

Golden Age of Analog

Alexander R. Galloway

Oh, for days long gone, when intellectuals sparred over symbolic economies and cultural logics. Gone are those heady chats about *écriture* and the pleasures of textuality. How quaint would it seem today for a critic to proclaim, defiant, that *there is nothing outside of the text*. Who speaks that way anymore? Who speaks of word, symbol, text, code, economy, social structures, or cultural logics? Of course, many of us still do; nevertheless, this language feels reminiscent of another time. Or, to be more precise, the language of language is reminiscent of another time.

The world is awash in data, yet these days it is much more common to encounter scholarly takes on a series of distinctly nondigital themes: books about affect or sensation; treatises on aesthetics as first philosophy; essays on the ethical turn (turning away from the political) or on real materiality (turning away from symbolic abstraction); manifestos proclaiming, defiant, that *there is nothing outside of the real*.

A generation ago, the theoretical humanities was fixated on codes, logics, the arrangement of texts, and the machinations of the symbolic order. Today the theoretical humanities is more likely to address topics such as perception, experience, indeterminacy, or contingency. Why in the digital age have some of our best thinkers turned toward characteristically analog themes?

A Decline in Symbolic Efficiency

Yet this is already taking a lot for granted. Doesn't *digital* mean computers and the internet? And doesn't *analog* refer to older formats like phonograph records or the movies, those dusty and grainy artifacts of yore running off an

Unless otherwise noted, all translations are my own.

electric motor or perhaps even cranked by hand? Why equate *digital* with word, symbol, text, code, and logic, while defining *analog* via affect, experience, contingency, and the real?¹

Analog representation works through *continuity* or *continuous variation*, whereas digital representation works through *discrete units* like letters or integers. At the same time the phrase “an analog of such and such” signifies comparison or similarity, from the old Greek *analogos* meaning “proportionate.” (*Analog* is the American spelling of the British *analogue*, although *analogue* persists in American English in the sense of counterpart or object of comparison.) So digital and analog have a meaning in media and consumer electronics, but understood as synonyms for *discrete* and *continuous* they also pertain to long-standing philosophical discussions around similarity, identity, difference, and representation.

Debate over the definition and use of *digital* and *analog* go back at least to the development of electronic digital computers in the 1940s and '50s. “Every digital device is really an analogical device,” was Norbert Wiener’s unvarnished pronouncement at the Macy Conference of 1949.² A year later, John von Neumann would voice his own version of this kind of analog reduction: “In almost all parts of physics the underlying reality is analogical, that is, the true physical variables are in almost all cases continuous, or equivalent to continuous descriptions. The digital procedure is usually a human artifact for the sake of description.”³ Alan Turing was equally confident in the natural foundations of the analog. In reference to “discrete state” or digital machines, Turing admitted that “strictly speaking there are no such [discrete] machines. Everything really moves continuously.” The digital machine, for this father of the digital machine, was not actually real, merely a “convenient fiction.”⁴ Thus for Turing as much as for von Neumann, Wiener, and others of their ilk, the analog was associated with “the underlying reality” of nature, while

1. For an insightful introduction to the term *analog* that, for methodological reasons, is almost entirely incompatible with my own, see Jonathan Sterne, “Analog,” in *Digital Keywords: A Vocabulary of Information Society and Culture*, ed. Benjamin Peters (Princeton, N.J., 2016), pp. 31–44.

2. Norbert Wiener et al., “Possible Mechanisms of Recall and Recognition,” in *Cybernetics–Kybernetik: The Macy Conferences 1946–1953*, ed. Claus Pias, 2 vols. (Berlin, 2003), 1:158.

3. John von Neumann, comment to Ralph W. Gerard, “Some of the Problems Concerning Digital Notions in the Central Nervous System,” in *Cybernetics–Kybernetik*, 1:181–82.

4. A. M. Turing, “Computing Machinery and Intelligence,” *Mind* 59 (Oct. 1950): 439.

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the digital was a “fiction” or “artifact,” albeit a highly useful and efficient artifact.⁵ In short, the analog was real, and the digital was symbolic.⁶

But such heady philosophical discussions into *the analog as origin* were quickly forgotten, at least in those years, as scientists turned instead to the practical project of building a new kind of machine. Borne out of the analog, a new digital paradigm rapidly emerged, evident across many disciplines, not just computing and electrical engineering. Indeed, as von Neumann and others were building their digital machines, social scientists were constructing their own digital infrastructures. Structuralism and semiotics represent a high-water mark, although the digital paradigm thrived in certain strands of poststructuralism as well.⁷ (And in fact some of the most pronounced early work in digital theory was taking place in analytic philosophy.) Recall the heyday of structuralist anthropology, particularly Claude Lévi-Strauss and his 1954 essay in search of “The Mathematics of Man,” as he unambiguously termed it.⁸ Or think back to Ferdinand de Saussure, the influential Swiss semiotician, who lectured on the speaking “circuit” and the binary interplay of signifier and signified.⁹ Or recall Ernst Cassirer, who, in Erich Hörl’s succinct description, wished to make “the ‘problem of the symbolic’ the ‘systematic center’ of all philosophy.”¹⁰

5. Katherine Hayles analyzed this period of history under the rubric of “how information lost its body” (N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* [Chicago, 1999], p. 24).

6. The notion that logic and form may be added to an essentially continuous or unformed substrate has deep roots in western philosophy going back to Aristotle at least. On the gendered nature of such an arrangement see Emanuela Bianchi, *The Feminine Symptom: Aleatory Matter in the Aristotelian Cosmos* (New York, 2014).

7. While it serves as a conveniently proximate reference, the mid twentieth century was certainly not the only era for digital theory, and perhaps not even the most highly evolved. Given more time, a case could be made for the “triumph of arithmetic” that took place during the late nineteenth century around figures like Cauchy, Dedekind, and Cantor. See Sarah Pourciau, “A/ogos: An Anomalous Episode in the History of Number,” *MLN* 134 (Apr. 2019): 616–42.

8. See Claude Lévi-Strauss, “Introduction: The Mathematics of Man,” *International Social Science Bulletin* 6, no. 4 (1954): 581–90, where he cites Norbert Wiener, Claude Shannon, John von Neumann, and others. Erich Hörl has discussed the “two Claudes” in New York in the 1940s—Lévi-Strauss and Shannon—showing how Lévi-Strauss was in fact quite intimate with the cutting-edge informatic and cybernetic research at the time and crafted his structural anthropology accordingly (Erich Hörl, *Sacred Channels: The Archaic Illusion of Communication*, trans. Nils F. Schott [Amsterdam, 2018], p. 260). For more on the relation between continental theory and digital technology, see Lydia Liu, *The Freudian Robot: Digital Media and the Future of the Unconscious* (Chicago, 2010), and Bernard Dionysius Geoghegan, “From Information Theory to French Theory: Jakobson, Lévi-Strauss, and the Cybernetic Apparatus,” *Critical Inquiry* 38 (Autumn 2011): 96–126.

9. Ferdinand de Saussure, *Course in General Linguistics*, trans. Wade Baskin, ed. Perry Meisel and Haun Saussy (New York, 2011), p. 11.

10. Hörl, *Sacred Channels*, p. 122.

“Structural linguistics discovers meaning as the sum of two opposing terms, which it calls *binaries*,” wrote Rosalind Krauss in reference to Roland Barthes’s work from the 1970s.¹¹ Structuralists and poststructuralists had various names for this linguistic condition of binary relation—the symbolic order, the symbolic economy, the realm of discourse, signification and textuality—but what tied them together was the notion of a system of regularly interoperable symbolic terms such as *signifier* and *signified*, *self* and *other*, *use value* and *exchange value*, *letter* and *number* that came together to create meaning (or disrupt it). And if structuralism and semiotics reinvented a series of digital methods (symbol, word, code, logic, text), poststructuralism relaxed those methods into a more complex mixture of analog and digital elements involving suturing and play, supplement and residue, rupture and accident.

