

JCU ScholarShip

When Do Media Become Ecomedia?

Item Type	Book chapter
Authors	Ivakhiv, Adrian;López, Antonio
Citation	Ivakhiv, Adrian, and Antonio López. "When Do Media Become Ecomedia?" In The Routledge Handbook of Ecomedia Studies, 19-34. Routledge. 2023.
DOI	https://doi.org/10.4324/9781003176497
Publisher	Routledge
Rights	Attribution-NonCommercial-NoDerivatives 4.0 International
Download date	2026-06-09 17:49:09
Item License	http://creativecommons.org/licenses/by-nc-nd/4.0/
Link to Item	https://hdl.handle.net/20.500.14490/365

1

WHEN DO MEDIA BECOME *E*COMEDIA?

Adrian Ivakhiv and Antonio López

If ecomedia studies is intended as an ecological reboot of the study of media, it is necessary to define what we mean by both media and ecomedia. But rather than asking, what are ecomedia?, it's more fruitful to probe, when are media *ecomedia*?¹ In common usage, “the media” seems self-evident, yet as a taken-for-granted metonym it often changes meaning according to context and usage. Such is the case when “the news” is often equated with “mass media.” Vernacular use often defaults to old definitions that are no longer tenable, which is demonstrated in the way OpenAI's ChatGPT² chatbot reproduces a superficial description of media as the “means of communication that are used to transmit information, ideas, and messages to a large audience” (ChatGPT 2022). This narrow one-to-many characterization has long been recognized by media scholars as limited; ChatGPT's extracted datasets merely repeat an outdated view of media that persists in obsolete textbooks and routine thinking. Curiously absent in this designation is the tech industry itself. Under the guise of surveillance capitalism, the four biggest tech companies in the world—Alphabet (owner of Google and YouTube), Apple, Meta (owner of Facebook, WhatsApp, and Instagram), and Amazon—are not conventionally thought of as “media” companies, yet in 2022 The Walt Disney Co's revenue was only a third of Alphabet's total earnings. Adtech, a form of algorithmically based “surveillance advertising,” in 2021 was a \$763.2 billion industry that automates where ads are placed through microtargeting and generating revenue for websites (Cucchietti et al. 2022). In 2020, 97.9% of Facebook's and 80% of Google's revenue was generated from advertising. In 2022, 80%–90% of the ad market (excluding China) was accounted for by Facebook, Google, and Amazon. Microsoft, IBM, Netflix, and providers like the telecom giant AT&T and cable service Comcast in the United States, are the owners and distributors of media content. Videogames have overcome legacy media, propelled by the popularity of multiplayer online games and esports. The gaming industry grosses more income than Hollywood and the music industry combined, making it the most profitable entertainment business in the world (Richter 2022).

Though global media have evolved as a result of digitization, the “mass” of traditional analog media has not gone away; many legacy media organizations (publishers, film studios, radio networks, etc.) are larger and even more monopolized and remain an influential presence in our lives. But the emergence of networks, multitudes, mass self-mediation, filter bubbles, algorithms, and fragmented audiences means that media studies is in the midst of a shift from considering media solely as texts, industries, audiences, and medium, to investigating platforms, infrastructures,

computer networks, satellites, databases, and software that are integral to everyday life and the operation of the planetary system. A major characteristic of our era is one of rapid digitization and deep mediatization, “an advanced stage of the process in which all elements of our social world are intricately related to digital media and their underlying infrastructures” (Hepp 2019, 5). A problematic consequence of this trend is “digital solutionism,” an optimistic belief that emerging technologies like artificial intelligence and “smart cities” will solve the environmental crisis, yet, “they contain very little critical meditation on the question of whether, and to what extent, the digital itself might be unsustainable” (Kuntsman and Miyake 2022, 120). And what is framed as “new” digital technologies is actually based on “old” exploitative materialities: “the natural resources that make the digital possible, their relationship to global social relations of production and the political and environmental consequences of these relations” (Emejulu and McGregor 2019).

