

A Slow,  
Contemporary  
Violence:  
Damaged  
Environments  
of Technological  
Culture

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## I. A SLOW PHOTOGRAPHIC CHEMISTRY OF AN EXTENDED WAR

Let us start with a hypothesis that opens up the discussion about the contemporary in this text: The contemporary condition expands to a multitude of times that overlap and that cannot be resolved into one, simple designation such as “new” or “old.” That is also the reason why I want to address the contemporary as a multitemporal reality where slowness entangles with the technological microtemporalities; time-critical media that are of time, but more importantly, manipulate the time-axis, which (in)forms our horizon of perception, ethics, affects, and more. Hence the contemporary becomes detached from human-only time and to a time of other sort of tempor(e)-alities as they pertain to the current moment.<sup>1</sup> This sort of an asynchronous ontology of time has been already discussed in contexts of the postdigital as one particular way to understand media culture that does not proceed in one unified rhythm of experience or development. Geoff Cox has particularly clearly demonstrated that “[t]he complexity of historical temporality”<sup>2</sup> is one that does not resolve itself to a historical periodization so much as to a cartography of the multiple levels, processes and conceptualisations of time that then produces also a map of issues: the contemporary as a “moment in which shared issues that hold a certain currency are negotiated and expanded.”<sup>3</sup> We need to adjust to a complex sense of perception of time that constitutes the contemporary.

1. In this, I am following Wolfgang Ernst's definitions of time-criticality, well summarized by Anthony Enns, “Foreword: Media History versus Media Archaeology: German Media Theory and Wolfgang Ernst's Chronopoetics,” in Wolfgang Ernst, *Chronopoetics: The Temporal Being and Operativity of Technological Media*, trans. Anthony Enns. (London: Rowman & Littlefield, 2016), xx.

2. Geoff Cox, “The Post-digital and the Problem of Temporality,” in *Postdigital Aesthetics: Art Computation, and Design*, eds. David M. Berry and Michael Dieter. (Basingstoke: Palgrave, 2015), 160.

3. Cox, “The Post-digital and the Problem of Temporality,” 157.

I am interested in how the contemporary condition enables a focus on the tight link between environmental issues and technology, or more specifically: to address media technologies in the context of the Anthropocene and climate change. This shifts from the focus on technologies to the wider environmental and other rhythms that permeate our technological culture. This essay is a short take on the technological contemporary, and how it is grounded in the slowness of earth's dynamics, visual operations, geopolitics, and colonial arrangements. I am interested in how the contemporary planetary situation is a complex ecology of space, governance, and time. The contemporary becomes this sort of a fluid horizon where the relevancy of contemporary art continues to be about the complexification of the time and place of the assumed now as a long temporal and geographic stretch. One can think of the contemporary as a way to open up the complex entanglement of the temporal determinations of what constitutes the now as a stretch between multiple time horizons, which however have an implication on place too: that is why the essay at times focuses on locations, spatial formations, and movements of materials across the planet. Thus, the contemporary has an angle towards time: it is a marker of temporality and this essay has a particular focus of addressing a cartography of that temporality as part of technology. It works through key terms such as *slow violence* that forms a particular rhythm of the contemporary that does not open to immediate experience, yet forms one background of that on a very bodily level too. This brings an alternative set of temporal concepts into play than discussing accelerationism<sup>4</sup> or futurity—hence,

4. Of course, accelerationism is not so much about speed, despite some of the connotations, but a more complex set of arguments relating to the possibilities of reappropriation of technological possibilities, platforms and infrastructures for alternative ends. For discussion and different positions, see Robin Mackay

and Armen Avanessian, eds., *Accelerate: The Accelerationist Reader* (Falmouth/Berlin: Urbanomic/Merve, 2014). I am, however, more interested in a set of concepts that help us to understand the multiplicities of time at play in contemporary culture, not merely as a future-oriented perspective.

I want to address the idea of temporal conglomerations and deep times of contemporary geopolitics as slowness or long term durations that unfold as not immediate for the human perception. I want to start by way of photographic art.



Fig. 1: A close up of *Her Taraf–No Man’s Land* by Güven İncirlioğlu. Used with permission.

As part of a selection of works from the 3rd and 4th Çanakkale Biennial in Turkey, Güven İncirlioğlu’s installation piece *Her Taraf–No Man’s Land* from 2014 is one of the many art and culture commentaries about the Gallipoli campaign, also known as Dardanelles Campaign, that took place on Turkish soil during the First World War. The events have been commemorated over the past times on many occasions and by many institutions from official governments to universities to cultural institutions. The war and its relation to modern Europe and global geopolitics has multiple narratives, and for historians of media and technology, it has been marked as a turning point of the twentieth century. The war was also a mobilization of new technologies including the wristwatch and different solutions for wireless communication on the front line; the media connections were important in military operations, but they also started to enter the private sphere of the domestic life. In addition, the chemical technologies presented a more efficient way of destruction from the air both as planes and as chemical warfare, which was employed on the European front effectively; such also formed the backbone of

the pesticide-enhanced agriculture of the twentieth and twenty-first century.

Many of the military operations and events took place on the outskirts of our current version of Europe, including Turkey and the Ottoman Empire. A hundred years after the war, and a hundred years after the start of the naval assault by Britain and France, on 25 April 1915, the digital photographs in the installation tell a partial historical story about what remains after the war and its devastation. The images do not, however, feature the usual iconography of human memory: of old photographs juxtaposed with other objects of memories; of faces as souvenirs of the old grainy image era transported in photography. It is a story not so much of faces but of landscapes of war and technology, of chemistry and destruction.

The photographic installation is itself a sort of a mini-landscape that occupies one wall. The images commemorate the First World War as an event of technological warfare of massive ecological scales. But it also becomes clear that the commemoration works in alternative ways; it is less as a celebration of the Ottoman victory than a subtle sort of a monument that entangles social history and natural history, and acts as a conglomeration of different temporal regimes. Even this distancing from the nationalist narrative is worthwhile noticing in the midst of the years of strong religiously tuned nationalist rhetoric and policy measures of current day Turkey. But the temporal politics of the images works differently. Enhanced by the atmosphere of silence surrounding the digital images placed on the walls of the Depo-gallery, Incirlioğlu's piece is described as a commentary on the two times of "human life and the time of nature," as the accompanying text on the wall informs. A usual historical narrative builds the memory around the 100 year milestone from the events, but the piece reminds of the multiple ways of narrating and recording time — not a passing of time, but a slow chemical

sedimentation of time; it reminds how time is not merely a passing of events, but a milieu of multiple ways of accounting for it in the midst of human and non-human agents. It expresses a landscape of time, but not a landscape of the usual mastery through which we have been accustomed to think of nature in art history. It is a landscape, which we are still involved in.



