DEEP TIMES of PLANETARY TROUBLE

Jussi Parikka

Abstract   This introduction to the special section on mediated geologies contextualizes the articles that follow within recent discussions concerning cultural politics of the environment, ecological contexts of contemporary media, and debates concerning the Anthropocene. The special section approaches the topics from the angle of media studies and argues for new ways to understand media culture as read through a materials focus: from waste to building materials and from temperature control to more conceptual developments concerning new materialism. The introduction discusses these ideas as extensions of material media theory and addresses how they can complement already existing ideas in the field.

Keywords   Anthropocene, media theory, environmental humanities, media studies

Deep Times of Planetary Trouble

*C*ultural politics of geology sounds rather oxymoronic, considering the distance geology seems to have from concerns of reproduction of cultural inequalities, power struggles, formations of identity, and issues of governance. Geological investigations of the earth and its layers, resources, dynamics, and histories occupy a timespan that is assumed to speak to an altogether different set of questions than what we consider as the task—or even the capacity—of the humanities. Yet the past years have seen a rather dramatic increase in debates about geology, although often through the term *Anthropocene*. The concept refers to the impact of human agriculture,

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science, and technology on a planetary scale; it could be said to function as nothing less than a modern "design brief" (Bratton 2016) for how the earth has been reformed and, as many would argue, catastrophically pushed to a point of no return when it comes to the amount of toxic content in the air and soil, to global temperatures, to sea-level rise and polar ice melt, and to many other interconnected chemical reactions and consequences. These debates have also led to intense discussions in the humanities and the arts, including the Haus der Kulturen der Welt's (Berlin) significant long-term project, the Anthropocene Observatory, involving artists, curators, theorists, and other participants. Although that project concluded, similar projects continue, with an abundance of art works and theoretical writings starting to address a set of interrelated questions: What are the political stakes in the nonhuman context of the human impact on the geological scale? In which particular territories, case studies, concepts, and questions are the entanglement of the scales most visible, most prescient?

In many of the perceptive theoretical and critical accounts, the issues have been contextualized in relation to debates in architecture and art. Such discussions have been instrumental in articulating the connection across time-scales and focusing on how the geological expands into issues of temporality of cultural reality: not only the intersections of issues of cultural memory and media culture but also the timespan of the Anthropocene as it manifests to us (see Beck 2014). The question of the multiple overlapping times also raises other questions about the concepts, methods, and even fields of knowledge in which geology could be discussed without falling into mere cultural commentary of the hard sciences or mere apocalyptic rhetoric of

the coming nonhuman future. As Seth Denizen (2013) has noted, the consideration of the Anthropocene in the geophysical sciences is relevant not only because of the scientific value of the measurements of the planet—in itself an interesting aspect of the media that frames our understanding of the planet—but also because of the role such practices and discourses of knowledge play for us as contemporaries of deep times, cultural memory, and a politics of the present: "In this way, the geological sciences are not only called on to reconstruct the past, but also participate in the construction of the present. Recent calls for the establishment of a geological epoch known as the Anthropocene are, in fact, calls for the production of what cultural critic Laurent Berlant has named a 'genre of the present,' in which a geological catastrophe too slow to watch could be rendered present and, perhaps, intelligible" (30). The technoscientific practices are also essentially involved in how a sense of the present is produced. Such practices are a condition of the present but also a condition of one particular language, or genre, that constructs how we consider what is meaningful at the moment. This "genre of the present," however, shows how divided the sense of the present is. Although a planetary concept such as the Anthropocene has a unifying force, it also forces us to reject the idea of a shared planetary moment. The postcolonial and neocolonial (Cubitt 2014) contexts of waste distribution, hand-in-hand with the violent processes of resource extraction, are one such expression of the "present" not always being present as one experience of what we are facing now. The nature of the problem is not merely the unification but the geographical and temporal distribution of the term and its weight. Hence, gradually, alternative concepts are taking