In the study of media, there is a tension between exploring them as objects, messages/meaning, organizations, or ecosystems. For example, media archeology deals with artifacts of “dead” media; media literacy reads textual representations; critical political economy investigates systemic structures and “media logics”; and fields like media ecology examine media as environments. As a baseline, media facilitate “the production and reproduction of sociality, social relations, social structures, social systems, and society” (Fuchs 2020, 377). They contribute to the “sense-making process by which people organize their experience and comprehend their physical and social environment” (Kaplan 1990, 38). Denis McQuail’s (2012) popular communications textbook broadly divides media scholarship between media-centric (the study of texts and meaning) and socio-centric (the study of social forces), and between radical/critical or functionalist approaches. These categories tend to distinguish between what people do with media and what media do to (and with) people. Moving beyond the essentialization of screen media, the materialist turn in media studies is less interested in what media *are* than in what media *do* as actors in a broader “ecology” that “includes human bodies, technologies, and the most basic elements of the world’s environment, such as minerals and the many other raw materials used to manufacture our devices” (Bollmer 2019, 17). New materialists claim that media include “the agency, liveliness, and vitality of the nonhuman world,” “the inseparability of human and nonhuman,” and the necessity “for an ethical response to these relationships” (Tidwell, this volume).

Increasingly the study of media is incorporating political-ecological and anti-colonial perspectives that recognize how media logics are founded on a system of “five Es”: enclosure, extraction, expendability, exploitation, and externalization. The dominant global economic system is predicated on *enclosure*, the process of converting the commons (air, water, forests, shared knowledge, stories, etc.) into private resources (minerals, materials, energy, data, intellectual property, etc.) that can be *extracted* to make and power our media and to form information regimes; this also entails an epistemic enclosure that seeks to replace diverse cosmologies with a universal rational modernity used to justify this system. In order to make this system possible, *expendability* relates to how ecosystems become sacrifice zones and populations are designated as disposable. *Exploitation* connects to how these practices depend on “cheap things” (labor, care, etc.) that result from negative *externalities* that are factored into standard business practices. As a result, our gadgets are “colonial technologies.” But instead of demonstrating mastery of the world, “they merely show a particular rearrangement of the practices, forms of life, and life forms, often with unintended and unforeseen consequences” (Davis 2022, 19). An example of a decolonial media logic is the recognition that people who work to process e-waste should be considered part of “digital labor” and the “knowledge economy” (Iheka 2021). Likewise, gender dynamics at sites of extraction and assembly are crucial to consider.

From an ecocritical perspective, a fundamental problem is that media have been historically conceived of as something immaterial, reflecting Western culture’s mind/body duality in which the

realm of ideas is considered disconnected from the physical world. For example, when ChatGPT is questioned about the environmental impact of its queries, it states, “As an AI language model, I do not have any physical presence or environmental impact. I exist solely as a software program and do not consume resources or generate any waste or pollution” (ChatGPT 2022). But just as we cannot have thoughts without a body, we cannot have communication without a physical means to communicate and sensory experience to inform that communication. Light is composed of photons that stimulate the photoreceptors in our eyes, and our voices (produced by the solar plexus, lungs, throat, tongue, and mouth) make sound waves that physically touch eardrums. Our very atmosphere and Earth’s surface are the primary media through which all communication must pass. As Jussi Parikka (2015, 13) asserts, “it is the earth that provides for media and enables it: the minerals, materials of(f) the ground, the affordances of its geophysical reality that make technical media happen.” Earth is integrated into our gadgets and batteries, making the planet’s geology and biosphere a necessary part of any medium. For if there is no clay, there are no tablets; no organic matter, no printing press; no coal, no steam press; no copper, no telegraph; no electromagnetic spectrum, no broadcast. To paraphrase Parikka, without mineral mining, there is no data mining.