Fig. 2: Installation view at Depo Gallery of *Her Taraf–No Man's Land* by Güven İncirlioğlu. Used with permission.

The title *No Man's Land* refers to the contested zone between the trenches that during the long months until January 1916 changed occupation many times. It brings to mind the various historical narratives of human misery that the existential non-space of the trench meant — both in terms of anxiety of waiting, the deadly warfare and also the stink of diseased bodies.

For material stories of the war, writers have addressed “bunker archaeology”<sup>5</sup> as the architectural legacy of war that transforms into the concrete aesthetics of the Cold War that still lingers on in port and other towns bombed down during the latter of the two world wars, and replaced by Brutalist building blocks in many of their central quarters. But İncirlioğlu

5. Paul Virilio, *Bunker Archaeology*, trans. George Collins (New York: Princeton Architectural Press, 1994).

extends from the social and human history of ruins to what lies beneath the architectural as its ground, the soil and the seabed. His photographic installation talks of the invisible chemical traces of dead bodies, body parts, barbed wired, gun shells, mines, dead trees, and flora — a natural history of the intensity of the war localized back then in Çanakkale but one that seems in its own way planetary. The geopolitical aim of landing through Çanakkale to reach Istanbul never succeeded according to the plans, but the geophysical legacy of such warfare in the age of advanced machinery left its concrete trace in the soil. Incirlioğlu's meditation is not, however, only about that particular piece of land, the landing site and its territories formed of trenches, blue waters giving way to the war ships that connected to the supply routes, distant ports in England and other places, and many other operations; it also includes a global perspective.

He continues by way of a short biospheric meditation of technical war: "Today, it is possible to say that the global state of war that also encompasses the biosphere has been going on for a century."<sup>6</sup> Incirlioğlu continues referring to the annihilation of masses in the Middle East, Africa, Asia — an extension of the continued war; on the other, the "total destruction of human habitats, rivers, forests and the biological-mineral world is being processed on by the neo-liberal policies worldwide. In this context, today's Istanbul's northern forests, quarries, African gold mines, vast territories of fracking in Canada and all other sites of destruction [...] resemble the scene of a 'no man's land'."<sup>7</sup>

The story told was not after all a commemoration of a war that ended but the war that *never ended*; the war that facilitated an entry of new sorts of technical forms of control,

6. *Her Taraf*, exhibition notes, Çanakkale Biennial: Coordinates 40°9'0"N-26°24'0"E, Depo Gallery, February – March 2015.

7. *Her Taraf*.

regulation, production of chemicals and more — an apt theme considering we are living in a sort of a continuous Cold War<sup>8</sup> defined by territorial claims, energy wars, realpolitik of terrorism entangled with geopolitics, movements of biomass that expresses itself as the human suffering of forced refugee movements. Beginnings and endings become only temporary markers for narratives that are insufficient for the complexity of this time. The sort of a war we are addressing does not lend itself to easy stories of ideological oppositions but to complex networks, which entangle strategies and tactics with environmental realities and the finitude of the world of energy and materials. These sorts of wars are *geopolitical* in the fundamental sense, and do not involve just the two sides of troops in trenches. Indeed, it moves the focus from the human actors, soldiers, tragedies of personal, family and other scales to those of soil, the ground, the air — an elemental tragedy that is the backdrop in which a drama of the Anthropocene might unfold. It is also a tragedy that comes out clearest in its slowness.

Rob Nixon's study on "slow violence" is here an excellent reference point for a theoretical elaboration as to the environmental impact of colonialism, global corporate operations as well the modern warfare that cannot be statistically summarized in terms of the official casualties but needs a different sort of a narrative and temporal framework to reveal its longer term impact. Slow violence refers both to the realities of chemical and structural violence in different colonial and post-colonial conflicts and also the narrative ways in which to make this slow violence visible and accountable. Nixon refers to the necessity to apprehend this sort of slow reality, "whether on a cellular or a transnational scale"<sup>9</sup> and

8. On the extended legacy of the Cold War, see John Beck and Ryan Bishop, eds., *Cold War Legacies: Systems, Theory, Aesthetics* (Edinburgh: Edinburgh University Press, 2016).

9. Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2011), 15.



to ask how to extend the cognitive and affective capacities of talking about what lies outside the first hand sensory, or even the time-span of human perception. How does one speak of a slowness, especially one that registers slowly as psychological and biological damage by way of accumulated chemicals, toxic soils, and mental disorders? How do we address this by way of visual culture that needs to attach to a multitemporal notion of time?

He elaborates this by way of a reference to Mary Louise Pratt's thoughts:

Planetary consciousness (a notion that has undergone a host of theoretical formulations) becomes pertinent here, perhaps most usefully in the sense in which Mary Louise Pratt elaborates it, linking questions of power and perspective, keeping front and center the often latent, often invisible violence in the view. Who gets to see, and from where? When and how does such empowered seeing become normative? And what perspectives — not least those of the poor or women or the colonized — do hegemonic sight conventions of visuality obscure? Pratt's formulation of planetary consciousness remains invaluable because it allows us to connect forms of apprehension to forms of imperial violence.<sup>10</sup>

What sort of politics is this? It picks up on a different set of temporal coordinates than many of the other discussions at the moment that emphasize acceleration and speed. It is more likely to speak to the set of concerns that Sarah Sharma has activated by way of reference to Harold Innis. Sharma writes that "the temporal is political regardless of speed and is present no matter what the dominant technologies of the day are." Sharma underlines how this is "not a new condition resulting

10. Nixon, *Slow Violence and the Environmentalism of the Poor*, 15.

from speedup but an enduring political and economic reality with important cultural effects.”<sup>11</sup> Her suggestion of a *power-chronography* is then an attempt to make sense of the multiple speeds that define various techniques, actions, infrastructures, and not least, lived experiences of contemporary culture.