shape in the arts and critical humanities: some, such as the Capitalocene, are particularly apt to consider the entanglement of contemporary modes of production as an inherent part of the environmental disaster (Moore 2015; see also Wark 2015); some, such as the Anthrobscene, view technical media culture as one relay in the production of planetary level obscenity (Parikka 2014, 2015); and some, such as Donna Haraway's (2015: 160) powerful feminist term Chthulucene, conceptually express the complexity of the situation, which "entangles myriad temporalities and spatialities and myriad intra-active entities-in-assemblages—including the more-than-human, other-than-human, inhuman, and human-as-humus." The Anthropocene and its kin have also become terminological sites where conceptualization of the complex spatiotemporal events that cannot be resolved by way of a human-centered cultural politics takes place.

Even without the use of the A-word, the humanities have adopted a language of layers and deep times—from the media archaeological deep times proposed by writers such as Siegfried Zielinski (2006) to the environmental humanities. Both within and beyond the Anthropocene and its conceptual friends (or kin, see Haraway 2015), we are dealing with issues of time scales that are not necessarily authored only by the loose category of humans. Instead, we find ourselves orienting in nonhuman long durations, as Kathryn Yusoff (2013: 785) points out, arguing for a geological turn in the critical humanities, as well. In short, this emphasis, whether it is a turn or a return, informs the question about what nonhuman, or even inhuman, forces produce the human and also makes clear that the humanities, as a formation of knowledge with its own sense of relevant temporalities and research objects, is at

the threshold of having to negotiate its relation to the wider material worlds (see Grosz 2005: 186; see also Braidotti's article in this issue).

This special section takes a related route to such questions but with an emphasis on the role of media in the discussions of the Anthropocene and the alternative terms that want to situate it in the historical and critical contexts, including gender and the postcolonial debates. As such, it is not about the term *Anthropocene* but about the geologies, thermocultures, environmental ethics, and new materialities that constitute key parts of the contemporary material politics of media. Broadly speaking, it is about the environment in contexts of media culture, with an emphasis on how the question of the environment is not resolved into a subject-object pairing of general terms: we humans, that nature. Instead, the complex entanglements range from the small and seemingly mundane (microchips, for example, or bare hands ripping apart obsolete electronics) to questions of technocultural practices: human embodiment in media environments that are far removed from the promise of immateriality. We were told to expect artificial intelligence and cyberspace; we also got dirty landscapes of discarded toxic electronics.

This section gathers together articles that involve fresh methodological ways to address issues of materiality in urban technological worlds, including the toxic residue of technological culture, by letting surprising themes narrate the argument. Mud, temperature, plastics, copper, and synthetic silicon are some of the material agencies that become anchors of cultural analysis.

The articles do not refer to media representations of geology or even, all that much, to the specific instruments and

techniques used in geological fieldwork (although that is a particularly interesting mode of mediated knowledge in technoscience and something that features in this issue in Starosielski's article). Instead, the articles primarily use *geology* to refer to the geophysical underpinning of contemporary technological culture: it becomes a useful term to discuss, in a broad sense, materiality of technology and media. *Geology of media* is used in earlier contexts (Parikka 2015) to rethink discussions in media studies and theory about media materiality and to connect that to wider historical and environmental contexts. These articles move some of this earlier work forward by way of new examples and critical insights and discussions, by bringing to the table new sets of art and design work that further emphasize the idea of the visual production of the Anthropocene, and by presenting visual, art, and design methods that contribute to the sense of the planetary media culture arising from mines and metals, minerals, and flows of energy.

I will briefly discuss the contexts in which *geology of media* as a term emerges before introducing the particular articles that form this section as an input to discussions in a cultural politics of the environment.