Binary code, symbols, mathematics—indeed, if mid-century social scientists did not frequently use the term *digital*, they certainly did so under other names. That era was awash in discrete symbols, codes, logic, structure, language, and text. And if some did not explicitly use *digital*, others certainly did. Nelson Goodman devoted a short but significant discussion to “Analog and Digits” in his book on semiotics, *Languages of Art: An Approach to a Theory of Symbols* (1968), which among other things elicited a critique a few years later by the philosopher David Lewis under the title “Analog and Digital.”¹² An even more detailed analysis also arrived relatively early in the form of Anthony Wilden’s *System and Structure: Essays in Communication and Exchange*, an unclassifiable cocktail of cybernetics and continental theory that contains arguably the first significant examination of the digital and the analog.¹³

11. Rosalind Krauss, *Under Blue Cup* (Cambridge, Mass., 2011), p. 17.

12. See Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols* (Indianapolis, 1976), p. 159, and David Lewis, “Analog and Digital,” *Noûs* 5 (Sept. 1971): 321–27. Goodman must be commended for investigating these concepts at a relatively early point. However, I diverge from Goodman at both the general and specific levels. Speaking generally, Goodman claimed that “a digital system has nothing special to do with digits, or an analog system with analogy,” which is clearly misguided (Goodman, *Languages of Art*, p. 160). More specifically, Goodman characterized the analog as “dense,” which contradicts how that adjective is used in number theory (see *ibid.*).

13. See Anthony Wilden, *System and Structure: Essays in Communication and Exchange* (London, 1972), esp. chap. 7. Wilden’s book would go on to influence a key essay on the concepts of digital and analog; see Eve Kosofsky Sedgwick and Adam Frank, “Shame in the Cybernetic Fold: Reading Silvan Tompkins,” *Critical Inquiry* 21 (Winter 1995): 496–522. *System and Structure* is also notable because it contains one of the earliest instances of digital theory composed by an African American, Vincent Hollier’s six-page graphical essay inserted as an appendix between Wilden’s chapters seven and eight; see Vincent Hollier, “Appendix II: Analog and Digital,” in Wilden, *System and Structure*, pp. 196–201. For more on the complicated history of African Americans and computing, see in particular Charlton McIlwain, *Black Software: The Internet and Racial Justice, from the AfroNet to Black Lives Matter* (New York, 2020).

An early follower of Jacques Lacan, Wilden was aware of the connections between cybernetics and psychoanalysis, connections forged by Lacan himself in his seminar of 1954–1955.¹⁴ Lacan was particularly fascinated by “the combinatory logic of 0 and 1,” to borrow a phrase from Lydia Liu.¹⁵ Similar to the syllable or phoneme in structural linguistics, the zero and the one represented for Lacan a series of elementary blocks that could be arranged and rearranged in a semiautonomous fashion, interfacing with consciousness but also somehow below and above it. The German media theorist Friedrich Kittler would go on to connect Lacan with the computer more explicitly.¹⁶ And by 1992 the notion that *poststructuralism equals digital* was articulated in no uncertain terms by George Landow, who argued that software and personal computing had realized ideas originally developed in French theory.¹⁷

Meanwhile, the symbolic order was already declining, falling, and waning in various ways. Jean-François Lyotard warned of a collapse of grand narratives, while Fredric Jameson wrote about the waning of modern subjectivity. Bernard Stiegler has lamented the decline in the libidinal economy, while Jodi Dean (after Slavoj Žižek) has written on the decline in symbolic efficiency.¹⁸ Do these various declines and falls not also signal a *decline in digital efficiency*, a decline in the potency of symbol, law, logic, or name? In many places around the world this decline accelerated in the 1990s—typified in philosophy by the widespread appeal of Gilles Deleuze but not reducible to him—to be consummated the following decade by the global installation of a new economy of platform capitalism and social media rooted in rhizomatic affects and distributed drives rather than more traditional constructs like law, symbol, or ego.¹⁹ All of which ends in paradox: at the moment of ubiquitous computing, the world is imbued with a series of analog cultural techniques, from assemblages and topologies to affects and sensations to contingency and heterogeneity to that most analog of analog conditions, *the real*.

14. See Jacques Lacan, *The Ego in Freud's Theory and in the Technique of Psychoanalysis 1954–1955*, trans. Sylvana Tomaselli, vol. 2 of *The Seminar of Jacques Lacan*, ed. Jacques-Alain Miller (New York, 1988). See also Svitlana Matviyenko, “Lacan's Cybernetics” (PhD diss., University of Western Ontario, 2015).

15. Liu, *The Freudian Robot*, p. 194.

16. This tendency is scattered across Kittler's work, but see in particular Kittler's gloss on Lacan's seminar 2 in Friedrich Kittler, “The World of the Symbolic—A World of the Machine,” in *Literature, Media, Information Systems*, ed. John Johnston (New York, 1997), pp. 130–46.

17. See George Landow, *Hypertext: The Convergence of Contemporary Critical Theory and Technology* (Baltimore, 1992).

18. Lurking in the wings is Marx's famous argument in *Capital* about the “tendential fall in the rate of profit”; see Karl Marx, *Capital: A Critique of Political Economy*, trans. Ben Fowkes and David Fernback, 3 vols. (New York, 1981), 3:317.

19. Not everyone agrees of course. On the persistence of the symbolic order—with Donald Trump as primal father—see Hal Foster, “Père Trump,” *October* 159 (Winter 2017): 3–6.

I begin then from an intuition about periodization, namely that the past was significantly more digital than we give it credit for and that today's Digital Age, so-called, is better characterized through a series of analog concerns. But if this article begins from an intuition about periodization, it does not linger in the waves of history. Skepticism is appropriate toward the very notion of an analog turn or a digital age, even if I might use these phrases out of convenience. Such framings might better be understood as master signifiers (for those who are more digitally inclined) or historical oscillations between contingent assemblages (for the analogically inclined). And it would be wise to treat both the digital and the analog as coequal branches rather than favor one over the other. We proceed thus through the analog itself, not by theorizing it, but by describing it—description being a characteristically analog method. Then, following the path of a kind of analog-to-digital conversion, we will slowly systematize the digital and the analog, first through the *twin* notions of logical and analogical and finally ending (in high digital style) by proposing *general formula* for the digital and the analog. The many qualities of the analog will appear along the way, whether as continuous variation, as proportion, or through the non- or extra-digital domains of sensation or contingency.

The Analog Method: A Description from the Field

The old structuralist and poststructuralist agenda has not vanished entirely, of course, even as its digital signature has slowly faded. What remains are the qualities and characteristics of the method: gaps, traces, supplements, patchiness, mixing, and messiness. These still remain the virtues of the day. As Wendy Brown put it, we must attend to “supplement,” “slippage,” and a world that “does not fully cohere.”²⁰ Anna Lowenhaupt Tsing has talked about patches and patchiness (as has Kathleen Stewart); Tsing connects this with the notion of entanglement, or what she called a “mosaic of open-ended assemblages of entangled ways of life.”²¹ Patrick Jagoda has described “a world that is messy, uncertain,” in an attempt to show “an ambivalent sensitivity to the riskiness and complicatedness inherent to all intimacies.”²² For his part Hiroki Azuma is concerned with “an endless movement of slipping sideways.”²³ And in one of the most powerful sections of *Habeas Viscus*, Alexander Weheliye

20. Wendy Brown, *Undoing the Demos: Neoliberalism's Stealth Revolution* (New York, 2015), p. 215.

21. Anna Lowenhaupt Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton, N.J., 2015), p. 4. See also Kathleen Stewart, *Ordinary Affects* (Durham, N.C., 2007).