There is also another level that complements lived temporalities and is another sort of time, perhaps non-human. Provocatively, Thomas Pynchon once suggested, about the Second World War, that perhaps it was never ideological in the traditional sense:

This War was never political at all, the politics was all theatre, all just to keep the people distracted [...] secretly, it was being dictated instead by the needs of technology [...]. The real crises were crises of allocation and priority, not among firms — it was only staged to look that way — but among the different Technologies, Plastics, Electronics, Aircraft, and their needs which are understood only by the ruling elite.<sup>12</sup>

Such a provocation leads also to discuss what do technologies, plastics, and more need — and how they link to the mobilization and exploitation of organic, including the environmental forces, including the worlds devoid of humans but full of life, chemical events, biospheric and atmospheric processes. This is a question of a political world of a different sort than in Pynchon’s *Gravity’s Rainbow* as it takes its aim at the global geopolitical and corporate measures that impose a regime of distraction. Pynchon’s version comes closer to narratives in media studies too, but also needs to be complemented with a related focus on power-chronographies, time-axis manipulation and slow

11. Sarah Sharma, *In the Meantime: Temporality and Cultural Politics* (Durham: Duke University Press, 2014), 11.

12. Thomas Pynchon, *Gravity’s Rainbow*, quoted in Geoffrey Winthrop-Young, “Hunting a Whale of State: Kittler and his Terrorists,” *Cultural Politics*, vol. 8, issue 3 (2012): 407.

violence. We can call this a slow (media) technological violence of war: it is the soil, nature, the chemical residue that stayed as an archive of violence, and the chemical pollution that keeps on dispossessing certain human groups as much as various species and the biosphere in this extended warfare. It relates to the extended environmental impact of the link between contemporary multitempor(e)alities and the media technological materials as part of supply routes and the processes of fabrication involving rare earths and other earth materials that need to be refined for their usefulness as part of production of electronic objects. This slow media violence of geophysical proportions is the main milieu in which this text moves and builds its argument.

## II. MATERIALS OF MEDIA

Relating to the above contextualization of slow violence, one has to admit that war is a rather obvious starting point in media and art theory. The references to Pynchon as well as the history of the military and war are abundant in accounts such as Friedrich Kittler's media theoretical insight into history as well as for example Virilio's take on technical visibility. In Kittler's writings, it was most often bound together with an evaluation and even a clandestine *appreciation* of the role of the military-industrial complex. Indeed, if, for Martin Heidegger, "technology is entrenched in our history" (in his lectures on Parmenides) we learned via Kittler that it is in *the trenches* in which technology becomes history.<sup>13</sup>

Media technologies embody a clandestine history of military investment, engineering and scientific contexts, which some have also expressed with the term "military-industrial-entertainment-academic complex."<sup>14</sup> Kittler's writing argued for the existence of a secret story of mobilization of technology, knowledge, materials and energy that brought Kittler to a proximity with Pynchon's narrative constructs. The huts of Bletchley Park, rocket sites at Peenemünde, abandoned radar stations, bunkers, are ruins of historical significance and reminders of the original sites where media technologies take place: computers, rockets, advanced mathematics employed as part of the war effort, giving us later the civilian uses of different audio and visual hardware, wireless communications and signal frequency hopping, and so forth. What trickles down, is visible and hearable as media

13. Besides Kittler's various books and texts, see for example, Geoffrey Winthrop-Young, "Drill and Distraction in the Yellow Submarine: On the Dominance of War in Friedrich Kittler's Media Theory,"

*Critical Inquiry*, vol. 28, no. 4 (Summer 2002): 825–854.

14. Ryan Bishop, "The Global University," *Theory, Culture & Society* (2006): 23 (2–3), 563–566.

culture and pop music.<sup>15</sup> Of course, there is more to this sort of an argument — as Geoffrey Winthrop-Young demonstrates, the difficulty of addressing war and Kittler is that it was such an overdetermined combination that was used in so many alternative ways that Winthrop-Young summarizes as *motor, model, and motivation*.<sup>16</sup>

Without getting drawn into discussions of war, media and German media theory, one has to note that the shortcomings of Kittler's claims have also been registered.<sup>17</sup> As one minor contribution, I am interested in how Kittler's thoughts on materiality can be expanded and made to discuss the wider context in which technical media operate. My proposal relates to some of the more environmental histories of media materiality and how they present an alternative, at times complementary and at times diverting, suggestion. But instead of thinking of "the environment" as a contained thing, I want to approach it through dynamics and temporalities. One such key concept for rethinking time and media comes from Siegfried Zielinski who introduced early on the idea of "palaeontology of media," or "deep time of the media," with however a focus different from mine.<sup>18</sup> Zielinski's focus is not related to the ecological turn I am interested in but offers the interesting set of concepts that bend time to become radically expanded to earth durations. The alternative focus and temporal schemes remind us that dynamic materiality, a secret life of other temporalities, does not have to start with war. It can commence from an appreciation of ecological multiplicities that seem to borrow more from the vocabulary of Félix

15. Friedrich Kittler, "Rock Music: Misuse of Military Equipment," in *The Truth of the Technological World*, trans. Erik Butler (Stanford, CA: Stanford University Press, 2014).

16. Geoffrey Winthrop-Young, "De Bellis Germanicis: Kittler, the Third Reich, and the German Wars," *Cultural Politics*, vol. 11, issue 3 (November 2015): 361–375.

17. See, again, for example Winthrop-Young, "Drill and Distraction in the Yellow Submarine."

18. Siegfried Zielinski, *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means*, trans. Gloria Custance (Cambridge, MA: MIT Press, 2006).

Guattari<sup>19</sup> than Kittler, and which acknowledge the rich impact post-structuralist theory contributed to ecological thinking.<sup>20</sup> Meditations on war have gradually turned to meditations concerning the more generalized hostilities to which we refer by the term “Anthropocene.”<sup>21</sup>

Hence a proposition for a geological investigation of media culture is actually meant to work in this particular manner of expansion of interest and the realization of how media studies can be more than just media analysis or focus on the triangle of interests in “text, audience, industry.”<sup>22</sup> It can inspire to expand and renew domains of knowledge (including academic methodology and theory); and also, more specifically, it can refresh what we mean by media materiality and by media time. It is an extension of the normal focus on social histories and times of the human media — whether of the McLuhan type characterization of media as extensions of man — or the more nuanced type of focus on the uses of media as tools. This other manner of extensions relates to the question of where we start a media studies analysis. Can we think of mediation as something more than just the thing contained in media devices?<sup>23</sup> This does not necessarily have

19. Félix Guattari, *Three Ecologies*, trans. Ian Pindar and Paul Sutton (London: The Athlone Press, 2000).

20. Verena Andermatt Conley, *Eco-politics: The Environment in Poststructuralist Thought* (London: Routledge, 1997).

21. Terms are important and yet they have to be seen as ways to impact and entangle with the real world, instead of a merely internal theory discussion. McKenzie Wark acknowledges this too, by way of listing the various terms invented in theory that are of creative consequence for the focus — including Capitalocene, Manthropocene, Anthrobscene, Chthulucene. “The Anthropocene introduces the labor point of view — in the broadest possible sense — into *geology*. Perhaps the challenge is then to find analogous but different ways to hack other specialized domains of knowledge,

to orient them to the situation and the tasks at hand.” Wark quoted online from excerpt on *Flavorwire*, <http://flavorwire.com/516562/flavorwire-exclusive-civilization-is-doomed-mckenzie-wark-takes-on-the-anthropocene>.

