

44 Gilles Deleuze and Félix Guattari *Anti-Oedipus: Capitalism and Schizophrenia* Robert Hurley, Mark Seem and Helen R. Lane (translators) (Minneapolis: University of Minnesota Press, 1983)
Deleuze and Guattari’s machines are based upon effondement, an infinitude of interlinked, chaotic flows a priori to the emergence of any sort of form in the universe. This provides a radical alternative to a Platonic formulation wherein the world is organized around a set of idealized forms. It is also an alternative to a Lacanian (or Hegelian) conception of the subject as based upon lack or need. For Deleuze and Guattari subject/object divisions and all types of discrete isolations and boundaries are interruptions. It is the abstract, desiring machines which interrupt, break, detach and slice the continuous flux and flows. Simultaneously, the machines also connect and reconnect specific flows.

Desiring Machines and Turing Machines

It is now possible for me to begin to address a question posed by John Rajchman (in his essay “Another View of Abstraction”) by comparing, aspect-by-aspect, Deleuze and Guattari’s “desiring machines” to computer science’s “Turing machines.”

The question of abstraction then becomes: to what sort of “abstract machines” do Turing machines belong; with what sort of “desiring machines” are they connected?

I think Turing himself -- in his 1950 article “Computing Machinery and Intelligence” which is credited as the founding article of artificial intelligence

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47 ibid., pp.36-41.
48 ibid., p.36
50 ibid, p.22.
51 Alan Turing “Computing Machinery and Intelligence,” Mind, Volume LIX, No. 236 (1950)
(AI) -- has a response to Rajchman’s question. Unfortunately, AI researchers have consistently repressed the details of Turing’s proposal while, simultaneously, crediting him as the “father of AI.” In the 1950 essay, Turing proposes a test to determine if a computer is intelligent. His test is based upon a parlor game. I will use Turing’s words to describe the game and the role he thinks it could play in determining the answer to the question “Can machines think?”

The new form of the problem can be described in terms of a game which we call the “imitation game.” It is played with three people, a man (A), a woman (B), and an interrogator (C) who may be of either sex. The interrogator stays in a room apart from the other two. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman.

... We now ask the question, “What will happen when a machine takes the part of [the man] A in this game?” Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, “Can machines think?”

AI researchers have chosen to re-member Turing’s proposal, not as a variant of the “imitation game” which involves a machine, a woman, and an interrogator, but rather, as something that they refer to as the “Turing Test” which involves only two players: a machine and a human. Gender differences, the focus and pivotal element of Turing’s “imitation game,” have almost

52 ibid
uniformly been ignored by AI researchers, even in their essays about the “Turing Test.”

I have made one important omission in my description of Turing’s “imitation game.” Turing intended the man, in the original game, to play the role of a woman. The point of this being that both the man and the woman are suppose to try and convince the interrogator that they are the woman. In other words, Turing’s original proposal was, essentially, to build a machine to function as a man pretending to be a woman.

Such a masquerade is not only familiar to fans of Shakespearean theater; it is also a common masquerade on the Internet where it is quite simple to “change one’s gender” by, for example, using a fictitious name or “handle” when writing electronic mail (email) messages or when participating in “on-line” discussions. The desires which lurk behind an email question from one user regarding another user’s “real” gender are constitutive of the sorts of “desiring machines” that contemporary Turing machines and their users are connected to. I do not think it is an exaggeration to say that Turing’s original essay suggests a very different kind of AI than the AI which has been developed over the past forty-five years. What is even more intriguing is how this “alternative” AI -- which one can imagine could preserve the centrality of the gender issues Turing posed in his essay -- would have something of interest to say about the ubiquity of cross-gender masquerades on the Internet.

While I, as a software designer, hope to contribute towards the creation of such an alternative AI, right now I want to turn to what I see as the response of painting to Rajchman’s question.

Baudrillard, Turing and Halley
My “degree zero” for this discussion on painting and Turing machines will be the work of Peter Halley. In much of his work Halley uses rigid geometric forms to investigate flow charts, flow diagrams and the related codes of system analysts, computer programmers, and urban planners. I will argue that these works by Halley, done over the course of the last fifteen years, illustrate a very tight coupling to the Baudrillardian and Turing -- thus computational -- conceptions of machinery and simulation. I will also argue -- and thus their position as a “degree zero” -- that these works by Halley have very little to offer in the way of exercising Deleuze and Guattari’s “abstract machines.” I hope that by introducing Deleuze and Guattari’s machines and contrasting them with Turing’s, I will be able to show how various painters -- often associated with Halley but working on their own conceptions of machinery and simulacra -- create an alternative to the concept of Turing machines as “universal machines.”