A Media Theory of the Environment

So, first: Why geology of media? For several years, some of the most interesting debates in media studies and theory have elaborated materiality as a key context for concepts and methodological ideas that relate to media archaeology and to the wider context of theories of technical media culture. Such debates have partly stemmed from so-called German media theory (a loose conglomeration that includes Friedrich Kittler, as well as

Wolfgang Ernst, Bernhard Siegert, Claus Pias, Cornelia Vismann, Markus Krajewski, and others) and partly from other directions that have elaborated the irreducibility of issues of media to the usual focus on "text, audience, and industry" (Peters 2009: 4–5). As Peters and subsequent writers (Young, forthcoming) identify, the fourth, minor tradition is where influences from Canadian media studies (Marshall McLuhan, Harold Innis, and others) have resonated with the work in German-speaking areas since the 1980s. Without going into much detail, it is important to note that these debates have led to discussions of materiality that, at least in some versions, have been accused of technological determinism and hence a lack of politics, by which is often meant a particular way of reading politics only through text, audience, or industry. Rather than accept this particular angle, this issue investigates the particular politics in and of materials that are relevant for media, both the standardized materials of construction and also the sorts of materials we rarely discuss in media studies: obsolete, discarded, and electronic waste.

This move toward a different set of questions fits rather well with what Thomas Pynchon—so dear to many media theorists, not least Kittler—voiced about twentieth-century technical culture: "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" (1973: 521; quoted in Winthrop-Young 2012: 407). Geoff Winthrop-Young turns to this

passage from Pynchon's *Gravity's Rainbow* as a way to elaborate the particular theoretical attachment to war that Kittler voiced. But it also applies to thinking about the wider sense in which one can approach media culture. In other words, perhaps it was never so strictly about meaning as we thought it was, nor even the devices or the end-users only, but the flow of materials in which the devices, users, and others become part of the assemblage. As I argue in *A Geology of Media* (Parikka 2015: 5), this passage provides a way to narrate an "alternative media theoretical lineage that does not include necessarily [the proper names of] McLuhan, Kittler, and the likes in its story but materials, metals, waste and chemistry."

Such arguments have interesting consequences for a media theoretical and historical account that could become a way of narrating issues of culture from the perspective of material assemblages. It does not mean discarding the political aspects of the given situation, however nonhuman it is, but incorporating them into the focus in new ways, as many of the articles in this section do. Such an emphasis hints at the rather different sort of politics that goes on in infrastructural arrangements and governance, a politics that is not merely at the level of ideology. In other words, the articles also respond to the question: How to articulate the political that is distributed across a wide set of agencies, contexts, and scales? Perhaps the shift in the media theoretical discussion and concerns about the materiality of media could be elaborated through the following example.

Bernhard Siegert (2015: 81), writing about "media after media" and Kittler's impact on media studies, reminds us how this particular field of "German media theory" (which he reminds was neither so much about theory nor only German)

was based on a revaluation of "traditional objects of humanities." In detailing what this meant both in terms of an intellectual history of the emergence of new disciplinary attachments and as a methodology, he writes:

Much like crew members of British ships of the line in the seventeenth century who deserted their ships only to board them again as pirates, media analysis deserted literary studies to board them again and replace the emphasis on authors or styles with a sustained attention to inconspicuous technologies of knowledge such as index cards, writing tools, typewriters, discourse operators (such as quotation marks), pedagogical media such as the blackboard, media like phonographs or stereo sound technology, or disciplining techniques like alphabetization.

Could we say that we are now experiencing a similar sort of a pirate takeover but of a second order? This would be a takeover of the body of so-called material media studies that comes with its own set of already inspiring and well-traveled theoretical concepts, mostly from across the Atlantic (see Ernst 2013: 23–31), but that is also ripe for another set of discourses, concepts, and methods to be taken aboard. In the case of this special section, this could mean materials such as mud and plastics; in general geophysics and environmental issues, it could mean a "green" (yet also muddy and dirty) version of media theoretical materiality that is both drawing on media theory and also revising it. A rather good example of recent discussions and research is found in John Durham Peters's (2015) *The Marvelous Clouds*. It articulates the point that not only are media understandable as environments (as we learned from McLuhan and others) but that "environments are media"—the