Modernity’s legacy of “nature” designated as something contrasted to culture, civilization, and the human makes it conceptually difficult to integrate an environmental understanding of media because they are normally thought of as only belonging to complex, depersonalized technological societies, and in this sense always somewhat intangible. Without a common vocabulary to describe the intersection between media and environment, these issues continue to be ignored. That’s why media metaphors matter. A contraction of “ecology” and “media,” renaming media as *ecomedia* addresses media’s ecological opacity (in the sense of unseen, unrecognized, ephemeral, hiding in plain sight, and taken-for-granted). Ecomedia reframes media as ecological media; that is, media are a material reality that are in, and a part of, our environment in the broadest sense(s). Media are inseparable from their material conditions and the environment that produced them.

Ecomedia studies serves as a “historically situated, ideologically motivated, and ethically informed approach to the intersections of media, society, and the environment” (Rust, Monani, and Cubitt 2016, 87). But since it has not entered into common usage, “ecomedia” can also be perplexing. For example, *Keywords for Environmental Studies* describes ecomedia as “shorthand for representations of and communication about the human and natural environment in media beyond traditional print” (Ziser 2016, 75). This is close to ChatGPT’s description of ecomedia:

Ecomedia is a term used to describe media that focuses on environmental issues or ecological themes. It includes a range of media forms, such as film, television, journalism, and social media, that seek to educate, inform, and engage audiences about environmental concerns and promote sustainable living. Ecomedia may also aim to influence public opinion and policy on environmental issues, and to inspire individuals and communities to take action to protect the natural world. Ecomedia often incorporates elements of activism and advocacy, and may be produced by organizations or individuals with a mission to promote environmental awareness and conservation.

(ChatGPT 2022)

Both Ziser and ChatGPT reinforce the notion that media work solely in the realm of ideas and representations, and in the case of ChatGPT, a normalized notion of the environment signaled by the use of “eco.” Like legacy concepts of media, this definition doesn’t account for their materiality or their affective characteristics. This is not to say that communicating about the environment is not an important aspect of ecomedia studies. Indeed, the insights of ecocriticism,

environmental communication, and ecocinema regarding rhetoric, symbolic resources, and discourses are integral to ecomedia studies. But the aim is to balance our understanding of media between representations and their materiality. Media are finite, so media *matter* matters: “because they are inevitably tied to physics... [they] are finite resources in the closed system of planet Earth. Because they are finite, media not only cannot persist forever; they cannot proliferate without bounds” (Cubitt 2016, 7).

For our purpose, “ecomedia” is inherently reflexive in a way that “media” is not. Ecomedia is indexical of media’s inherent ecological condition. This affords a decolonial perspective, such as grappling with how media

make possible communication and sustenance, but they are equally tethered to social and ecological degradation in Africa from their production, distribution, consumption and disposal. [...] Ecomedia studies is primarily positioned to scrutinize this contradiction – of the possibilities and problematics of media.

(Iheka 2021, 5)

By countering the ideological milieu that constrains this awareness, ecomedia registers the interrelationship and materiality of media with the physical environment inhabited by humans and nonhumans alike. From this perspective, all media become ecomedia, but there is a difference between explicit and implicit expressions of ecomedia. Explicit forms would be those ecomedia openly portraying environmental themes, whereas implicit ecomedia are inherently ecological by their condition as materially embedded in the environment and global economic system. Explicit forms of ecomedia are cultural and ideological inscriptions of ecological meanings. They can also be implicit in the ways they frame out or decenter environmental concerns.