In writing about the “New York Painters,” Arthur C. Danto points out that “painting-as-writing does not capture all the painters of New York today -- but it does define the artists gathered here [Peter Halley, Jonathan Lasker, Philip Taaffe, Ross Bleckner], and great many more, whose artistic agendas it helps clarify.”53 Following Danto, and listening to Halley, one can quickly see the relationship between Halley’s paintings and Turing machines, the “writings” of computation:

**Jeff Rian:** Is there a logical relationship between the flowcharts and your paintings?

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Peter Halley: When I was planning to include them in my Dallas show some people said that it would be too didactic to put a flowchart next to a painting to show the connections between them. But I use flowcharts that are as opaque as possible; in other words there is no specific information. In fact, they make no sense without their captions. What happened in Dallas was that viewers first looked at the flowcharts, then they looked at the paintings. I think it was a way of giving the average person information about the paintings.\(^5^4\)

It is useful to remember that the “flowcharts” Halley refers to here are not linked with Deleuze and Guattari’s “flows.” Instead, these “flowcharts” are, essentially, an alternative notation for Turing machines. Halley usefully separates himself from a Deleuzean interpretation by saying later in the same interview “I don’t really think of myself as a schizophrenic artist in the sense of, say, Richter or Polke, ...”\(^5^5\) Since Deleuze and Guattari specifically call their theoretical stance “schizoanalysis”\(^5^6\) Halley’s comment seems to interrupt attempts to represent his work as Deleuzean and to encourage a reading of it as an aspect of Baudrillard’s simulacra and the simulations of Turing machines.

Anyone who has seen computer microprocessors under high magnification, might notice how effective Halley’s efforts have been to make his paintings appear as computational artifacts. It is this analogy between the two-dimensional images of chip diagrams and the painted canvas that I will use to


\(^{5^5}\) ibid., p.92.

\(^{5^6}\) Gilles Deleuze and Félix Guattari *Anti-Oedipus: Capitalism and Schizophrenia* Robert Hurley, Mark Seem and Helen R. Lane (translators) (Minneapolis: University of Minnesota Press, 1983) p 273
explain how some painting seems to point to possibilities outside the universalizations of Turing machines and the totalizations of Baudrillard’s simulacra.

Chains and Alphabets

I will start with alphabets. As McLuhan and others have pointed out, the invention of moveable type made Guttenberg’s press one of the first Western machines of mass production. Machines of mass production require a fixed “alphabet;” e.g., the twenty-six letters plus a few punctuation marks needed to print books in the English language. Turing’s machine is no different. His theoretical formulation employs a pre-defined fixed alphabet of symbols (cf., his original paper or any textbook introduction to the subject). Interestingly, Turing (parenthetically) brings up a means of disputing the adequacy of a restricted symbol set in the discussion section of his original paper:

I shall suppose that the number of symbols which may be printed is finite. If we were to allow an infinity of symbols, then there would be symbols differing to an arbitrarily small extent. The effect of this restriction of the number of symbols is not very serious. It is always possible to use sequences of symbols in the place of single symbols. Thus an Arabic numeral such as 17 or 999999999999999 is normally treated as a single symbol. Similarly in any European

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language words are treated as single symbols (Chinese, however, attempts to have an enumerable infinity of symbols).  

Yet, how easy is it to think of written Chinese without at least glancing attention to the arts of calligraphy? Calligraphers produce more than an enumerable infinity of symbols; calligraphers produce an infinity of symbols each differing from the others “to an arbitrarily small extent.” Yes, if we maintain a schematic reduction of Chinese -- or handwritten European prose for that matter -- we can forget the infinite variations and productions of script. But, such a reduction is an idealization which marginalizes the role of gesture and the production of signs in writing, drawing, and painting.

I am reminded of an off-hand remark once made by Henri Matisse in which he proposes that truly important artists introduce a great number of new signs into the arts. As an example, Matisse explains how many artists learn how to paint the foliage on trees by repeatedly brushing “33” on the area of the canvas that is suppose to correspond to the leaves of the plant while other, more interesting artists, invent new ways of approaching the same problem of abstraction. One must employ a certain kind of fuzzy vision to ignore the inventions Matisse describes: the infinitely multiplying and complicated “alphabets” of, for example, the “New York Artists” mentioned by Danto in his remarks on “painting-as-writing.”