classical four elements of water, fire, sky/air, and earth. Such a cue leads us to consider the massive processes of fire and combustion, the sky's movement and periodicity, watery habitats for fish and information cables (Starosielski 2014), and liquids—and much more—as both media, in themselves, and as mapped by media; the sciences of nature work with techniques that participate in the measurement of multiple realities that escape direct human perception. Geology and astronomy are sciences of media that relate to scales of the planetary and the extraplanetary, both in terms of distance and time: "Telescopes are machines of time travel as of space travel; we could call them paleoscopes," argues Peters (2015: 363), continuing on the topic of deep times. Could we pick up geology books, then, as odd inspirational sources for media theory? Or astronomy and meteorology books as part speculative, yet real, maps of airborne, space-bound media realities? Or zoology books as media theory (Parikka 2010; Peters 2015: 370)?

Slow Technological Violence

Second: What does this altered "media after media after nature" perspective mean in the context of the politics of the Anthropocene?

Let me elaborate this idea by way of some add-ons and specifications to Peters's account. One the one hand, we are dealing not only with the classical four pre-Socratic elements but with the multitude of elements and combinations that are defined in the nineteenth-century-originated tableau of chemistry, up until the identification of all rare earth elements by 1939. Dmitri Mendeleev's Periodic Table is, in this sense, an even more apt way to start unfolding the chemistry of contemporary technical media as the

media of new synthetic materialities and their aftereffects (not least, electronic waste). Mircea Eliade (1978: 173–74) put this in rather poetic terms when articulating the political, economic, and ideological underpinnings of chemistry: "By conquering Nature through the physico-chemical sciences, man can become Nature's rival without being the slave of Time." The less poetically phrased story would be to narrate the history of material sciences as the ground of technical media solutions, from corporations that combined meticulous work in chemistry and technology (such as Bell Labs) to the global routes of resource extraction as part of supply chains. It is also a different sort of media archaeology, which, as Nicole Starosielski notes in this issue, is not always so much about depth and literal excavation as about the thermal and chemical reactions—the metallurgical interactions of materials—as the conditions of technical culture.

To follow the line of reasoning suggested by Paul Virilio and others, every technology comes with its accident, and this leads to the question: What are the forms of accidents that emerge in the elemental media? The natural, intuitive response relates to the massive toxic pollution that penetrates in and through the mobilization of such media; the burning of fossil fuels still firing up cloud computing, the invention of our petrocultural[1] modernity since the nineteenth century (Jones 2016), air pollution and smog, soils and liquids of toxic residue. But there is also the sense of the historically accidental that is part and parcel of the image of such natural media accidents as technological failures embedded in historical time. Benjamin Bratton (2015) argues that the governance of planetary infrastructures as multiscalar interlocked realities is what defines this particular geopolitical situation. The

definitions of the elemental are situations of computational, visual, and other technical media; the earth and its elements are organized and visualized in media assemblages while they feed as part of the construction of planetary level infrastructures, such as cloud computing. We can also call this *medianatures* (Parikka 2015: 12–14), a term modified from Donna Haraway's *naturecultures*. Medianatures picks up on the co-defining continuum of media and nature, where technical media plays an essential part in perceiving, analyzing, and mobilizing the earth, the air, and more, while technical media itself is based on the usefulness of many chemical and earth elements. These include not only energy but also things like rare earth minerals, another key focal point for analyses of geology of media, which have been addressed in many recent art and design projects (see Samman and Ondreička 2015). Aesthetics and visual arts are at the core of this planetary situation—as interlocked fundamental processes of visualization, as enabling actionability, and as material conditions of perception.[2]

But the accidents of the elemental media do not necessarily come as flashy spectacles. As Rob Nixon (2011) has argued, meticulously and with flair, particular attention needs to be paid to the reality of slow violence that takes a temporal and visual form different from the form taken by immediate explosive accidents. Nixon addresses key accidents and aftereffects of past years across a range of geographical contexts, including the Bhopal industrial disaster, the Chernobyl nuclear accident, the use of depleted uranium in the wars in the Middle East with long-term effects on humans and crops, and cases addressing environmental justice in Nigeria. Nixon's particular interest is to develop forms of narrative and concepts that are able to speak to this slow, emerging death count, which is too easily left unaccounted for. It also fits into the context of other temporalities in which we have to think of the accident—both the long durations of the Anthropocene and the events that fail to cater to the immediate perceptual reality and yet remain as real. Hence scale—spatial, temporal, conceptual—is a core issue, one that pertains to questions of the accident in geologies of media culture; media are such multitemporal planetary environments in which planetary pollution becomes perceptible and sometimes also experienced. This aspect comes out clearly in how Verena Conley, in her article in this issue, speaks of "care" while also touching on the sensor realities that escape human sensation and yet can somehow be addressed in contexts of a posthuman care.