22. Patrick Jagoda, *Network Aesthetics* (Chicago, 2016), pp. 102, 180.

23. Hiroki Azuma, *Otaku: Japan's Database Animals*, trans. Jonathan E. Abel and Shion Kono (Minneapolis, 2009), p. 105.

evoked “the sorrow songs, smooth glitches, miniscule movements, shards of hope, scraps of food, and interrupted dreams of freedom that already swarm the ether.”²⁴ Let us pause and dwell in his language for a moment: *slippages, patches, mosaics, messiness, glitches, shards, scraps, interruptions, swarms*. This is a very specific vocabulary.

At the same time, contemporary discourse tends to favor *pragmatic* concerns, from action and production, to expression, creativity, performance, and experimentation. Recall when Deleuze confessed his desire “to remove essences and to substitute events in their place.”²⁵ At play here is the old philosophical distinction between being and doing, the former a question of presence or existence and the latter a question of will, event, or action. Now, nearly fifty years after Deleuze penned that line, it is not uncommon for contemporary scholars to say that the being of an entity does not matter, what matters is the doing. The tendency is evident across a variety of disciplines. Thus from within the field of digital design, Benjamin Bratton recently wrote that “platforms are what platforms do.”²⁶ Working in a very different discipline, Jasbir Puar nevertheless said something similar about assemblages: “There are thus numerous ways to define what assemblages *are*, but I am here more interested in what assemblages *do*.”²⁷ Weheliye agrees with this pragmatic turn as well, writing that “assemblages are inherently productive, entering into polyvalent becomings to produce and give expression to previously nonexistent realities.”²⁸ And Reza Negarestani put it succinctly with his mantra, something “is only what it *does*.”²⁹ From word to deed, it appears that Johann Wolfgang von Goethe was correct after all: *In the beginning was the deed*.

Indeed, all this doing is adding up. The shift from an existential to an ergodic analysis entails a concomitant shift in the general foundations of the world. This new analog world is described in terms of process, not stasis. Becoming is the order of the day, not being. In Jane Bennett’s estimation, paraphrasing Michel Serres, our ontology is “a turbulent, immanent field in which various and variable materialities collide, congeal, morph, evolve,

24. Alexander G. Weheliye, *Habeas Viscus: Racializing Assemblages, Biopolitics, and Black Feminist Theories of the Human* (Durham, N.C., 2014), p. 131.

25. Gilles Deleuze, *The Logic of Sense*, trans. Mark Lester and Charles Stivale, ed. Constantin V. Boundas (New York, 1990), p. 53.

26. Benjamin H. Bratton, *The Stack: On Software and Sovereignty* (Cambridge, Mass., 2015), p. 41.

27. Jasbir Puar, “‘I Would Rather Be a Cyborg Than a Goddess’: Intersectionality, Assemblage, and Affective Politics,” *Transversal Texts*, transversal.at/transversal/0811/puar/en; my emphasis.

28. Weheliye, *Habeas Viscus*, p. 46.

29. Reza Negarestani, *Intelligence and Spirit* (New York, 2018), p. 1.

and disintegrate.”³⁰ (Almost every word in that quotation is nondigital.) In a recent lecture, Stanley Fish described (and decried) this new condition as a form of “principled instability.”³¹ Evident here are the familiar traces of process philosophy, an indication of the immense influence that thinkers like Alfred North Whitehead, along with Deleuze and others, have had on contemporary thought.³² For these thinkers and their followers, things do not remain static. Rather, the world shimmers and tessellates, quivering with an ineluctable vitality, forever changing and renewing itself into new forms. Overall, we are witnessing a kind of *gerund sublime* in which becoming triumphs over mere existence, in which the old prescription for critical and cultural theory—*always historicize*—has shifted into a new mandate: *always deterritorialize!*

Perhaps this accounts for the preponderance of assemblage theory in recent years. If the *gerund sublime* has taken over, if the world is populated by ergodic entities, and if they are indeed so messy, uncertain, slippery, and patchy, then it makes sense to migrate to that most reliable Deleuzian structure, the assemblage. The assemblage is a good way to account for multiplicity and difference analogically, a good way to think beyond symbolic dualisms and without language more generally. With its internal heterogeneity, the assemblage allows one to move beyond discrete objects and symbols and think instead in terms of forces, fields, and networks.³³

In this sense, the analog turn is legible as a particular debate within *materialism*. Bennett framed the debate in stark terms by admitting that she “pursue[s] a materialism in the tradition of Democritus-Epicurus-Spinoza-Diderot-Deleuze more than Hegel-Marx-Adorno.”³⁴ The slant of these two

30. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, N.C., 2010), p. xi. Robin James offers a compelling critique of terms like *vibration* and *resonance* in *The Sonic Episteme: Acoustic Resonance, Neoliberalism, and Biopolitics* (Durham, N.C., 2019).

31. Stanley Fish, “If You Count It, They Will Come: The Promise of the Digital Humanities,” 15 Sept. 2015, www.cornell.edu/video/stanley-fish-promise-of-digital-humanities

32. See Alfred North Whitehead, *Process and Reality: An Essay in Cosmology* (New York, 1978). Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts*, trans. Michael Chase (Cambridge, Mass., 2011) has been particularly influential. For more on Whitehead and contemporary theory, see Steven Shavero, *Without Criteria: Kant, Whitehead, Deleuze, and Aesthetics* (Cambridge, Mass., 2009) and *The Universe of Things: On Speculative Realism* (Minneapolis, 2014).

33. For more on *assemblage*, see Bill Brown, “Re-Assemblage (Theory, Practice, Mode),” *Critical Inquiry* 46 (Winter 2020): 259–303, where he tracks the conceptual and practical dynamics of assemblages, from art and the avant-garde to philosophy and social theory.

34. Bennett, *Vibrant Matter*, p. xiii. In pursuit of a “multitiered cosmos of becoming,” William E. Connolly offered a different but complimentary roster of names: “Nietzsche, William James, Henri Bergson, Alfred North Whitehead, Catherine Keller, Stuart Kauffman, Karen Barad, Ilya Prigogine, and Gilles Deleuze. . . . Foucault, Donna Haraway, Proust, Judith Butler, Jane Bennett, Brian Massumi, the later Althusser, Kafka, Merleau-Ponty, and Gregory Bateson” (William E. Connolly, *The Fragility of Things: Self-Organizing Processes, Neoliberal Fantasies, and Democratic Activism* [Durham, N.C., 2013], pp. 29, 29–30). For a refutation of Bennett and

rosters is clear enough. The Deleuzian strain issues from the tradition of radical materialism—*God or nature* was Spinoza’s famous formulation—while the other tradition puts the dialectic at its center, that is, the cycles of negation, estrangement, and alterity, but also their resolution through expression, realization, and an encounter with the other.

Bennett’s new materialism maintains that the world, at its core, is nothing but a mixture of consistency and accident. For such analoggers, destiny or fate do not exist. Likewise, there is no conscious human determination, no overweening will. Instead, there is primarily chaos, contingency, chance, and spontaneous accident.³⁵ These materialists conceive of matter as fundamentally aleatory, a word borrowed from the Latin meaning “a throw of dice.” They believe, following Elizabeth Grosz’s fantastic phraseology, that the world is made up of “little shards of chaos.”³⁶

From expression and process to glitches and chaos—where does this all lead? As a tour through the contemporary theoretical humanities, the references offered thus far are certainly not exhaustive and perhaps not even representative. Some readers might consider these citations themselves as little shards of chaos, too scattered to cohere into anything like a school of thought. Nevertheless, a series of qualities and characteristics emerge. (I will continue to attach *analog* to each of these summarizing descriptions, while sensitive that the term has perhaps not yet been sufficiently defined.) First and foremost, *analog methods* focus on real materiality as assemblage, multiplicity, heterogeneity, and difference. *Analog ontology*, thus, favors deterritorialization over territorialization, becoming over being, process over stasis, the open over the closed. This generates an *analog ethics* defined through doing, action, production, creativity, experimentation, and pragmatism. *Analog causality* operates via chance, accident, and chaos. And *analog aesthetics* means gaps, slippage, patchiness, and messiness.