It is exactly the ever-expanding alphabets that Turing takes as insignificant and forgettable in the construction of his machines that Deleuze and Guattari take as central to the construction of theirs:

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No chain is homogeneous; all of them resemble, rather, a succession of characters from different alphabets in which an ideogram, a pictogram, a tiny image of an elephant passing by, or a rising sun may suddenly make its appearance. In a chain that mixes together phonemes, morphemes, etc. without combining them, papa’s mustache, mama’s upraised arm, a ribbon, a little girl, a cup, a shoe suddenly turn up.62

What remains unclear about Matisse’s comment and Deleuze and Guattari’s subscription to heterogeneous, multiplying alphabets and sign systems is who, or what, is allowed to introduce a new sign? As the Guerrillas Girls and Linda Nochlin’s famous essay, “Why Have There Been No Great Women Artists?” make clear, it is often not the women who are allowed to transform or produce signs for strategic spaces of interaction, like the galleries and museums of painting. This general problematic, of what has been called “feminist epistemology,” is left unresolved by a discussion which focuses exclusively on gesture and the formal production of signs. But by tying such a discussion to the possibilities of producing a different (perhaps non-computational) machinery, the ethical issues at stake can be explored. What is crucial to an ethical investigation of any sort of machinery is to determine who has been automated “out of the loop”? Whose position or role has been replaced by the machine, or repressed by the implemented machinery?


Within the critical discourse of Baudrillardian “simulationist” art a recurrent thematic of the “death of the artist” or a “death of the author” (in Foucault’s\textsuperscript{65} sense or Barthes’\textsuperscript{66} sense) was detectable (cf., several of the essays in the \textit{Endgame} catalog\textsuperscript{67}). However, if the artist is “dead”, i.e., “automated out of the loop,” then do the names of any artists still have to be mentioned? Obviously we have not entered upon a point in art history, much less art criticism, in which names are optional. Consequently, the questions becomes who needs to be cited? For example, when one notes the machinic diagrams that can often be seen in Lydia Dona’s paintings, does one need to note that they are Duchamp-like in some sense? Or, can one simply say that Dona has produced a novel set of machinic marks? As far as I can tell, neither Baudrillard’s simulacra, nor even the adoption of the infinite, heterogeneous “chains” or alphabets of Deleuze and Guattari allow us to escape the political questions raised by a regime of the \textit{auteur}\textsuperscript{68} and the politics of the signature.\textsuperscript{69}

\textbf{Grids and Smooth Space}

If a fixed, predetermined alphabet is Turing’s first requirement for the construction of his machine, then a bureaucratic attention to the grid is the second requirement:

Computing is normally done by writing certain symbols on paper.

We may suppose this paper is divided into squares like a child’s


\textsuperscript{67} ICA Boston \textit{Endgame: Reference and Simulation in Recent Painting and Sculpture} (Cambridge, MA: MIT Press, 1986)

\textsuperscript{68} Stephen Heath, “Comment on ‘The idea of authorship’”, \textit{Screen} 14, 3.

\textsuperscript{69} Jacques Derrida Limited inc. (Baltimore: Johns Hopkins University Press, 1977)
arithmetic book. ... I assume then that the computation is carried out on one-dimensional paper, i.e., on a tape divided into squares.\textsuperscript{70}

It can be shown, from a mathematical perspective, that Turing machines with one-dimensional tapes are just as powerful as machines with two-dimensional tapes. However, within the construct of a computational system, one cannot escape the "squares," the grid. If a sign slides out of the grid or exceeds its allotted area of one "square" (\textit{not} two or more), a computational apparatus of Turing’s design simply scans each square individually and assigns to each square a "value" of one of the symbols of the predefined alphabet it has been built around. In a sense, the machines are designed to deny them the possible cognitive state of the Kantian sublime, the moment of indecision when a phenomenon cannot be coerced into a known schema. Turing’s “squares” are, in Deleuze and Guattari’s vocabulary, a strictly “striated space” (as opposed to a “smooth space”).\textsuperscript{71} In contrast, Deleuze and Guattari assume that their machines are interruptions in “smooth”, borderless, flowing space.

Many painters have understood the radical possibilities born of a violation of the grid. I must admit though, it has only been by feeling these transgressions through a Deleuzean prosthetic that I have been able to grasp the investments in the grid made implicitly by software developers. These grids are not simply the pixelated patterns one can see on one’s computer screen; they are the grids which can be found at every level of existing computer architectures because of Turing’s initial commitment to the grid in his definition of the Turing machine. To see, for example, painter Valerie Jaudon’s invented “alphabets” imposed over

\begin{footnotesize}
\begin{itemize}
  \item[71] Gilles Deleuze and Félix Guattari \textit{A thousand plateaus: capitalism and schizophrenia} (Minneapolis: University of Minnesota Press, 1987) pp.492-499.
\end{itemize}
\end{footnotesize}
and traversing a background grid (as in, for example, her painting *Accomplice*, 1991), is to imagine an “impossible” computer machine design.