Many of the debates about the ethical responses to this situation of the Anthropocene have resulted in highlighting the importance of scale. How do the cultural and media theories react to subperceptual—too slow or too fast—realities, massive infrastructures that are not experientiable in immediate embodied perception? As Joanna Zylinska (2014: 20) puts it, we need to be able to address the environmental less as a thing and more as a dynamic movement across scales: "Minimal ethics for the Anthropocene is not just an updated form of environmental ethics: it does not pivot on any coherent notion of an 'environment' (or, as mentioned earlier, 'nature') as an identifiable entity but rather concerns itself with dynamic relations between entities across various scales such as stem cells, flowers, dogs, humans, rivers, electricity pylons, computer networks, and planets, to name but a few" (see

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also Braidotti 2012). It is in this spirit of mapping the media of environment, and environments of technical media, that the articles of this special section were also gathered. They represent particular takes on the critical posthumanities (Braidotti) and geopolitical issues, but with an eye to movements across scales: from the detailed travels of a plastic (Taffel), to urban histories of material surfaces of inscription (Mattern), to the realities of temperature as a part of media (Starosielski), to the just mentioned ethical responses through care (Conley) that does not contract on an assumption of a unitary subject but becomes a vector of movement that folds multiple scales into this particular nonanthropocentric form.

The articles respond to the design brief to address media histories of matter—to map the media archaeology of contemporary technical condition from the perspective of "components, minerals, metals, chemicals" (Parikka 2015: 25) while paying attention to the cultural politics in which such practices arrange reality (as design, as plans, as programs). Hence it is important to read Shannon Mattern's "Of Mud, Media, and the Metropolis: Aggregating Histories of Writing and Urbanization" as both thematic and methodological insight into how materialities of media are written in our stories about culture, including cultural memory. As Mattern observes, the textual sites of inscription are tightly connected to the emergence of the city as a material media infrastructure for living. Implicitly writing her argument as part of the Anthropocene discussions, she starts from Mesopotamian agriculture and the emergence of cities. The mud and other mixtures that compose cities also compose one element in the emergence of writing. Administrative

practices of inscription demand particular material substrates, and following this other genealogy is what becomes a particularly apt approach for a media history of materials written hand in hand with a media history of standardization of materials and elements. The governance of symbolic writing becomes tightly connected to what we do with materials and what types of things these materials enable—a discussion Mattern extends to Bernhard Siegert's notion of cultural techniques: these are techniques that, both symbolically and in material design, draw spatial, temporal, and conceptual boundaries, including between culture and nature, between inside and outside. It is in this sense, and relying on the Harold Innis tradition (Peters 2015: 18–19), that Mattern's realization gradually becomes a way of writing the material history of the standardized architectural forms, including brick and also, broadly speaking, concrete. To paraphrase her, media techniques of settlement, urban planning, and administration serve as backbones for organizing and arranging everyday life. And yet they also become platforms for alternative inscriptions, contested spaces that are also vertical, such as the reemergence of the wall as a key partitioning feature in geopolitics: from the threats of American presidential candidates, to the graffiti realities in Palestine, to the contested public use of walls in Calcutta. A politics of inscription accompanies the emergence of the standardized material forms of the urban conditions of life.