The old critical language is still evident here of course. What was poststructuralism if not an attention to heterogeneity and difference, to the contingency

Connolly (among others), see Christian Thorne, “To the Political Ontologists,” in *Dark Trajectories: Politics of the Outside*, ed. Joshua Johnson (Miami, 2013), pp. 97–121.

35. For more on contingency and computation, see Luciana Parisi, *Contagious Architecture: Computation, Aesthetics, and Space* (Cambridge, Mass., 2013); M. Beatrice Fazi, *Contingent Computation: Abstraction, Experience, and Indeterminacy in Computational Aesthetics* (New York, 2018); and Yuk Hui, *Recursivity and Contingency* (New York, 2019).

36. Elizabeth Grosz, *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (New York, 2008), p. 28. A complicated and enigmatic notion derived from an archaic Greek divinity, chaos is favored in philosophical texts like Deleuze, *Difference and Repetition*, trans. Paul Patton (New York, 1994) and Quentin Meillassoux, *After Finitude: An Essay on the Necessity of Contingency*, trans. Ray Brassier (New York, 2008) but satirized as reactionary in books like Gilles Châtelet, *To Live and Think Like Pigs: The Incitement of Envy and Boredom in Market Democracies*, trans. Robin Mackay (New York, 2014).

of real signification? At the same time, a whole series of concerns seem to have fallen away, concerns that once played an essential part in the critical method but now seem entirely unessential. The symbolic economies and cultural logics favored by previous generations—so linguistic, so textual, so coded, so structured, so binary, so *stubbornly digital*—have been replaced by an attention to sensation, perception, affect, desire, intensity, experience, immanence, nonhuman cognition, and machinic life.³⁷ Again the question: In an age when data and information are on the rise, why have some of our best thinkers fallen back on characteristically analog themes?

The Logical and the Analogical

The short unfinished novel *Mount Analogue*, by the French poet René Daumal, is an intriguing, if also elusive, entry in the discourse on analogicity.³⁸ In contemplating the book, it is hard to know what Daumal meant by the analog mountain or even by his use of the term *analog* at all. The novel discusses mythological accounts of mountains. It mentions proportion versus scale, specifically referring to the scale and inaccessibility of the mountain. It deals with how mountains act as thresholds between the visible and the invisible. The text laments “an incurable need to understand.”³⁹ Indeed Daumal has some fun around how language relates to knowledge and understanding, for there is a character in the novel named Sogol—a reverse spelling of the old Greek word *logos*—along with a housekeeper simply named Physics. One longs for the impending arrival of someone named Sogolana, but alas she never arrives.

“All thought is a capacity to grasp the divisions of a whole,” wrote Daumal in one of the novel’s most elegant moments, “*the divisions of a whole of absolutely any kind.*”⁴⁰ What should the reader make of this passage? Is this line a hymn to the powers of rational thought? Or is it an admission that, whatever the powers of rationality, there will always exist an excess of wholes, an excess of totalities that, while perhaps graspable, in their very graspability belie a fundamental separation from thought? In a certain sense Daumal is returning

37. Carol Wilder described the analog in terms of “process, relationship, context, complexity, community, and the body” (Carol Wilder, “Being Analog,” in *The Postmodern Presence: Readings on Postmodernism in American Culture and Society*, ed. Arthur Asa Berger [Walnut Creek, Calif., 1998], p. 253). Joan W. Scott, “The Evidence of Experience” (*Critical Inquiry* 17 [Summer 1991]: 773–97) was also prescient in its ability to describe some of these transformations and indeed affect them.

38. See René Daumal, *Mount Analogue: A Tail of Non-Euclidian and Symbolically Authentic Mountaineering Adventures*, trans. Carol Cosman (New York, 2004). Anyone curious where Daumal might stand today in the digital-analog debate need only consult the novel’s verbose and vivacious subtitle.

39. *Ibid.*, p. 39; emphasis removed.

40. *Ibid.*, pp. 66–67, 67; trans. mod.

to some of the original questions of Greek philosophy: What is rationality and what is analogy? What is *logos* and what is *analogos*? So, if the previous section was an attempt to describe the analog by observing its qualities—a characteristically analog methodology—we break slightly now toward the direction of the digital by considering the analog linguistically, as a relation within language.

Terms like *analog* and *analog* share *logos* as a common root.⁴¹ Thus *logos* and *analogos* appear at first glance to be connected, at least etymologically. But how exactly? Are these two terms opposites? Or do they have a different relation? And if the analog's putative opposite is the digital, where does that put *logos*? Are *digital* and *logos* synonyms?⁴²

A number of contemporary authors have taken up the question directly. Consider Kaja Silverman's most recent work, where now in two consecutive volumes she has turned her attention away from difference and toward its supposed antonym, analogy.⁴³ Or recall how the first great North American acolyte of Deleuze, Brian Massumi, once wrote an essay called "On the Superiority of the Analog."⁴⁴ Even while writing during the first internet bubble, Massumi stayed true to his principles. He knew that to be a Deleuzian meant embracing the analog fully. He knew that to become a Deleuzian was *to become an analog philosopher*.

In that essay Massumi was not shy about providing clear definitions for both the analog and the digital. For him the analog was "a continuously variable impulse or momentum that can cross from one qualitatively different medium into another. Like electricity into sound waves. Or heat into pain. . . . Variable continuity across the qualitatively different: continuity of transformation."⁴⁵ The analog is thus a question of representation via continuous variation, a representation able to cross between qualitatively different entities or zones.

41. While *analog* and *analogy* are closely related, I will sidestep any serious discussion of analogy here, a term with a long and rich history within fields such as literary criticism and aesthetic theory, and indeed in religion, philosophy, and the hard sciences as well. Medievalists will naturally direct our attention to Thomas Aquinas and the Thomist interpretations offered in Cajetan's *De Nominum Analogia*. For some of this story and for analogy's role in philosophy and figuration more generally see, in particular, C. D. Blanton, "Theory by Analogy," *PMLA* 130 (May 2015): 750–58, written in response to Andrew Cole, *The Birth of Theory* (Chicago, 2014). For a spirited defense of analogy in computation and cognitive science, see the work of Douglas Hofstadter, most recently Douglas Hofstadter and Emmanuel Sander, *Surfaces and Essences: Analogy as the Fuel and Fire of Thinking* (New York, 2013).

42. This line of inquiry is indebted to Wendy Chun's key investigations into *logos* and digitality. See, in particular, Chun, *Programmed Visions: Software and Memory* (Cambridge, Mass., 2011).

43. See Kaja Silverman, *Flesh of My Flesh* (Stanford, Calif., 2009) and *The Miracle of Analogy: Or, The History of Photography, Part I* (Stanford, Calif., 2015).

44. See Brian Massumi, "On the Superiority of the Analog," *Parables for the Virtual: Movement, Affect, Sensation* (Durham, N.C., 2002), pp. 133–43.

45. *Ibid.*, p. 135.