22. John Durham Peters, “Strange sympathies: Horizons of German and American media theory,” in *American Studies as Media Studies*, ed. Frank Kelleter and Daniel Stein (Heidelberg: Universitätsverlag, 2008), 4–5.

23. On mediation that precedes a narrow definition of media devices, see Sean Cubitt, *Practice of Light: A Genealogy of Visual Practices from Prints to Pixels* (Cambridge, MA: MIT Press, 2014), 2–3. See also Richard Grusin, “Radical Mediation,” *Critical Inquiry*, vol. 42, no. 1 (Autumn 2015): 124–148.

to be a New Age type of adoration of cosmic media realities but a realization that media is about manipulation of light, energy, materials, minerals, and more. In short, media is composed of the geophysical minerals and energies necessary to run high tech computational processes that constitute this other sort of a planetary level. What Jesuit priest Teilhard de Chardin branded as the “Noosphere” is actually a geopolitical circuiting of the planet via its underbelly, the infrastructure also necessary for the perception of the existence of the planet from its underground to its heavens, from its mines to its satellites in the sky.<sup>24</sup>

This conceptual shift is visible in many fields in media studies of the past years, as well as in the contemporary art world, which has embraced both a focus on the non-human and also a more specific focus on geophysics. I will return later to these ways the contemporary technological arts engage with the slow media violence in the Anthropocene. In writings and research about media, the rather simultaneous emergence of so many important studies about infrastructure is one such example of the raised awareness of the entanglement of media technologies and their environmental impact. It relates to the articulated connections between the most local and the planetary — of sites of infrastructure and realities of global signal traffic, as Lisa Parks and Nicole Starosielski have presented. Besides foregrounding “processes of distribution,”<sup>25</sup> it also relates to opening up a new materialist perspective to this distribution: “the resources, technologies, labor, and relations that are required to shape, energize, and sustain the distribution of audiovisual signal traffic on global, national, and local scales.”<sup>26</sup> Such are different structurations of time which

24. Nicole Starosielski, *The Undersea Network* (Durham: Duke University Press, 2015). Lisa Parks, *Cultures in Orbit: Satellites and the Televisual* (Durham: Duke University Press, 2005).

25. Lisa Parks and Nicole Starosielski,

“Introduction,” in *Signal Traffic: Critical Studies of Media Infrastructures*, ed. Lisa Parks and Nicole Starosielski (Urbana: Chicago: University of Illinois Press, 2015), 5.

26. Parks and Starosielski, *Signal Traffic*, 5.

are not merely human experienced. They also function on the level of signals that are microtemporal.<sup>27</sup>

However, what moves is not only the time-critical technological operations of signal traffic, but also the materials that make signal traffic possible; the material infrastructures themselves are also, managed across planetary supply chains. An awareness of the mineral constitution of media has gradually entered the vocabulary of media theory too as has a careful mapping of the multiple levels of materials and technocultural practices that contribute to a historically and thematically expanded understanding of the critical backbone of media culture.<sup>28</sup> In terms of the mineral and metal realities, coltan is often discussed because of its importance as an ore that can be refined as tantalum, an essential part of technological culture of game consoles, mobile phones and more. The chemical properties of the rare earths are however in some cases embedded in the dirty politics of the supply routes, having included use of child labor in mining as well as contextualized in the complex political contexts of the Democratic Republic of Congo. In other locations, such as in Baotou in China rare earth production also leaves not merely a proverbial trace, but a whole toxic landscape from the tailings: acids, heavy metals, carcinogens, and radioactive materials.<sup>29</sup> But also other sorts of minerals, metals, and rare earths too are part of media technological culture, some of it very mundane, some of it less so: large amounts of tin, cobalt, palladium, silver, gold, and copper go to media technologies; copper was crucial for the establishment of the earlier, nineteenth and twentieth century global network society of telecommunications; lithium is one crucial alkali

27. On microtemporalities that bypass the human cognitive and sensorial capacities, see Mark B. N. Hansen, *Feed Forward: On the Future of Twenty-First Century Media* (Chicago: Chicago University Press, 2015); Wolfgang Ernst, *Digital Memory and the Archive* (Minneapolis: University of Minnesota Press, 2013).

28. See the forthcoming special section on "Mediated Geologies," edited by Jussi Parikka, *Cultural Politics* (Durham: Duke University Press, 2016).

29. This information relates to the Unknown Fields Division travel to the region, documented in their "Rare Earthenware" project to which we will return later.



metal that is in increasing demand because the role it plays in environmental battery technologies (and hence the “green smart futures”); considering basic elements of digital culture, a computer chip demands about sixty different minerals in its construction, a fact recognized in national security reports over the past ten years.<sup>30</sup>

One could easily claim that this is merely an extension of the hardware focus of some media theoretical accounts. The detailed view of *what makes media media* is itself however connected to a wider set of networks and political economic questions and scientific contexts which are the conditions of existence of what constitutes the contemporary as media cultural situation. It is the sort of effective administrative reality that these sorts of lists about minerals and materials constitute and express one node in various geopolitical strategies and tactical operations that then go to enabling the smooth functioning of supply lines. Hence in this spatial distribution of materials the question of *when* becomes also important; when do materials transform into refined materials, embedded into devices, transported across, entering into homes, cars, and other situations of use as entertainment and when in their lifespan do they turn again into a bundle of unusable materials, scrap metals, and residual minerals?