I suggest reading Nicole Starosielski's article in relation to Mattern's, with a focus on the idea of "standardization." Investigating the cultural techniques that allow us to standardize elements is not a question restricted to "things,"

in the purely tough-as-concrete sort of materiality, but can also be applied to chemical reactions that bind and unbind media. Starosielski's take on thermocultures takes measurement of temperatures as a thing itself—or, more accurately, as something of a mediating factor in how standardization works. She addresses standardization of materials from paper to silicon, as conditioned by their temperatures, a point that becomes developed into important insights that relate to different technoscientific practices. There are no raw materials, no raw earth that is part of the cultural politics of media but various levels, geographics, and processes of mediation in which the thermacultural becomes one way to address this ecology of practices.

First, the functioning of media is conditioned by processes that we are able to open up as mediations (see also Grusin 2015 on radical mediation as a material-ontological reality of relations): in short, it is mediation all the way to the bottom of how materials become produced as part of media assemblages. Second, it is also the basic parameters we discuss as media—the spaces and times of media—that are made in such chemical and thermocultural conditions. Archives should not be conflated with storage, but any discussion of cultural memory is always tied to the maintenance of conditions in which memory is passed on as media. To quote Starosielski:

Black-and-white photographic negatives on glass, produced in the nineteenth century, will remain usable for approximately seventy-five years in a hot room of 30 degrees Celsius but will live fifteen hundred years at 10 degrees Celsius. Newsprint and celluloid film will last only six months if left out in the sun but in a "normal" room temperature will last a human lifetime. Magnetic media will last fifteen years in a warm room of 25 degrees Celsius but, even in cold storage at 0 degrees Celsius, will become unplayable after six hundred years. Incorrect temperature . . . is an agent of deterioration.

This is surely no revelation for anyone in the museum or archival sector, but it becomes a way to reconsider the passages between media studies and temporal practices. Indeed, many of the ideas expressed here are not meant to claim speaking on behalf of specialist fields such as material sciences but to open up discussions between disciplines. Starosielski's and Mattern's articles, as well as the one by Sy Taffel, layer on top of various fields of knowledge and, by way of that work, offer a dialogue with media studies and cultural politics. What's more, Starosielski's article starts a discussion that is important when it comes to the vocabulary of media materialism: the text reminds us to be critically aware of the specifically masculine connotations of geology while also suggesting alternatives; how about the gendered histories of thermacultural practices that have been left out of "technological histories of heating and cooling," the ones that exclude pottery, cooking, and so on. What, then, are the conceptual limitations of adopting terms like *geology* and how can those be complemented and critiqued by way of a set of alternative terms for the chemical transformations in and of media culture, including the set of cultural techniques brought into play?

Starosielski's article underlines a broader conceptual theme that runs through the special section and the mobilization of the concept of geologies of media: it deals with the transformations, reactions, and dynamics of materiality,

instead of a list of objects. Geologies of media involve a perspective on how geology is constantly mobilized as part of cultural practices and technical media. The transformational quality of an object is also prevalent in the extended sense of media that falls out of use and becomes waste. Sy Taffel articulates this aspect in "Technofossils of the Anthropocene: Media, Geology, and Plastics," which contrasts the "natural" geologies of the earth with the accumulating strata of petrochemical-derived synthetic plastics. The fossil-fuel deep times, which have been transformed from an external condition to an internal motor of modern capitalism (Salminen and Vadén 2015), are here also transformed into object-like symbols of that same modernity: the various products floating in the sea, from shampoo bottles to food wraps, not only make up a natural ecosystem of the oceans but also, according to some sources, will eventually outnumber the fish in the same waters by 2050 (*Al-Jazeera* 2016). The unglamorous nature of plastic hydrocarbons made of oil, coal, and natural gas is, however, a testimonial to the already mentioned chemical media culture that finds its media archaeological crystallization early on in bakelite. Taffel articulates the folded genealogies of materials of old new media: "The inception of modern synthetic polymers is historically entangled with media technologies; the development of nitrocellulose plastics and synthetic polymers emerge from the same technocultural milieu, with developments in one area creating the environment out of which the possibility of the other eventuates. The similarities in the developmental processes of these substances is one way that the materiality of matter matters when it comes to

comprehending the technological genealogy that encompasses plastics, photography, and cinema." What has been identified as the new materialist (Dolphjin and van der Tuin 2012) perspective that stems from feminist theory, as well as Manuel Delanda's theoretical work, is mobilized in this context into a media theoretical focus on environmental issues. The chemical reactions producing plastic culture are also issues of media of new spatiotemporal dimensions—not least the slow degrading process that filters through the soil and the food cycles of a different sort of a planetary cultural residue.