(One famous example from Deleuze and Félix Guattari of an analog threshold is the wasp and the orchid.) By contrast, Massumi defined the digital as “a numerically based form of codification (zeros and ones) . . . a close cousin to quantification.”⁴⁶ These two definitions are essentially the ones I provided at the outset: *analog* means “continuity,” while *digital* means “discretization.” So, if Google and Playstation are digital, it is because they operate using quantified symbols; and if waves, vinyl records, and astrolabes are analog, it is because they operate using continuous variation across qualitative difference. (Based on this simple sense of *analog* as a specific mode of representation based in continuous variation, I will also use *the analog* to mean any scenario in which analog representation pertains.)

Logos is a common Greek term; it contains a number of combined meanings that do not necessarily map easily into English.⁴⁷ In a day-to-day sense *logos* means “speech,” as when Socrates speaks to his interlocutor or listens to the speech of another. In each case it is a question of *logos* as speech or word. Cognate with *logos* are Greek terms like *lego* (λέγω) (say, speak) and *logismos* (λογισμός), which means “accounting, counting, calculating, reckoning, and reason” and from which we derive the English term *logic*.⁴⁸ Indeed the French word for software, *logiciel*, is appealingly literal in its etymology.

“The Greek *Logos* had no opposite,” wrote Michel Foucault in his first major text published in 1961, and since then many have contemplated what he might have meant by such an assertion.⁴⁹ For what so confounded Foucault in this early volume, a study of madness, was the unspeakable nature of non-speech. For the Greeks, the simple opposite of *logos* was of course *alogos*. These are the creatures without *logos*, without speech, the brutes and animals,

46. *Ibid.*, p. 137.

47. Philosophers like Jacques Derrida have spent countless months and years plumbing the nuance and sophistication of *logos*. See in particular Jacques Derrida, *Of Grammatology*, trans. Gayatri Chakravorty Spivak (Baltimore, 1976) and *Dissemination*, trans. Barbara Johnson (Chicago, 1982). Likewise, Martin Heidegger, known for his tendency to leverage Greek etymology as a vehicle for thinking, discussed *logos* in a number of places including *Being and Time*, suggesting that, as discourse, *logos* “lets something be seen” (Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson [Oxford, 2001], p. 56). Heidegger wrote on analogy in sections 5 and 6 of Heidegger, *Aristotle's “Metaphysics” θ 1–3: On the Essence and Actuality of Force*, trans. Walter Brogan and Peter Warnek (Bloomington, Ind., 1995).

48. Heidegger and his interpreters will also point out how *logos/legein* is connected to the act of collecting or gathering: “because *legein* means *lesen*, to glean, ‘to harvest or gather [*zusammenlesen, sammeln*], to add one to the other, to include and connect [*mitrechnen*] one with the other’, the primary meaning of *logos* is ‘relation [*Beziehung*]’ or ‘relationship [*Verhältnis*]’ rather than discourse” (Stuart Elden, *Speaking Against Number: Heidegger, Language and the Politics of Calculation* [Edinburgh, 2006], p. 72).

49. Michel Foucault, “Preface to the 1961 Edition,” *History of Madness*, trans. Jonathan Murphy and Jean Khalifa, ed. Khalifa (New York, 2006), p. xxix. Derrida provided an early rejoinder to Foucault; see Derrida, “Cogito and the History of Madness,” in *Writing and Difference*, trans. Alan Bass (Chicago, 1978), pp. 39–41.

and most importantly the child, what we fittingly call the “infant,” from the Latin meaning “unspeaking” or “without speech.” The child but also its mother and women are likewise the silenced ones, at least according to a persistent patriarchal fantasy.⁵⁰ So *alogos* is the direct inversion of *logos* and thus means “unreason” and “the irrational” (literally having “no ratio”). But *alogos* is also an inversion of the very speech of *logos*, and thus *alogos* refers literally to “speechlessness.” “The alogon prohibits speaking,” wrote Serres.⁵¹ The *alogos* is mute. No word. No speech.

Embedded here is the second important meaning of *logos*. *Logos* means speech, discourse, and word, but it also means *ratio* and thus by extension *rationality* and reason.⁵² The connection between *word* and *ratio* might not be entirely clear. But consider the art of rhetoric and how a skilled rhetorician will compose and deliver speech. To speak—and to speak well—means to speak in a way that is coherent, to speak in a way in which words form proper compositional arrangements. Or consider mathematics: “Philolaus and his followers, the ‘so-called Pythagoreans’ . . . literally referred to the 4:3 ratio of the fourth, the 3:2 ratio of the fifth, and the 2:1 ratio of the octave as *logoi*,” wrote Friedrich Kittler.⁵³ Mathematical ratios like 4:3 or 3:2 were understood as *logoi* because they too, like well-composed speech, were examples of proper compositional arrangements, arrangements readily audible in music and visible in geometry.

Analogos is something different, however. The *ana-* in *analogos* does not negate *logos*, nor present its contrapositive form, but in fact produces a different relationship, a kind of parallel or implicative relation. In its most common usage, *ana-* means up or upward. *Ana-* is the opposite of *kata-*, meaning down or downward. Thus a katabatic wind (from *baino* [βαίνο], meaning “to walk, step, or go”) is the wind that flows downward off an icy glacier. And *anabasis*

50. See for instance Anne Carson, “The Gender of Sound,” in *Glass, Irony and God* (New York, 1995), pp. 119–42, where she observed that “putting a door on the female mouth has been an important project of patriarchal culture from antiquity to the present day” (p. 121).

51. Michel Serres, “The Origin on Geometry,” in *Hermes: Literature, Science, Philosophy*, trans. pub., ed. Josué V. Harari and David F. Bell (Baltimore, 1982), p. 129. Wittgenstein famously articulated this kind of philosophical dualism—*logos/alogos*, rational/irrational, sayable/unsayable—in his *Tractatus*, writing in the preface that “what can be said at all can be said clearly, and what we cannot talk about we must pass over in silence” (Ludwig Wittgenstein, “Author’s Preface,” *Tractatus Logico-Philosophicus*, trans. D. F. Pears and B. F. McGuinness [London, 1969], p. 3). The phrase is also repeated, with slight variation, in the seventh and final thesis of the work; see p. 89.

52. For more on *logos* as ratio and rationalization, see some of Lorraine Daston’s recent work, for instance Daston et al., “Enlightenment Reason, Cold War Rationality, and the Rule of Rules,” *How Reason Almost Lost Its Mind: The Strange Career of Cold War* (Chicago, 2013).

53. Kittler, “Number and Numeral,” trans. Geoffrey Winthrop-Young, *Theory, Culture & Society* 23, no. 7–8 (2006): 56.

refers to the opposite kind of motion, an upsurge or rush, as in a phrase like “the anabasis of desire” made popular during the 1960s and ’70s. But that is not the definition used here; *analogos* does not parse as “up-word” or “upward-speech.” As Pierre Chantraine noted in his dictionary of Greek etymology, *ana-* can also have a kind of distributive value, meaning “at the rate of,” “by reason of,” or “[in] proportion to.”⁵⁴ This begins to reveal the true meaning. *Analogos* means literally “proportionate with” or “according to” a due *logos*. Or, in abbreviated form, *analogos* simply means “proportion.”⁵⁵

General Formula for the Digital and the Analog

But how did an ancient Greek word meaning “proportion” eventually become shorthand for modern media technologies like the gramophone? And why use the term *analog* as a label for contemporary theorists interested in affect, intensity, and becoming? What links all these things together? What links proportion with continuity, and continuity with intensity?