In addition to the recent awareness in media theory, it is also a cultural historical theme that characterizes the Cold War. The necessity in management of energy and non-fuel mineral resources was in many ways about the management of energy and mineral resources. In the 1970s, especially from the US and allied perspective, this related to what was referred to as the “short- and long-term reliability and availability of foreign sources of oil and other energy and nonfuel mineral

30. National Research Council, *Minerals, Critical Minerals, and the U.S. Economy* (Washington: National Academies Press, 2008), chap 2.

31. National Research Council, *Minerals, Critical Minerals, and the U.S. Economy*, ix. See also Thomas Graedel et al., *On the material basis of modern society*, PNAS Early Edition (2013): 1–6.

resources such as bauxite and cobalt.”<sup>31</sup> The extended Cold War, and the various measures which tie the work of private corporations in mining, logistics, etc. with national and regional security interests is a complex bundle of actants, processes, and systems.<sup>32</sup>

In other words, the global nature of the nonfuel mineral market has mobilized a sense of criticality that ranges from availability of tantalum (from coltan for example) to the wider sense of infrastructural dependency that reveals this longer, deeper mineral constitution of media. While scholars such as Sean Cubitt<sup>33</sup> have been especially important in talking of the need for a refined look at hardware—and the neo-colonial ecopolitics of resource extraction that systematically have a relation with lax regulation in indigenous lands—we can continue that line of thought to talk of the geophysics of media technologies as the true *geos* of geopolitics and the multiscalar reality of this material-temporal situation. The massive change from primary reliance on just few key materials only over 100 years ago (wood, brick, iron, copper, gold, silver, and then in the twentieth century plastics) has been replaced by a meticulous production, refinement, and standardization of minuscule elements, not least, minerals, that are crucial for the microchipped technological society. It was already recognized in Lewis Mumford’s account from the 1930s that the new technological period will be one of new power sources, petroleum, transportability but also of rare metals and metallic

32. In more historical terms, it has been well-documented how China grew since the 1980s and 1990s to become a central player in the mineral production and supply market. This was crucial for its internal needs but also for being one of the major export countries for a range of industrial minerals, with also gradual export restrictions in the 2000s put into place. Jessica Elzea Kogel et al., eds., *Industrial Minerals and Rocks: Commodities, Markets and Uses*, 7th edition (Littleton, Colorado: Society for Mining,

Metallurgy and Exploration, Inc., 2006), 54. While restrictions were recently lifted after pressure from WTO, the situation however revealed how important the control of rare earths is for the technological culture and the geopolitics of technology. Chuin-Wei Yap, “China Ends Rare Earth Minerals Exports Quotas,” *The Wall Street Journal*, January 5, 2015.

33. See Sean Cubitt, “Decolonizing Ecomedia,” *Cultural Politics*, vol. 10, issue 3 (2014): 275–286.

earths, as he described: tantalum, tungsten, thorium, cerium, iridium, platinum, etc. This was of course before the birth of the electronic society, and yet, such elements were essential, such as selenium useful for “automatic counting devices and electric door-openers.”<sup>34</sup> These minuscule material hinges were essential for the everyday to become everyday — that is unnoticed as background tasks — and created in strategic sites of material production of technological culture such as the Bell Labs and other R&D sites.

Aptly, Mumford spoke of the paleotechnical revolution, or threshold, that formed an essential part in the early history of technological modernization. The focus on mines as the site of technology was expressed in two related ways: both the economic mobilization of resources and capital to build extensive industrial mines and the significance of what Mumford called the “first completely inorganic environment to be created and lived in by man: far more inorganic than the giant city that Spengler has used as a symbol of the last stages of mechanical desiccation.”<sup>35</sup> Mumford continues: “Field and forest and stream and ocean are the environment of life: the mine is the environment alone of ores, minerals, metals.”<sup>36</sup> But it was this reality of the mine that also made possible then to imagine further inorganic environments both under and above the ground in terms of the infrastructuring of modern technological cities. So is Mumford’s description not merely one way to acknowledge the historically changing material base of technological society but also a way to account for the various times and spaces in which infrastructures operate? The frightening fantasy of underground became a key narrative trope too,<sup>37</sup> but also perhaps telling the story

34. Lewis Mumford, *Technics and Civilization* (Chicago: University of Chicago Press, 2010), 231.

35. Mumford, *Technics and Civilization*, 69.

36. Mumford, *Technics and Civilization*, 69.

37. Rosalind Williams, *Notes on the Underground: An Essay on Technology, Society, and the Imagination* (Cambridge, MA: MIT Press, 2008).

where infrastructures were laid: water, sewage, electricity, underground transport, gradually also some of media communications. Imagine how this intensifies as we approach the smart cities and technological epistemologies of the planetary in the twenty-first century.

Hence, it is not merely the materiality but how it links up with the infrastructural or the logistical situation. Temporal, synchronizing management of complex materialities in relation to the territorial organizational situations becomes mediated through time-critical computational events. It is evidenced in smart cities and the wider planetary level of smart management and also raised by insightful research into logistics.<sup>38</sup> Indeed, in Ned Rossiter's words it becomes clear that the geophysical materiality of digitality and consumer culture outside the media technological is itself media technologically organized as situations that set new standards for the questions of geopolitics across the usual divisions of nation states and sovereignty. Referring to Reinhold Martin, Rossiter speaks of the "organizational complex" made "of technocratic and aesthetic systems designed to modulate the world as an 'organized, informatics pattern' in flexible ways. Not constrained by sovereign rule or national borders, the logistical city is a recombinatory form that attempts to standardize capital accumulation from the microlevel of algorithmic apparatuses to the macro level of global infrastructures."<sup>39</sup>

Such methodologies facilitate teasing out the infrastructural work of multiscalar connections from microlevels to the planetary. The current contemporary condition becomes infused with an odd sense of synchronized materiality that arranges the multiple temporalities as part of its circuit. It manifests itself differently depending on which angle you take: from the "raw" materialities of the earth inside computational devices to the

38. Rob Kitchin and Martin Dodge, *Code/Space: Software and Everyday Life* (Cambridge, MA: MIT Press 2011).

39. Ned Rossiter, "Logistical Worlds," *Cultural Studies Review*, vol. 20, no. 1 (March 2014): 64.

computationally managed abstract epistemologies that action the movement of such matter. This management of the multi-scalar planetary computation is also at the center of Benjamin Bratton's take on the issue: "The Stack" is that form, multi-layered and multitemporal, that functions as a mega-architecture from the Earth to the User.<sup>40</sup>

So how does media studies, media theory, and cultural theory respond to this situation of a multiplicity of times and a multiplicity of geopolitical materialities that are the historical infrastructural layer? Where do these two realities overlap? One connecting point offered above is through an understanding of how the two entangle: the governance of the planetary materials and their routes takes place through the computational logistics that pertain to the microtemporal operations: from human time of experience, it shifts the marker of temporality to other tempor(e)alities.<sup>41</sup> The contemporary is not merely a horizon of experience, but a logistics of time. This also relates to developing a way to look at Sharma's power-chronographies from the perspective of the non-human planetary computation, and at the same time a notion of materiality that is based on operations such as synchronization, logistical ordering, and calculation. How do we acknowledge this long trail of media materiality that extends much outside the machines to the networks, infrastructure and even to planetary materialities that are necessary for media to become media?