Ecomedia helps us resolve some conceptual roadblocks that inhibit our ability to attend to media’s “double ground”: the first being the content and text of whatever it is we are attending to, the second being the material itself in/on which the text is available—the book in your hands, the screen, the metals, plastics, electricity, and production circuits that undergird its creation, and so on (Citton 2017, 198). Nadia Bozak’s (2011) term “resource image” enables us to think of both at once: the image as representation of material-ecological production and the image as material and ecological product. For example, iconic images of burning oil fields from the 1991 Gulf War communicate about human domination/destruction of the environment and the ideology of oil dependence and war. But in order to create, view, and retrieve those images, we require supply chains that make image technology possible, technological infrastructures, and materials containing images (newspapers, TVs, computers, etc.). Digital images in turn are data files that exist on servers, whose storage and use produces CO₂. Like household utilities, we take for granted how media images are piped into our homes. Bozak (2011, 2) asks, what would happen if an “end of oil” affects “not only the functioning of society and culture at large, and on a global level, but also, as a consequence, the way moving images are produced and received?” Cajetan Iheka (2021) reminds us that in an African context, “resource media constitute the middle relationship between the site of extraction and the point of consumption, between Africa and Euro-America in this context” (5).

Ultimately, rather than regarding ecomedia as having a closed definition, we propose it as a “sensitizing concept.”³ Following Eva Horn’s (2007) theoretical approach, Nicole Starosielski and Janet Walker (2016) frame “sustainable media” by using an

“anti-ontological” approach in media theory, rejecting fixed concepts of what “media” are – whether technologies, communications, platforms, or institutions – in favor of seeing media

as conditions of possibility for events and processes, “heterogeneous structures,” that comprise practices and forms of knowledge.

(4–5)

“Ecomedia” in this sense is not a thing or a set of objects (despite what object-oriented ontology might suggest), for a world of things arguably reflects the mechanistic thinking that has reified the Earth, humans, and the more-than-human world, contributing ideologically to the current ecological crisis. Instead, ecomedia entail processes of activation, mediation, institutionalization, and materialization. Ecomedia *perform* and do things that are ecological. (On the objects-processes debate, see Ivakhiv 2014, 2018.)

The remainder of this chapter grapples with some of the ways in which prominent scholars have been engaging ecomedia in both its “eco” and its “media” aspects and suggests some pointers for studying ecomedia that are reflected in the essays in this volume.

The “Eco” of Ecomedia

Just as the meaning of “media” is routinely taken for granted, so too are the concepts of nature, environment, and ecology. Nature, as cultural historians like Raymond Williams (1980) have long shown, is among the most complex and ambiguous terms in the English language, its uses marked by Eurocentric and colonial assumptions (see Ivakhiv 2017). The conceptual separation of nature and culture underpins much of Western scholarship, including the very division between the sciences, with their presumed objectivity focused on the study of “nature,” and the humanities, with their attempts to grapple with the “subjective” dimensions of “culture.” Nature has traditionally been seen alternately as the generative (yet inferior) matrix from which human civilization has “risen,” as a set of limits to be either bound by or to overcome, and as the ground of rejuvenation for romantic (and typically masculinist) quests for wholeness. Historians of ideas have studied the ways in which these ideas of nature have shaped ideas and discourses of “ecology,” arising in the late nineteenth and early twentieth centuries, and of “environment” as these emerged in the mid twentieth century (see Ivakhiv, this volume).

Because these terms have a way of essentializing “the environment” as something separate from humans, scholars in the environmental humanities, including ecofeminists and theorists of postcolonial and queer ecology, have highlighted the cultural constructedness of these concepts, showing how they support and reproduce forms of colonial, patriarchal, ableist, and heteronormative discourse. For feminists like Val Plumwood and Karen Warren, the nature-culture dualism has traditionally supported a “logic of domination” whereby men and women, white and Black, European and non-European, and reason and emotion are asymmetrically constituted to privilege the first term over the second (Plumwood 1993; Warren 1993). Postcolonial and decolonial theorists have extended this critique to encompass histories of colonialism that continue today in hierarchical power relations encompassing the capitalist world system, legacies of racial domination, neoliberal governance, discourses of “development,” and much more (e.g., Escobar 1995; Mignolo 2007; Quijano 2007; Sultana 2022).