Euclid is remembered as a geometer, when he is remembered at all. But Euclid’s *Elements* was an omnibus compendium of all mathematical knowledge known to him at the time, beginning with the first mathematics, geometry, then addressing ratio and proportion—that is, *logos* and *analogos*—and ultimately arithmetic, irrationality, and other topics. “There is hardly anything in mathematics more beautiful than [Euclid’s] wondrous fifth book,” wrote British mathematician Arthur Cayley.⁵⁶ Indeed the definitions that begin book 5 of the treatise furnish a series of important concepts, first the mathematical ratio, then proportion, understood as an equality of ratios.

3. A ratio is a sort of relation in respect of size between two magnitudes of the same kind [*Λόγος ἐστὶ δύο μεγεθῶν ὁμογενῶν ἢ κατὰ πηλικότητα ποιά σχέσις*].

. . .

6. Let magnitudes which have the same ratio be called proportional [*Τὰ δὲ τὸν αὐτὸν ἔχοντα λόγον μεγέθη ἀνάλογον καλεῖσθω*].⁵⁷

54. Pierre Chantraine, *Dictionnaire étymologique de la langue grecque: Histoire des mots* (Paris, 1968), p. 82.

55. Thomas Heath noted in his commentary on Euclid’s *Elements* that “*Ἀνάλογον*, though usually written in one word, is equivalent to *ἀνὰ λόγον*, in *proportion*” (Thomas Heath, “Notes on Definitions,” in Euclid, *Elements*, trans. and ed. Thomas Heath, 3 vols. [New York, 1926], 2:129).

56. Arthur Cayley, “A Presidential Address to the British Association, September 1883 (Cayley 1883),” in *From Kant to Hilbert: A Source Book in the Foundations of Mathematics*, ed. William Ewald, 2 vols. (New York, 2007), 1:559.

57. Euclid, *Elements*, 2:114.

Digital and analog appear here on the same page, perhaps for the first time, at least so under the guise of *logos* and *analogos*.⁵⁸ Of immediate interest is the expression “two magnitudes of the same kind” (*δύο μεγεθῶν ὁμογενῶν*), or, to mimic Euclid’s terminology even more closely, two *homogenous* magnitudes. What does it take for two magnitudes to be homogeneous, to be “of the same genus”?⁵⁹ They must contain a “part” or submultiple (*μέρος*) out of which each are measured without remainder.⁶⁰ Hence 4 and 3 may form the ratio 4:3 because each is measurable by a shared, discrete submultiple, the simple arithmetical unit more commonly known as 1.⁶¹ But, apples and oranges are not comparable, as the old saying goes, and may form no discrete ratio, because they share no submultiple as a common basis for measurement. (This is one indication for why aesthetics and digitality belong to fundamentally different paradigms; perception easily accommodates qualitative difference while digitality constitutionally prohibits it.) The *logos* ratio is thus a strange beast, both multiple and homogenous. The digital begins with a differential cut, the cut of distinction. But beyond the initial cut all future differentiation is based on the same genus (the homogenous). Later in the treatise, Euclid expands this basic insight by stipulating that *logos* ratios are symmetric (*σύμμετρα*), literally “with measure” or commensurable through a shared, common part.

Definition 6, already quoted above, shifts the discussion slightly. While the previous definition concerned a single ratio, itself defined as a relation of two discrete numbers, this definition duplicates the ratio, bringing two ratios into a relation of equality. When two ratios are the same, they are *analogos*, or proportional.⁶²

58. The mixture of Greek and Latin nomenclature is admittedly distracting. Because of its etymological affinity with *analogos*, I have elected to focus on *logos* as a suitable alternative to *digital*. Aden Evens reminds us that “the word *digital* derives from *deixis*, the act of pointing out, pulling something out of its immediacy to set it against and before its background” (Aden Evens, *Logic of the Digital* [New York, 2017], p. 16). Hence the word *digital* also derives from an act of discretization.

59. For more on number as genus or race, see, in particular, Katherine McKittrick, “Diachronic Loops/Deadweight Tonnage/Bad Made Measure,” *Cultural Geographies* 23, no. 1 (2016): 3–18 and “Mathematics Black Life,” *The Black Scholar* 44 (Summer 2014): 16–28.

60. Euclid, *Elements*, 2:113. Such is the gist of Euclid’s first definition in book 5.

61. Euclid defines the arithmetical unit [*μονάς*] in book 7, definition 1: “An unit is that by virtue of which each of the things that exist is called one” (Euclid, *Elements*, 2:277).

62. When Euclid begins to define the analog in book 5, definition 5, at first, he avoids the term *analogos* but instead refers to magnitudes which are “in the same ratio [*ἐν τῷ αὐτῷ λόγῳ*]” (Euclid, *Elements*, 2:114). This state of *having the same ratio* is subsequently nominated *analogos* in definition 6; see 2:114. Thus, if *logos* means “ratio,” *analogos* means “same ratio,” the former a combination of two elements, the latter an equality of two combinations.

The general formula for *logos* is thus a/b , or the ratio between two homogenous elements. Whereas the general formula for *analogos* is $a/b = c/d$, or the equation of two existing ratios.⁶³

These two expressions are revealing. At the outset, they confirm that *analogos* is, in fact, not the negation or inversion of *logos*—and thus, by extrapolation, the analog is not the opposite of the digital—but rather, in some fundamental sense, its twin or echo. Yet even as the former is shown to be a reduplication of the latter, the two terms diverge dramatically in their connotations and effects. The two expressions may look similar, and they may be composed the one out of the other, but they ultimately produce two very different technologies.

First, the digital or *logos* relies on a *homogeneous substrate* of elements that are differentiated quantitatively. Those famous “zeros and ones” get the most attention, but the rest of the integers are just as digital as are the natural numbers overall and the rational number line as a whole. And the discussion need not be limited to number, as the alphabet is an advanced digital technology too, as influential as the integers if not more so. (Indeed, in languages like Hebrew or Greek, letters of the alphabet are deployed as counting numbers.) Any other system of mediation constructed from quantitative difference will likewise earn the moniker “digital.”

In this way, the digital follows what might be called the *rule of two* in that it entails an ever-present discretization into two or more parts—the two, the three, the multiple. These parts are brought into relation and assembled into a combinatorial whole. Examples of this combinatorial mechanism have already been provided: ratio numbers like $3/4$ or $5/8$ or the composition of words and phrases from simple linguistic elements. Yet even as combinatorial wholes, such ratios never elide the two elements that form them. As in music, two voices may sing the harmony of the fifth interval, yet they will forever remain two voices. There is no fifth outside of the two, just as there is no more reduced form of 3:2 than the two arithmetical atoms that compose it.

Finally—and this will be the hardest to demonstrate since it is not explicitly provided in any of the above citations—the digital generates a *transcendental essence within a symbolic order*, that is, something significant that supersedes the merely homogeneous substrate of elements. The simple terms of the digital ratio are more or less useless. Alone, the number 5 or the letter *g* carries little meaning. Nevertheless, as combinatorial wholes, *logos* ratios contain symbolic value. Such is the magic of language. The letters of the alphabet

63. Analogy as a construction of the form “*a* is to *b* as *c* is to *d*,” familiar to any high school student studying for the SAT, is also explicitly provided by Euclid in this section; see *ibid.*, 2:114. The construction is in fact very old; analogy appears in Plato, Aristotle, the Pythagoreans, and other ancient traditions.

are not inherently meaningful, and indeed many simple words are not particularly meaningful either, nevertheless constructions may be made of them that bear deep signification. The digital is the site, in other words, of what in poststructuralism was called the symbolic order, where a system of regularly interoperable terms (*letter/number, signifier/signified, ego/superego, self/other*, and others), themselves *empty* structures, recombine in complex ways to produce rich compositions, from novels and poems all the way up to human beings and entire societies. In sum, the digital is differential and homogenous, but also transcendental. Digital atoms may be standardized, but that does not preclude them from transcending their own empty consistency. Indeed, it mandates that they do.