40. Benjamin H. Bratton, *The Stack: On Software and Sovereignty* (Cambridge, MA: MIT Press, 2016).

41. Borrowing the term from Ernst, see Enns, "Foreword" and Ernst, *Digital Memory and the Archive*.

### III. VISUAL ARTS FOR THE ANTHROPOCENE

In this last section, I would like to return in some more detail to what I already briefly addressed, that is, the status and role of visual media arts in this situation. Many of the projects and the interest in climate change and the Anthropocene might be in the danger of being perceived as merely artistic interventions to more fundamentally scientific questions. Do media theorists or artists have more to say than act as cultural commentators? Is the actual technological reality out of the reach of professionals working with audiovisual production of reality? I am interested in which ways some theoretical as well as materially innovative ideas engage with this dilemma. Similar ways of appreciating the artistic input to the Anthropocene has of course been recognized. It was well put by Heather Davis and Etienne Turpin in their introduction to the volume *Art in the Anthropocene* by way of outlining three important angles through which art can offer a deep understanding of issues of *aesthesis*, experience, and technology in this context. Paraphrasing their words, the Anthropocene engages already directly with the sensorial as “the experience of living in an increasingly diminished and toxic world.” In addition, it is through the various visual and media technologies — from data visualization to satellites — that it takes further effect, becomes planetary, while adding a third important function by way of referring to Anna Tsing: art can provide ideas, affects, and experimentation with the realities of “living in a damaged world.”<sup>42</sup>

In more detail, this becomes mobilized as an understanding of the new materialities in which art and design culture works. To quote Heather Davis’ summary:

42. Heather Davis and Etienne Turpin, “Art & Death: Lives Between the Fifth Assessment & the Sixth Extinction,” in *Art in the Anthropocene: Encounters Among*

*Aesthetics, Politics, Environments and Epistemologies*, eds. Davis and Turpin (London: Open Humanities Press, 2015), 3–4.

From the extraordinarily beautiful colors made from tar for the World Exhibition in 1862, to the London smog that inspired Monet and other impressionists, to the trash vortex, “the largest water architecture of the twenty-first century,” the re-shaping of the earth by humans has also meant the birth of entirely new colors and aesthetics. The aesthetic effects — as in aisthesis, or affects produced by our sensorial experience of the environment — have been entirely re-ordered by the presence of plastic. The use of the term “plastic arts” was first recorded in 1624. Until the invention of the synthetic polymer that we have come to know as plastic; the arts held a virtual monopoly on artifice, now it is chemical engineers who re-make and re-fashion the earth.<sup>43</sup>

Hence it is clear that I am definitely not the first to talk of the visual cultures of the Anthropocene, ranging from the discussion that was briefly mentioned above relating to contemporary arts and including to the more design oriented *Architecture in the Anthropocene*.<sup>44</sup> These already cover a massive amount of relevant material, approaches, and ideas. Many art works, such as İncirlioğlu’s *No Man’s Land* that we started with does not explicitly even use the term Anthropocene even if it attaches to similar discussions by way of the theme of the extended slow war — a different temporal scale for the planetary situation, as stretched between the speed of microtemporal calculations of the computational planet and the slowly sedimenting effects and impact of various kinds of violence. Hence, such approaches to the multitemporal technocultural worlds and art are one way to continue the discussions articulated by Peter Osborne concerning contemporary art as a mapping of the site

43. Heather Davis, “Life & Death in the Anthropocene: A Short History of Plastic,” in *Art in the Anthropocene*, 348.

44. Etienne Turpin, ed., *Architecture in the Anthropocene: Encounters Among Design, Deep Time, Science and Philosophy* (Ann Arbor: Open Humanities Press, 2013).

of complex temporalities and the disjunctive sense of “now” in which we are living.<sup>45</sup> But this now is complemented by questions such as “where” now, as well as “when” now, referring to the multiple levels of time that are asynchronously present in the contemporary moment.

Also Nicholas Mirzoeff’s article “Visualizing the Anthropocene” has offered an entry point to what could be called an art history of the climate disaster we are living. Mirzoeff however starts from the difficulty of visualization of such massive scale situations that range from lithosphere to the atmosphere, and with specific relations to political and economic issues, and with implications to the dynamic role time plays. Where is the visual angle that is both a product of and the aesthetic condition that captures this spatio-temporal complexity?

Mirzoeff narrates that “[v]isualizing is a task first defined by eighteenth-century military theorists.”<sup>46</sup> Many of the colonial forms of power as well as the modern conquest of nature relied on measures that ensured that there was visually nothing: the invention of indigenous nations as *terra nullius*<sup>47</sup> and the wider sense in which the non-human world was a *res nullius* in itself was both a militarized way of seeing and capturing space. To put that into the context of the earlier discussion (such as İncirlioğlu’s photographic installation) is useful. This is especially so as it relates to issues of war but also the slow violence that persists in formations that are irreducible to the explosive events of military operations, and feature in the other temporal regimes and definitely not merely as a speeding up, often associated with digital culture.

45. Peter Osborne, “Contemporary art is post-conceptual art/L’arte contemporanea è arte post-concettuale,” public lecture, Fondazione Antonio Ratti, Villa Sucota, Como, 9 July 2010, online at <http://www.fondazioneantoniorratti.org>. See also Cox, “The Post-Digital and the Problem of Temporality.”