Instead of pertaining to a narrative of apocalyptic closure, such situations demand alternative conceptual coordinates. As Verena Conley demon-strates in "The Care of the Possible," this is a matter of establishing ethical positions that require more than just taking care of nature and some sort of stable environment ready-made for the Anthropos. The multiple relations across human politics, natural formations, and technological cultures does not resolve into an idealized stability of a perfect living balance, but this does not remove the necessity to think about relations of care in this situation. Quite the contrary: it forces us into an ethics of a posthuman kind, one that acknowledges the necessary complexity of the situation. It also acknowledges situations that are complex mixes of humans and nonhumans, of aesthetic and existential territories, in which we inhabit a world that exceeds our sensory capacities. Taffel's discussion of Karen Barad's term *intra-action* and Conley's conceptual development both implicitly link up with Haraway's call for an investigation into the tentacled Chthulucene that defines this entangled situation. Conley's

emphasis is on a potentiality of a future as a sort of a philosophical design brief for the humanities: how to map the possible emerging futures by way of creative fabulation and by way of taking in the lessons already in place from "feminists, ecologists, postcolonialists, and anthropologists," and from other scholars who have succeeded in creating methodological and conceptual ways to think with others. In a situation where perceptual capacities cannot be returned merely as a capacity of the human subject and where sensibility operates "outside of the divisions of subject-object or human-world," it is also the matter of (a critical posthuman) ethics to engage in this sort of an enmeshed reality across a continuum of nature-culture-media.

In addition to the theoretical articles, we have included two artist contributions. These are not meant as illustrations or ornaments of the nature-culture-media continuum but as examples of visual methodologies that engage with the electronic culture of technologies, tied to specific geographies and also tied to the mobility across planetary supply chains—or "the planetary-scaled conveyor belt," as architect Liam Young (2015) puts it. Artists Revital Cohen and Tuur Van Balen offer in their photo essay "Take a Good Lamp" a sort of a reverse engineering of that conveyor belt. Their artistic expedition to the Democratic Republic of the Congo entered the geographies of one of the most important minerals for digital culture: coltan. Their earlier works, such as *H/AlCuTaAu* and the later *D/AlCuNdAu*, have engaged with the material realities and residues of electronic culture. For this special section, Cohen and Van Balen offer a glimpse of their artistic work as well as some insight into their recent trip by way

of selections from their travel diary and meditations about a geography of the materials of media culture as part of the postcolonial landscapes. They write: "The demand for Congolese minerals and organisms has consistently been a direct result of industrial developments, making the Congolese soil the birthplace of objects of desire and destruction that are actualized in other realities, in other parts of the world. The nuclear bombs on Hiroshima and Nagasaki contained parts of the Congo, just as every smartphone and laptop does today. These technological objects exist in all places, while the Congo exists in all these technological objects." Their contribution illuminates how even the seemingly most displaced part of electronic culture, whether the gold extracted from devices or mineral dust, also has a spatial logic as a vector of movement that entangles with the lives of miners, mining corporations, border procedures, maps, and memories.