Like its digital twin, the analog may also be generalized into a series of movements or mechanisms. First, the analog relies on a substrate where all elements are *strictly heterogenous* to each other, which is to say they relate primarily via nonquantitative difference without recourse to an abstract or symbolic infrastructure. All that ultimately matters for the two ratios is that they are similar. So, while the analog is constructed out of two terms, presumed discrete and rational, the analog is based ultimately not in the particular constitutions of those terms but merely that they are equatable and hence proportionate. So, when Virgil makes an analog construction equating the industrious Carthaginians and a hive of bees, he does so out of some form of aesthetic similarity, not because the bee atom is homogenous with the Tyrian atom: "Such is their Toyl, and such their busy Pains, / As exercise the Bees in flow'ry Plains."⁶⁴

Fundamentally synthetic in nature, the analog follows the *rule of one*, meaning that it tends toward an integration from a regularized multiple into a continuous similarity. (Beware that, here, *one* must not be confused with terms like totality, universality, the whole, the all, or even the integer 1, since those are all symbolic and hence digital categories.) In this way, the analog leverages qualitative transformations to *generate real forms* in the absence of a universal, symbolic language.

Overall, the analog is defined as an *identity*, that is, an equality, similarity, or proportionate comparison between two elements. While homogenous identity is perfectly legal—as in analog expressions of the form $4/2 = 8/4$ —the real tooth of the analog comes with equality across heterogenous or qualitative difference. The natural sciences furnish some of the best examples, as when a vibrating string generates sound waves: the string and the wave form an analog identity, while remaining strictly heterogenous to each other. Nothing of string stuff is standardized with wave stuff, yet energy may pass between

64. Virgil, *Aeneid*, trans. John Dryden, ed. Frederick M. Keener (New York, 1997), p. 18.

them analogically. Or consider again the wasp and the orchid example from Deleuze and Guattari. Two life forms alike in no way, nevertheless the wings and carapace of the wasp resemble the petals and nodules of the orchid and vice versa. Such is the magic of analog identity.

Thus, there is no such thing as an analog alphabet or an analog language. Or if such a language exists, it would be, as Deleuze wrote, a strictly aesthetic language of “expressive movements, paralinguistic signs, breaths and screams.”⁶⁵ The digital/*logos* is formed from a relation between standardized elements. But the analog pertains to an equality of things that remain particular in their own rationality. In a sense, the digital is internally the same, while the analog is externally the same. Or at least that is where the stress falls for each term. This produces a somewhat counterintuitive scenario in which the general formula for the digital (a/b) expresses no explicit equality of terms while containing an implicit equality of type (*ὁμογενής*), and the general formula for the analog ($a/b = c/d$) appears to flaunt a pair of ratios while obliterating the particular forms of their rationality in favor of a single, generic equality.

In the end, both terms are paradoxical. The digital is internally homogeneous and yet somehow always two. And the analog is internally heterogeneous while still remaining one.⁶⁶

The Digital Operation

With all this in mind, one may begin to move beyond, shall we call it, the consumer-electronics definition of the digital (and, with it, the analog), all those many books and articles about social media, rhizomatic networks, image macros, contagious technology, protocological organization, bitcoin/blockchain, postinternet aesthetics, and so on. (I am implicating myself first and foremost with such a list.) Digitality and analogicity are general modes of mediation; they are not facts about consumer electronics, at least not only facts. Thus, the digital and the analog are not simply reducible to sociological, anthropological, or even empirical observation. Rather, digitality and analogicity are free floating representational modes evident in many different formats and times, perhaps in all of them.

Instead of a list of qualities, the digital is better defined as an event or operation. (And, of course, definition itself is a paradigmatically digital method.)

65. Deleuze, *Francis Bacon: The Logic of Sensation*, trans. Daniel Smith (New York, 2003), p. 113.

66. Which is why Deleuze, whose work is an extended love song to heterogeneity and analogicity, could also sing in praise of univocity, or “speaking in one voice”; see Deleuze, “Twenty-Fifth Series of Univocity,” *The Logic of Sense*, pp. 177–80. See also the “three principal moments of univocity” (Deleuze, *Difference and Repetition*, p. 39). And for a useful gloss, albeit mercilessly dismissive, see Alain Badiou, *Deleuze: The Clamor of Being*, trans. Louise Burchill (Minneapolis, 2000).

The digital is the capacity to divide things and make distinctions between them. Thus, the digital appears to be quite explicitly a form of abstraction, if not simply abstraction as such. Necessary to this operation is some rudimentary act of discretization or making-discrete. What is necessary is a cut, a difference, a distinction, a movement from one into two ($1 \rightarrow 2$). This is why the digital appears most frequently in the mathematical digits (0–9) or even in the digits of the body (the fingers and toes). It is why the ancient Greek *logos* required two terms, not one. It is why the nineteenth-century mathematician Richard Dedekind defined irrational numbers as *cuts*, thereby allowing the *alogos* to enter discrete discourse.⁶⁷

Digital does not mean “zeros and ones,” therefore, at least not exclusively or necessarily. If anything, it means “ones and twos,” the one dividing in two. And, as a reversal but not a negation, the analog can be conceived as the two integrating as one ($2 \rightarrow 1$). Thus, it would be wise to advance a single step in our thinking on the digital and the analog, to advance from zero to one, and then from one to two.

Advancing beyond the consumer-electronics theory of the digital and the analog, a whole new landscape becomes visible. What are the greatest digital technologies? The logic gate and the computer are merely the latest in a long stream of digital technologies that would begin with the integers, the alphabet, or even the atom, the synapse, the gene, and even the point itself (in what Euclid called the *semeion*, or mark). Surely these are the great technologies of digitality. At the same time, to think beyond consumer electronics liberates the analog as well. The analog is now not simply the vinyl record or the magnetic tape but duration, intensity, sensation, affect, as well as the wave, the gradient, and the curve. The analog exists wherever there is similarity between qualitative particulars (without the use of quantified atoms). Indeed, the analog is quite simply *the interface of real difference*, but a real having been denuded of its romantic and nostalgic aura, the real without any logic of presence or absence, the real without the principle of norm and deviation. Here the real

67. “I succeeded on November 24, 1858,” wrote Dedekind of his key breakthrough defining an irrational number as a *Schnitt*, or cut, within the number line (Julius Wilhelm Richard Dedekind, “Continuity and Irrational Numbers [Dedekind 1872],” in *From Kant to Hilbert*, 2:767). Despite his famous association with continuity, Dedekind was an arithmetical thinker of the highest order—or, here, a digital thinker—as evidenced by the many hymns to arithmetic that dot his work. For example, he chose to preface his 1888 article “The Nature and Meaning of Numbers” with the aphorism “ἀεὶ ὁ ἄνθρωπος ἀριθμητίζει [humanity is always doing arithmetic]” (Dedekind, “Was sind und was sollen Zahlen? [Dedekind 1888],” in *From Kant to Hilbert*, 2:796). And in a fragment from his *Nachlass*, Dedekind wrote that “Of all the aids which the human mind has yet created to simplify its life—that is, to simplify the work in which thinking consists—none is so momentous and so inseparably bound up with the mind’s most inward nature as the concept of *number*. . . . Every thinking man, even if he does not clearly realize it, is a man of numbers, an arithmetician” (Dedekind, “From the *Nachlass*,” in *From Kant to Hilbert*, 2:837).

is understood as full and continuous, where representation—if representation is still a relevant term within the analog—is fully coextensive with reality. The analog is the real with no abstraction, no reduction, no sampling or capture. This is not to deny that the analog is a mode of mediation. It is simply to claim that the analog is a mode of mediation that always remains within the real.