The software engineer will object at this point. If we were able to take the flowing paint that breaks an underlying grid (in the manner that Valerie Jaudon’s or Marien Schouten’s foregrounded marks break a “background” grid) and try to “reverse engineer” it (i.e., to search for both the machinic “interpreter” or “compiler” and the idiomatic sequence of machine instructions which would allow the paint to be seen as a computer program) our efforts would not produce a machine that “works” in the opinion of the software engineer.\(^7^2\) Again though, I would contest that this objection is incomplete with respect to the debates of feminist epistemology and situated knowledges.\(^7^3\) Specifically, the question begged is this one: For *whom* would such a machine not work?

A machine, as sociologist of science Bruno Latour points out, is a kind of *machination*.\(^7^4\) Obviously as a machination, a painting does work for someone, even a whole group of people: the painting is a machination which holds painter, dealer, gallery owner, museum director, art audience, canvas, and pigments

\(^7^2\) “It is futile to examine the usefulness or uselessness, the possibility or impossibility of these desiring-machines. Their impossibility and their uselessness become visible only in the autonomous artistic presentation, and there very rarely. Don’t you see that they are possible because they are; they are there in every way, and we function with them. They are eminently useful, since they constitute the two directions of the relationship between the machine and man, the *communication* of the two. At the very moment you say, “this machine is impossible,” you fail to see that you are making it possible by being yourself one of its parts, the very part that you seemed to be missing in order for it to be already working, the dancer-danger. You argue about the possibility or the usefulness, but you are already inside the machine, you are a part of it, you have put a finger inside, or an eye, your anus, or your liver (the modern version of “You are embarked…”)” D&G, p.129, Semiotext(e).


\(^7^4\) The simplest means of transforming the juxtaposed set of allies into a whole that acts as one is to tie the assembled forces to *one another*, that is, to build a *machine*. A machine, as its name implies, is first of all, a machination, a stratagem, a kind of cunning, where borrowed forces keep one another in check so that none can fly apart from the group. Bruno Latour. 1987. *Science in Action: How to follow scientists and engineers through society*. Cambridge, MA: Harvard University Press. pp.128-129.
together. Thus, questioning the maintenance of the grid can lead to an exploration of the idea that machines based on the grid, like the computer, “work” for some people and against others. In a similar manner painting-machines can work for some and against others.

Details and Abstraction

My third, consideration concerns “details.” Which “details” can be abstracted away from a text, painting, or machine? For example, Turing’s machines are based upon a certain type of “forgetting” in order to allow him (or, now, contemporary computer scientists) to build them as “discrete state machines.”

Strictly speaking there are no such [discrete state] machines. Everything really moves continuously. But there are many kinds of machines which can profitably be thought of as being discrete state machines. For instance, in considering the switcher for a lighting system it is a convenient fiction that each switch must be definitely on or definitely off. There must be intermediate positions, but for most purposes we can forget about them.75

Note that Turing’s rationale is an economical, teleological construction that depends upon what is “profitable,” “convenient,” and what “for most purposes we can forget about.” Essentially, Turing asks us to perform a sort of goal-based “abstraction,” a metonymic displacement created by selecting a discrete set of states from a continuously moving world. Turing’s moving world is probably an

image he borrowed from his physicist-colleagues. It is nevertheless striking that his description of “everything” here resembles the constant flux, flows, and chains of Deleuze and Guattari. Also, just like Deleuze and Guattari, Turing sees the genesis of a machine in the interruption of this constant motion. However, Deleuze and Guattari’s interruptions or “abstractions,” seem quite different than Turing’s purposeful isolations:

By contrast in Deleuze one finds an abstraction concerned not with extracting “information” from things (as though the material world were so much clumsy hardware), but rather with finding within things the delicate, complicated “abstract” virtualities of other things. Such abstraction doesn’t entail independence or transferability from material support and doesn’t operate according to a logic of simulation. Rather, inherent in materials, it supposes the subsistence of connections which exceed the messages of a medium, and ourselves as senders and receivers of them.76

Abstract painter Lydia Dona expands upon John Rajchman’s insight with respect to her own work.