The second visual essay and contribution comes from Unknown Fields (Kate Davies and Liam Young). Their projects have extended the design and architectural studio's spatial vector to extreme locations that constitute the backdrop—sometimes a condition, sometimes an obscure shadow world—of contemporary (technological) culture. According to their biographical information:

Unknown Fields is a nomadic design research studio . . . [whose] members venture out on expeditions to the ends of the earth to bear witness to alternative worlds, alien landscapes, industrial ecologies, and precarious wilderness. These distant landscapes—the iconic and the ignored, the excavated, the irradiated, and the pristine—are embedded in global systems that connect them in surprising and complicated ways to our everyday lives. In such a landscape

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Figure 1 Bayan Obo, China, December 21, 2010: inside the highly restricted Bayan Obo rare earth mine. The treasure mountain deposit is the world's largest and, as of 2005, is responsible for 45 percent of global rare earth metal production. Photographer Toby Smith gained access in 2010 by waiting until a Chinese national holiday and hiding in the back of a pick-up truck, working below the radar of the authorities. Making use of GPS coordinates calculated from satellite photos, he ran the final 10 kilometers across the desert to the mine edge with a discreet point-and-shoot camera. Photo Credit: Toby Smith/Unknown Fields

of interwoven narratives, the studio uses film and animation to chronicle this network of hidden stories and reimagine the complex and contradictory realities of the present as a site of strange and extraordinary futures.

The *Rare Earthenware* project was executed for the Victoria and Albert Museum's *What Is Luxury?* exhibition (2015), and the collaboration surveyed the travels of materials across the globe. But instead of merely focusing on (luxury) objects or electronics, the chemical realities and toxic landscapes were brought to the fore: the wastelands in Baotou in Inner Mongolia produced as the residue of rare-earth metal processing became the material provider for an alternative sort of a "luxury" object's travel, a mock version of a Ming vase. The photographs from these

travels are documents of the stages along the line of material refinement becoming part of technological culture and its toxic double. With Unknown Fields' work, along with Revital Cohen and Tuur Van Balen's, we are able to point to alternative art and design methods that have been employed in recent years in a visual cartography of the planetary condition—the "making" and "unmaking" of objects, as Unknown Fields puts it in their essay.

The section is concluded by Rosi Braidotti's important overview of how the issues addressed in this section can be contextualized as part of the discussion of posthumanities. Braidotti elaborates on the theme of medianatures as part the genealogy of critical studies from feminist technocultures to contemporary versions of environmental humanities that insists on

located, singular materialities as its frame of reference. Indeed, as she points out in the context of the Anthropocene, we are, in some reactions to this discussion, facing a troubling return to demands for a morality and ethics based on a generalized humanity, which misses the point that we need a radical posthuman ethics that speaks with the Others of the project of humanism. Instead of backward-gazing reconstructive nostalgia, the nomadic ethics necessitates "the need to learn new modes of expression and affirmative modes of relations to multiple others." Braidotti's call for postanthropocentric, critical posthuman thought is then embedded in "open-ended, interrelational, transnational, multisexed, and transspecies flows of becoming" active in some projects in such fields as digital culture studies and digital humanities. Braidotti's article specifies some of the issues at stake that the Anthropocene brought up: a theoretical debate but also, importantly, a consideration of the political ecology of humanities and its various institutional forms and epistemological strategies. This is related to the need to keep alive the various critical legacies in which media material research (media ecology, geologies of media, and other strands of media theory) has to also find its own situated focus and radical epistemologies. The works in this special section are also contributions to that project.

Notes

1. See also the Petrocultures (2016) project at the University of Alberta.
2. Benjamin Bratton (2015: 83–84) expresses the same idea as follows: "The Stack is not only on the Earth and built out of the Earth; as a composition, it is also a framing of the Earth, and so its geodesign works through its specific sorts of line-making and putting segments of the world in motion."

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Jussi Parikka is professor at the Winchester School of Art, University of Southampton. His books cover a wide range of topics relevant to a critical understanding of network culture, aesthetics, and media archaeology of the digital. *Digital Contagions* (2007; 2nd ed., 2016), *Insect Media* (2010), and *A Geology of Media* (2015) make up a media-ecology trilogy that addresses the environmental contexts of technical media culture. Other books include *What Is Media Archaeology?* (2012). He has also edited several books, including, most recently, *Writing and Unwriting (Media) Art History* (2015, with Joasia Krysa) on the Finnish media art pioneer Erkki Kurenniemi. His website and blog can be found at jussiparikka.net.