This is why the so-called analog turn, described at the outset, tends to favor empiricism and pragmatism over structuralism or rationalism. Empiricism and pragmatism are fundamentally analogical in nature; they tend to be skeptical toward generalizable, digital structures such as name, word, law, technique, category, or kind. Both empiricism and pragmatism are, in this way, nominalist at heart, which is to say they reject the proper name or law; digitality, by contrast, is little more than a generalized theory of names and naming.

This is also why the analog turn favors aesthetics over other things (reason, decision), why its adherents favor deterritorialization over territorialization, why they tend to think in terms of assemblage, multiplicity, difference, and heterogeneity. These are all conditions in which the identity of qualitative difference takes precedence over the regular structure of letter, number, or symbol. “‘In the beginning’ is chaos,” wrote Grosz in her Wellek lectures from 2007, “the whirling, unpredictable movement of forces, vibratory oscillations that constitute the universe.”⁶⁸

The colloquial sense of *analog* as “the offline,” “the old,” “the real,” “the authentic,” “the richly aesthetic” is not incorrect, therefore, even if such descriptors are ideologically distracting. The point is not so much that analogicity is more authentic but that it favors synthetic qualities over analytical atoms. Unencumbered by the proper name or rule, the analog is most readily found in those methods and fields that operate largely in the absence of discrete ratio, chief among them empiricism, pragmatism, aesthetics, and ethics. Unencumbered by discrete atoms, the analog is found most readily in technologies of curves and waves, in an aesthetic of smoothness and unbroken lines, planes, or volumes. The mirror, the echo, the ghost, the trace, the outline—these are paradigmatic analog modes. Its materiality is water, liquidity, flow, or perhaps plastic with its molding and continuous variation, plastic but also metal, with metallurgical annealing as a kind of analogical liquification of matter.⁶⁹ But water, metal, and plastic are mere metonymy for analog materiality overall, which melts and morphs into swirling “shards of chaos,” if not also “shards of hope.”

68. Grosz, *Chaos, Territory, Art*, p. 5. This book was an attempt to think art in strictly ontological terms. Likewise, in Grosz, *The Incorporeal: Ontology, Ethics, and the Limits of Materialism* (New York, 2017), she presented an analog philosophy through the lens of ethics.

69. For plastic, see the work of Heather Davis, Max Liboiron, and Catherine Malabou, each approaching plasticity from a very different angle. Or for an earlier reflection on the topic, see

In the end is it still possible to periodize the heyday of analog thinking? What about digital thinking? Consider again the 1960s, '70s, and '80s, and the high-water mark of poststructuralism. Consider the age of *écriture*, of Jean-Joseph Goux and the theory of symbolic economies in Sigmund Freud or Karl Marx. Consider the notion that *the unconscious is structured like a language* or that *there is nothing outside of the text*.⁷⁰ This, I suspect, represented peak digitality, at least from the recent past. By contrast, consider the mid-1990s through to today, the shift into full-fledged Deleuzianism, the dominance of Latourian methods in the social sciences, the rise of radical empiricism, new materialism, pragmatism and the various arguments *against method*, or even the *how-we-read-now* debates in literary criticism.⁷¹ This represents peak analogicity, the *golden age of analog*.

Which is not to indict anyone of anything. Anachronism is not a crime. In fact, analog thinking gains perspective by virtue of being untimely. Such perspective is valuable indeed. Hence, I do not seek to defend, with hygienic precision, the digital against the encroachments of an analog thought. But nor should we assume that assemblages and affects will save us. In previous writings I have tried to imagine a way of thinking that is neither digital nor analog. And many others have been guided by a similar impulse, that

Roland Barthes, "Plastic," in *Mythologies*, trans. and ed. Annette Lavers (New York, 2001), pp. 97–99. For metal see the work of Mel Y. Chen, Deleuze and Guattari, Karen Pinkus, and Eugene Thacker.

70. The expression "*there is nothing outside of the text*" is doubtless a poor translation of Derrida's "il n'y a pas de hors-texte," as pedants never tire of crowing (Derrida, *Of Grammatology*, p. 172). Yet given the popularity and influence of that English pronouncement, a veritable mantra for the flurry of intellectual activity around texts and textuality particularly during the 1970s and '80s, I am sticking with it. Spivak furnished the reader with an alternate translation in parenthesis, "there is no outside-text," along with the original French (p. 172).

71. Benjamin Boysen has referred to some of these tendencies under the heading of "semiophobia," a fear of signs, a fear of meaning making. Indeed, a fear of language, a fear of *logos*, the meaning it bears and the interpretations it entails, is all too characteristic of contemporary theory; see Benjamin Boysen, "The Embarrassment of Being Human: A Critique of New Materialism and Object-Oriented Ontology," *Orbis Litterarum* 73 (June 2018): 225–42. The antihermeneutic tradition is complex with many spurs and subvariants, whether it be oriented against interpretation (Susan Sontag), against theory (Steven Knapp and Walter Benn Michaels), against critique (Bruno Latour), or against hermeneutics in some other construal, the intricate complexity of which, at the very least, begs to be interpreted. Much of this kind of work, but not all, finds its safe space in pragmatism, which, it will be noted, is a very specific theoretical position with its own history and ideological commitments, so that it would not be a stretch to label the anti-hermeneutic tradition, if not the analog turn overall, as distinctly Anglo-American, no matter where its proponents call home. See Susan Sontag, *Against Interpretation: And Other Essays* (New York, 1964), and Bruno Latour, "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30 (Winter 2004): 225–48. For their part, Knapp and Michaels enunciate the analog's *rule of one* quite clearly when they proscribe "separate(ing) things that should not be separated" (Steven Knapp and Walter Benn Michaels, "Against Theory," *Critical Inquiry* 8 [Summer 1982]: 741).

the digital-analog distinction itself is part of the problem; so wouldn't it be easier just to dump it?

Nevertheless, such speculations are a privilege. An old Marxist once said that "fear of handling shit is a luxury a sewerman cannot necessarily afford."⁷² As recent geopolitical events demonstrate, the symbolic order is alive and well, whether it be in the command of the sovereign or the infrastructure of the machine. The digital is the site of contemporary power. The digital is where capital exploits labor. The digital organizes technologies, bodies, and societies.

But the digital means something else as well. The digital is the mechanism of negation, of the confrontation of the *two*, of breaking with the present state of affairs. Indeed, the digital is the site of the event, and thus of a political confrontation more generally. *Digital* is thus both a term to describe the contemporary infrastructure of power but also a term of art meaning cut or distinction. In this way, the digital is both the site and the stake in any contemporary struggle, as Stuart Hall once said about popular culture.⁷³

It is time to turn our attention back again to the digital, therefore, not at the expense of real analogicity, but as a coequal branch. Here we may give equal attention to what Katherine McKittrick and Alexander Weheliye have called the "heavy waves and vibrations" but also the "wicked mathematics" of contemporary life, in both body and mind.⁷⁴

72. Hans Magnus Enzensberger, "Constituents of a Theory of the Media," trans. Stuart Hood, in *Electronic Culture: Technology and Visual Representation*, ed. Timothy Druckrey (New York, 1996), p. 67.

73. See Stuart Hall, "Notes on Deconstructing 'the Popular,'" in *Cultural Theory and Popular Culture: A Reader*, ed. John Storey (London, 1998), p. 453.

74. Katherine McKittrick and Alexander G. Weheliye, "808s & Heartbreak," *Propter Nos* 2 (Fall 2017): 13, 33. "Ida B. Wells-Barnett, W.E.B. Du Bois, and Sun Ra come to mind in terms of 'wicked mathematics,' since they all use mathematics, numbers, calculations, tabulations, charts, tables with and against the master-codes of Man" (p. 33).