46. Nicholas Mirzoeff, “Visualizing the Anthropocene,” *Public Culture*, 26:2 (2014): 216.

47. Mirzoeff, “Visualizing the Anthropocene,” 218.



Mirzoeff's way of revisiting some of the most talked about canonical works of art history, such as Claude Monet's *Impression, Sunrise* (1872) is helpful. What he narrates is a suggestion towards an art history of the Anthropocene, which actually registers things outside the usual categorical contexts we look at, whether style, author, context, genre, and such; "the standard appreciation of color and light"<sup>48</sup> in Monet's *Le Havre* is the light of the industrial smog too, a registering of the afterglow of coal-based economy. So the light of art history also registers the political economy as much as the environmental as sedimented, yet dynamic times, which has an impact on the very way in which the sun shines down upon us. This may be easy to say now, but this is the prehistory of the century of ozone depletion and other alterations to the atmospheres of the planet.

Mirzoeff is writing a story that rethinks visual culture, visual commons, and art history. What then would the story be like for media studies that parallels this same question? And also the work by artists engaging in this same dilemma, the visual and the media as part of the planetary enterprise? Besides a list of artists and art practices I have previously addressed in *A Geology of Media*—such as works by Trevor Paglen, Gregory Chatonsky, Katie Paterson, and Martin Howse, both on his own and in collaboration with Jonathan Kemp and Ryan Jordan<sup>49</sup>—an apt framing is also visible in Unknown Fields Division's research/design journeys organized by Kate Davies and Liam Young. Such trips take the form of an expanded studio environment that extends the consideration of design materialities to the long geographical networks and their computational contexts. The "Rare Earthenware"

48. Mirzoeff, "Visualizing the Anthropocene," 221.

49. Jussi Parikka, *A Geology of Media* (Minneapolis: University of Minnesota Press 2015). See also the special section of the journal *Cultural Politics*, titled "Mediated

Geologies," with photo essays by Revital Cohen and Tuur Van Balen, as well as by Unknown Fields Division about their "Rare Earthenware" project (forthcoming 2016).

project exposes the specific odd sites of the seemingly placeless objects, like a vase moulded in this case out of residues of electronics production, the sludge that comes out as the side product of the refining of rare earth materials. Hydrofluoric acid, sulphur dioxide, and sulphuric acid are merely some names for electronic culture of this extended scale that the studio mapped as part of this particular project.



Fig. 3: Kevin Callaghan uses mud from a radioactive tailings lake in Inner Mongolia to fashion a vase inspired by highly valuable Ming dynasty porcelain. Conceptualized by Unknown Fields, three finished vases were on display in the V&A Gallery as part of the exhibition "What is Luxury?" between 25 April and 27 September 2015. Photo credits: Toby Smith/Unknown Fields. Used with permission.

More recently, the focus of the expedition was on lithium, which is the necessary mineral for the production of batteries and other green technologies. Chilean mining and Bolivian resources of the precious metal form the audiovisual and narrative backbone for a focus on the 15 million year old slow exposure from the insides of the earth as now an important part of electronic culture. It is not merely the question of where it comes from but how the interest in lithium and other rare

earth's itself reforms the sites of the geological resources and geographical places with impact on issues of life and living, livability and environment. Sites are becoming indexed in relation to the main resources; oil and gas, silver, and indeed lithium, forming another layer of geopolitical importance though the measurability of the sites by way of computational and sensorial means. In Unknown Fields Division's projects, it is expressed by way of the aesthetics of information visualization or a cartography of the nodes and vectors that are the same time the most material and the seemingly most ephemeral links when it comes down to their status in the supply lines. We could continue to address how things like mining and visualization software are another mundane visual technology that opens up the Earth.



Fig. 4: Rockwood Holdings Inc. Lithium Pools from the air.  
Photo credits: Liam Young/Unknown Fields. Used with permission.

Young speaks in another context of fiducial architecture as the shadow world of the digital. This relates to the forms of design where established scales and measures have changed and not been established only in relation to the human body or phenomenological patterns of perception. Young speaks of the “fiducial” that takes the place of measure: “a recognizable

marker placed in the environment which is used for calibration or navigation.” Importantly, this marker is not indeed necessarily of human scale and the various combinations of computational ways of optimizing and managing the earth. This interest ranges from container traffic to data centers and Amazon Fulfilment Centers, mining excavations where “computer models of mines are now linked live to the fluctuations of metal prices on the stock market.”<sup>50</sup> The planetary is itself a sensory wired body and it reproduces in odd variations as synchronizations and abstractions that feed back to the terraforming that takes place in excavations, transportations, and refinement of the earth. It is the sort of a process that forms the Earth layer in Bratton’s *The Stack*,<sup>51</sup> and a process, or a level also in the aesthetic, visual production of the era of the Anthropocene.



Fig. 5: Field worker in Salar de Uguni.  
Photo credits: Liam Young/Unknown Fields. Used with permission.

I will take one more example as a way to illustrate the fundamental connection to issues of visibility and visibility that characterize the double bind between slowness of the geological

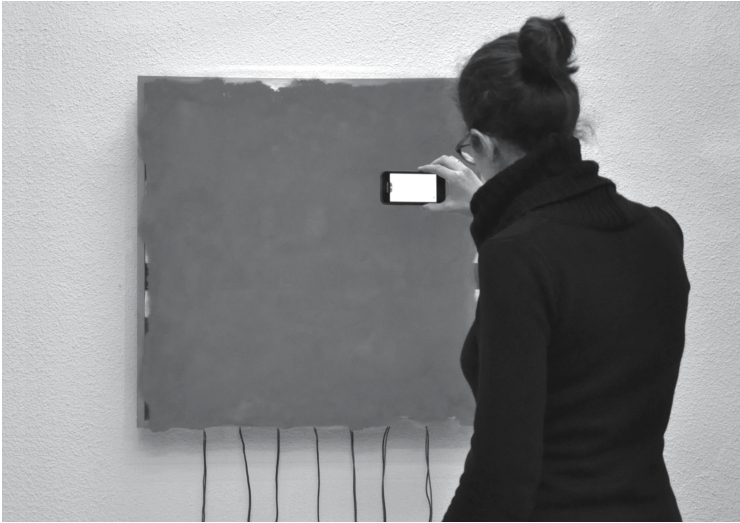
50. Liam Young, “An Atlas of Fiducial Architecture,” *After Us*, issue 1 (2015): 11. See also the Unknown Fields Division website

at <http://unknownfieldsdivision.com/>.  
51. Bratton, *The Stack*.

world and the microtemporalities, speeds, and calculated aesthetics of the digital.