In response to this critique of conceptual dualisms, numerous theorists have worked to articulate alternative understandings of ecology (as holistic and encompassing of society alongside the natural world), cosmology (as relational), and ontology (as primary and thus preceding any possible duality of “nature” and “culture”), drawing from multiple sources, including Indigenous or non-Western traditions of thought, “postmodern” or post-positivist conceptions of science, and other novel philosophies from Spinozist monism to post-Heideggerian phenomenology, Whiteheadian

processualism, and Deleuzian “assemblage theory.” Terms like actor-networks (Latour 2005), naturecultures (Haraway 2008), quasi-objects (Serres 1982), rhizomes (Deleuze and Guattari 1987), assemblages (Law 2004), social nature (Castree and Braun 2001), the more-than-human world (Abram 1996), humanature (Milstein 2016), humanimal (Mitchell 2003), and hyperobjects (Morton 2013) have been proposed to aid in the conceptual unraveling of inherited binaries (see Milstein et al. this volume). Others, including political ecologists, biocultural anthropologists, and critical realists, have sought a balanced and multi-leveled understanding that combines both the material-empirical and the discursive-cultural characteristics of environment, as in Michael Carolan’s distinction between Nature (physicality, causality, and permanence-with-flux), nature (socio-biophysical phenomenon), and “nature” (discursive constructions) (cited in Büscher 2021, 19–20).

As metaphors, “environment,” “ecology,” and “ecosystem” have both informed and obfuscated the ecological conditions shaping and making media, to the point of leaving out the material conditions that make any medium possible (Rust and Wurth, this volume). Discursive formations of “environment” do ideological work when they are tied to the idea of “enclosed” surroundings. “The environment,” as Patel and Moore (2018) note, is always the frontier of capitalist expansion to incorporate nature and people into markets: “capitalism grows through its frontiers” (2018, 37). The most generic definition of ecology is the interrelationship between organisms and their environments (for novel approaches to the concept, see Hörl and Burton 2017), but over time two distinct concepts of media ecology have emerged. In the case of Neil Postman’s notion of *media ecology* and Henry Jenkins’ use of *media ecosystem*, both signal a prescriptive orientation but have different situated meanings (Anderson 2016; Nadler 2018; Wahl-Jorgensen 2015). As reflected in the Postman tradition, media ecology is based on a normative concern with how a new medium (such as television or digital media) emerges to dominate an established medium environment (like print) to achieve some kind of “cybernetic balance” with the overall health and harmony of society. It is anthropocentric in the sense that it regards “media health” as something that can benefit or harm humans. The other is the rhizomatic approach which describes networks and complexity in the flow of information. This draws on the work of Gilles Deleuze and Félix Guattari (1987), refined later by Matthew Fuller (2005) and others. In the rhizomatic version, humans are not at the center but are a node in symbolic and material networks. Guattari (2008) later formalized a three-ecology approach that combines the physical, social, and mental environments (see Ivakhiv, this volume). While the ecosystem metaphor has been used both to support an organic (and hence beneficial) perspective or to justify market competition (as in the idea of “survival of the fittest” media technologies or platforms), Richard Maxwell and Toby Miller (2012, 93) assert that technological and political processes should not be equated with or translated as natural ecosystems because they behave differently. Ultimately, Anthony Nadler (2018) urges that the term ecosystem be “de-reified” in order to allow for flexibility of use.

Newer formulations of media ecology explore the “material-spatial conditions of media” (Gabrys 2016a). Concepts of “elemental media” also destabilize and reframe traditional notions of environment (see below). In a move beyond the essentialization of the environment, as commonly used in the English language, some scholars are exploring “milieu” as an alternative formation. In this perspective, environments are made up of multiple milieus, which have historically been described as “spaces of transfer, influence, and environmental inhabitation” (Gabrys 2016a, 12). For Jennifer Gabrys (2016a), a milieu arises when “environments and entities are formed across individuals (inner) and environments (exterior) through energetic and material exchanges that occur through the transversal field” (12). A milieu in this sense is a space mediating some form of communication. While this approach risks maintaining the traditional Western