**Demetrio Paparoni:** So a painting is not a simulation?

**Lydia Dona:** No, a painting is not a simulation, because in simulation there is only one aspect, a façade.77 Nevertheless a painting contains certain traits of simulation, since it addresses the

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77 Lydia Dona’s reference to “simulation” in this quote appears, to me, to be a reference to either computational simulations and/or Baudrillard’s simulacra but not to Deleuze’s simulacra.
question of artificiality (while at the same time going beyond artificiality). I’m interested in the fracture or friction of different models that break down in a techno-urban environment, so for me the question of reality is fluidity.78

To construct a Turing machine we must isolate out certain features of a continuous flow. This machinic logic requires one to see certain details as irrelevant. In contrast, Deleuze and Guattari ask us to see a machine as both a set of interruptions and as a set of connections or links.79 Thus, any detail might serve as a connection to something outside of the machine-painting.

The machinic painters stressed the following: that they did not paint machines as substitutes for still lifes or nudes; the machine is not a represented object anymore than the drawing of it is a representation. The aim is to introduce an element of a machine, so that it combines with something else on the full body of the canvas, be it with the painting itself, with the result that it is precisely the ensemble of the painting that functions as a desiring-machine. The induced machine is always other than the one that appears to be represented.80

Yet, “what appears to be represented” in either a painting, a machine, or a painting-machine is not a trivial issue. Whose details are intensified (and so

79 Deleuze and Guattari’s “interruptions” and “connections” are analogous to Marshall McLuhan’s media “amputations” and “extensions.”
abstracted in the Deleuzean sense) or forgotten (and so abstracted in a Platonic sense)?

**Signs, Grids and Details**

This essay, which isolates formal, technical details of Turing’s machines and Deleuze and Guattari’s machines in order to argue for a type of “autonomous” (i.e., “autonomous” from technoscience) position for painting is avant-gardist in character because of its focus on a conjunction of formal details and autonomy. I have isolated three distinctions between Turing machines and “desiring machines” and have used painting to illustrate these distinctions: (1) **Signs**: the prohibition or acceptance of a heterogeneous, expanding “alphabet” of signs or marks; (2) **Grids**: the transgression or adherence to the boundaries of the grid; and, (3) **Details**: the attention to different kinds of details and the forgetting, intensification, or “abstraction” of others.

It is the third point, “details,” which gives this essay its focus and philosophical underpinnings. Details read through Deleuze and Guattari’s theory of machines push one to examine how small variations and minutia connect an artifact, like a painting, to a larger “outside” world. Deleuze and Guattari encourage us to see an infinity of details connecting a desiring machine to others:

What defines desiring-machines is precisely their capacity for an unlimited number of connections, in every sense and in all directions.82

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81 Peter Bürger Theory of the Avant-Garde Michael Shaw (translator) (Minneapolis: University of Minnesota Press, 1984).
It is this insight that can inspire one to stand up close to a painting and see a larger significance in the brushstrokes and small variations in pigment.

However, it is not just the details, but even more importantly, it is the “unlimited number of connections” that these details can engender that separates this kind of avant-gardist (or, in Guattari’s sense “ethico-aesthetic”) “reading” from a technoscientific reading. One can tell a convincing narrative about the convergence of Deleuze and Guattari’s machines, Turing’s work in automata theory (i.e., “Turing machines”) and artificial intelligence, and the emergence and development of contemporary scientific and technical work in chaos theory, complexity and artificial intelligence. For example, Manuel De Landa narrates a convergence of these issues in his book *War in the Age of Intelligence Machines* by embedding them all in a genealogy of weapons and sophisticated war machines. Nevertheless, I think it is important to keep in mind that the technoscientific elements of this constellation of subjects (e.g., theories of chaos, complexity and work in artificial intelligence) are aimed at containing chaos, producing intelligent machines of automation to isolate or eliminate functions which are now performed by humans, and to find limits and boundaries of complexity; they are strategies of containment, isolation, and control.

In strong contrast to this is a reading of Deleuze and Guattari’s perspective which emphasizes an infinity of connections rather than the enumeration of finite limits or possible boundaries. Although the theoretics of Deleuze and Guattari can give one a new appreciation for details, a more sociological approach to artistic reception may be required to answer the types

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83 Manuel De Landa *War in the Age of Intelligent Machines* (New York: Zone Books, 1991)
84 For instance sociologist Pierre Bourdieu and artist Hans Haacke, in their respective work, have created sociological approaches to answering questions like these about art. An interesting introduction to their independent contributions can be found in their joint conversation/book: Pierre Bourdieu and Hans Haacke *Free Exchange* (Stanford, CA: Stanford University Press, 1995).
of questions that I found myself repeating but not addressing as completely as I would like to: For whom is a detail not important? Who is allowed to produce new signs? Whose space can be divided by whom and in what manner?