In an experimental technological arts context, Abelardo Gil Fournier, a Spanish artist interested in technology, color, and materiality, presents *Mineral Vision* (2015), an installation at the intersection of mineral worlds and human vision, geological materiality and digital encoding. By taking Vladimir Vernadsky's early twentieth century statement that "We are walking, talking minerals" to a technological conclusion in relating it to vision and media, Fournier investigates the copper structures of modern media technologies.<sup>52</sup> The infrastructural layering of telecommunications in copper is resurfaced in the installation through an augmented reality display accessible with certain smartphones. The user/viewer can scan the plain copper surface and discover hidden inscriptions, including the words by the Roman historian Tacit: "Where they create a desert, they call it peace." War returns as the secret message, perhaps striking but also often quoted, and yet the issue is located on another level than a hidden semantic message. It resides in the transition between levels of visibility that seemed to be part of Unknown Fields Division's work too: what is visible, what is invisible, and more importantly, what are the conditions of visibility that move across the various scales as well as speed, both quick and slow? Here, it returns to one object as a sort of a layered entity, where copper fills in the function of obfuscation — and yet enabling condition.

52. *Mineral Vision*, webpage for the project, <http://abelardogfournier.org/projects/mineral-vision>.



Installation view of *Mineral Vision* by Abelardo Gil-Fournier. Image used with permission.

In *Mineral Vision*, the question of visibility becomes deterritorialized. Aisthesis and the experience of the visual are conditioned by this very narrow keyhole of access, while the installation itself works as a sort of a minimalist material surface that is also a condition of visibility. It is performing the role of infrastructures — usually invisible, massively distributed, enacted in interactions. Some of the vision systems are also not catered for the human; the autonomous sensing systems that scan landscapes and create alternative visual representations by way of machine vision are not designed as, or sometimes even for, the human eye. Such “operational images” as Harun Farocki might have called them seem to have become one pervasive level in this layering of visual culture: “In fields from marketing to warfare, human eyes were becoming anachronistic.”<sup>53</sup> Referring to Farocki, Trevor Paglen ponders

53. Trevor Paglen, “Operational Images,” *e-flux*, no. 59 (November 2014), <http://www.e-flux.com/journal/operational-images/>.

the question of what it means for the arts and artists to try “to learn to see like a machine.”<sup>54</sup> Such installations as Fournier’s create the sense of layers of secret worlds of vision that returns a mystic feeling at the center of technological systems, and is only hinted at by way of augmented reality applications. Fournier’s solution is not exactly an augmented reality app either but the copper surface itself hides arrays of infrared LEDs which are the source of the message — it is the infrared light at a wavelength of 840 nanometers that is picked up by digital cameras (unless they have infrared filters installed). Fournier shows that the image is a function of various interlinked materialities from the technological apparatus to the infrared to the copper surface. His artistic argument relates to the ground of vision being metallic, mineral or in this case, copper — itself asignifying, yet supporting the world of technological vision systems.

Copper, a basic element within the digital infrastructure, appears in the forefront as a material presence, raw and a-linguistic. Instead of an industrial exploitation of minerals and humans, the electronic dialogue is an encounter of scales and durations, the geologic and the human.<sup>55</sup>

54. Paglen, “Operational Images.”

55. *Mineral Vision*, <http://abelardogfournier.org/projects/mineral-vision>.



Fig. 7: A close up of *Mineral Vision* by Abelardo Gil-Fournier. Image used with permission.

We gradually are able to return to the themes we started with: the geological as one articulation of the multiple scales of entangled times, even histories; issues of technology are mobilizing metals, minerals, and the earth in most concrete ways. I do not want to think of this use of the word “mobilize” metaphorically but instead to refer to concrete operations of shifting landmasses, including geo-engineering, big scale architecture and infrastructure projects and indeed the mining operations from fuel to non-fuel minerals. It is also not the mobilization that we encounter in the usual vocabulary of military operations but part of that alternative narrative I have proposed to adopt. This mobilization is also a slow build-up — as per Nixon’s idea of the slow violence as a *long durée* layer of technical culture, or in his case more specifically the neo-colonial arrangements that enforce situations of violence that only at times burst out in visible form, yet are the backbone of this planetary situation. In media studies, this can be teased out by terms such as “geology of media” — or at least that is my proposal for one particular way of thinking



through the geophysical basis of what makes media media, and yet not removed from issues of political economy that is governed by computational operations too. It is for sure a complex ecology and one that haunts the multiple directions toward which the contemporary condition extends both in space and time. The contemporary becomes this sort of a fluid marker, and perhaps one can think of it like Young's use of the fiducial: a way to mark some of the locations where contemporary issues crystallize and reveal the human and non-human scales at which they operate. This fiducial is not only a spatial marker but has an angle towards time as well. It thus becomes a marker of temporality that is not merely about the new or the old, the modern or postmodern, but the contemporary as a condensation of multiple co-existing times.

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PEN=0,10,2,22, WEIGHT=140, SLANT=0, SUPERNESS=0.72

The typeface used to set this series is called Meta-The-Difference-Between-The-Two-Font (MTDBT2F), designed by Dexter Sinister in 2010 after MetaFont, a digital typography system originally programmed by computer scientist Donald Kunth in 1979.

Unlike more common digital outline fonts formats such as TrueType or Postscript, a MetaFont is constructed of strokes drawn with set-width pens. Instead of describing each of the individual shapes that make up a family of related characters, a MetaFont file describes only the basic pen path or *\*skeleton\** letter. Perhaps better imagined as the ghost that comes in advance of a particular letterform, a MetaFont character is defined only by a set of equations. It is then possible to tweak various parameters such as weight, slant, and superness (more or less bold, italic, and a form of chutzpah) in order to generate endless variations on the same bare bones.

Meta-The-Difference-Between-The-Two-Font is essentially the same as MetaFont, abiding the obvious fact that it swallows its predecessor. Although the result may look the same, it clearly can't be, because in addition to the software, the new version embeds its own backstory. In this sense, MTDBT2F is not only a tool to generate countless PostScript fonts, but *\*at least equally\** a tool to think about and around MetaFont. Mathematician Douglas Hofstadter once noted that one of the best things MetaFont might do is inspire readers to chase after the intelligence of an alphabet, and "yield new insights into the elusive 'spirits' that flit about so tantalizingly behind those lovely shapes we call 'letters.'"

For instance, each volume in The Contemporary Condition is set in a new MTDBT2F, generated at the time of publication, which is to say *\*now.\**

Dexter Sinister, 23/09/16, 09:56 AM