view of cognition as “internal,” more recent theories of cognition as embodied, embedded, extended, enactive, and affective (“4EA cognition”) help to situate it within broader networks of agency encompassing, for instance, the personal use of gadgets, attending concerts, participating in all-night rituals, outdoor picnics and dinner parties, and so on. Here we are moving beyond a definition of media and communication as transference of information, to one based on the experience of mediation and ritual. Milieus can be experienced by plants, animals, insects, and chemicals. However, according to Seán Cubitt (2016), not all mediations are communication, but all communications are mediated (and material). “When we speak of media, we tend to refer to the technological media of the last two hundred years; but everything that mediates is a medium—light, molecules, energy” (4).

The “Media” of Ecomedia

In Friedrich Kittler’s (1993) influential take on the topic, media are defined by their capacity to record, store, and process information. This suggests an imperative to cache knowledge in some external capacity independent of oral traditions where memory is social. Media don’t have memory, they *are* memory. As John Durham Peters writes, “Like ‘new media,’ ancient media such as registers, indexes, the census, calendars, and catalogs have always been in the business of recording, transmitting, and processing culture; of managing subjects, objects, and data; of organizing times, space, and power.” He continues, “Media as entertainment machines that provide news and entertainment are rare in human history” (Peters 2015, 19). In complex societies, media are logistical in order “to manage time, space, and power,” and “what is not in the documents is not in the world” (Peters 2015, 20). According to Harold Innis’ (1999) investigations, the properties of a medium, such as stone or papyrus, that predominates in complex societies produce different spatial and temporal biases that, in turn, give rise to specific sociopolitical structures. Innis was concerned with how dominant media forms create knowledge monopolies and expert classes.

But this view that media are defined by their civilization-ordering processes arguably also reflects an inherently Western prejudice, with the result that “pre-literate” cultural practices are often excluded from definitions of media because they are not “civilized.” Armond Towns’ (2022) formulation of “Black media philosophy” critiques this kind of medium theory by arguing that its technologically determinist thinking generalizes from Western media experience. The result of this universalization is that “Black” equals “close to nature” (tribal, sensual, with little technological development), while “white” is “advanced,” detribalized, sensually isolated, less emotional, and so on. What counts or doesn’t count as “media” is a matter of control:

Unlike the slave catchers who relied on media like maps, printed paper, and the phonetic alphabet, the Black enslaved person’s media economy was structured around media not deemed media by white people, but often deemed natural, such as orality, star constellations, tree branches, and even their own bodies.

(23–24)

Towns critiques Marshall McLuhan’s media epistemology as tainted by white, male, heterosexual, able-bodied, middle-class, and cisgender assumptions: “the media that the West deployed,” he writes,

produced the West as the monopolizer of knowledge. McLuhan’s argument assumed that we are all derivatives of white Euro-Americans, and all media served a Western, temporal,

epistemological function: to show white Euro-Americans how far behind them we as Black people were.

(8)

Bridging the “eco” examined above with a broadened conception of “media,” Nicole Starosielski’s (2019, 1) “elemental analysis” of media encompasses “minerals that comprise media technologies,” “the harvesting of ecological matter for media of inscription,” “light that sets conditions for vision,” “infrastructures that support signal traffic,” “atmospheric media,” “plastic as the substrata, a medium, of advanced capitalism,” and earth itself as a medium. Starosielski asserts that “working with elements provides a way to come at ecological issues from an oblique angle, to refuse boundaries between human and environment, and to recast the terms of the conversation in environmental media studies” (2). John Durham Peters (2015), whose scholarship in “elemental media” has been influential, argues that the original concept of media was in reference to the elements; this is retained when we think of gel as medium in petri dishes. Tree rings, ice cores, and geological strata are all forms of storage, but technologies are expressions of nature by and for humans. For Peters, media “are ensembles of natural elements and human craft” (3). African ecomedia theorist Cajetan Iheka (2021) adds that “elemental media are indigenous inhabitants of the ecomedia sphere. Elemental media precede the arrival of media devices, media arts, resource media, and other recent immigrant arrivals threatening the survival of native ecomedia and the rest of the planet” (6).

Melody Jue (2020) reframes Kittler’s heuristic of media as interface, inscription, and database, which supports the infrastructural approach to ecomedia. According to Peters (2015), what most of us currently experience as media, different from experience in earlier epochs, is a proliferation of infrastructures, such that media are “fundamentally logistical”: they compress time and space, “organize and orient,” “coordinate and subordinate,” and arrange “relationships among people and things” into “grids” (Peters, 2015, 37). But by their nature, infrastructures are concealed, ordinary, background, and unnoticed. Infrastructures of data and control determine what we know about whales, forests, and medicine, which makes them “infrastructures of being, the habitats and materials through which we act and are” (Peters 2015, 15). This “forgotten” infrastructure has world-leveraging power to shift ontologies, but according to Iheka, they are also worldbuilding in the sense that fossil fuels are a medium of modernity that determine the geopolitical position of nations like Nigeria. A civilizational shift to “green” energy that requires cobalt and lithium for batteries will certainly change and reconfigure the planet in new ways (on media’ energy infrastructures, see Cubitt 2016).

The turn to media infrastructures is an important facet of ecomedia studies. “The goal” of this turn, in Jean-Christophe Plantin and Aswin Punathambekar’s (2019) words,

is not simply to study the technological properties of a particular medium of communications, but rather to show that the material transport of information (the ‘signal traffic’) reframes traditional questions of media production, circulation, access, consumption, and policy and regulation.

(2019, 165)

An infrastructural approach engages power relations between stakeholders, social and labor practices, scale (from personal gadgets to networks of undersea cables), contingent and relational conditions resulting from preexisting media platforms, and “the *ideological* work involved in

imagining, assembling, and maintaining media infrastructures” (emphasis original, 166–67). But Tung-Hui Hu (2016) challenges the idea that we can know the materiality of infrastructure—what he refers to as “the cloud”—because it is not medium-specific, but medium-agnostic: “not even the engineers who have built it typically know where the cloud is, and as a consequence, what part of the apparatus to examine” (xix). As a totality (or as a hyperobject, to use Timothy Morton’s term), it is unavailable to our senses. The form of the cloud comprises abstract layers (from least to most abstract): physical links between fiber-optic cable and Ethernet copper wire constitute the bottom layer; protocols like Internet Protocol and Transmission Protocol, the middle layer; and application software built onto the protocols, like streaming media, the top layer (xxiv). The “toxic cloud” enacts slow violence across space and time as it causes a double displacement, “the displacement of place itself from sight but also a temporal displacement” (xxix).

If we consider the environmental studies truism that we change the environment and the environment changes us, what does it mean if we take into account how “sensor technologies are generating distinct ways of programming and concretizing environments and environmental relations” across the planet (Gabrys 2016a, 4)? “The drive to instrument the planet,” Gabrys writes, “to make the earth programmable not primarily from outer space but from within the contours of earthly space, has translated into a situation where there are now more ‘things’ connected to the Internet than there are people.” She continues, “People-to-people communication is becoming a smaller proportion of Internet and networked traffic in the complex array of machine-to-machine (M2M), machine-to-people (M2P), and people-to-people (P2P) circuits of communication” (Gabrys 2016a, 7). The emerging “Internet of Things” and Earth sensors forming an “electronic skin” across the Earth together generate new environmental conditions that affect our experience and understanding of the planet. For example, the production chain for technology—from microprocessors to solar panels—is meant to monitor and “sense” the environment, but their manufacture, production, and infrastructure also materially change ecosystems.

An updated high-tech, dated version of Lewis Mumford’s (1970) “megamachine,” our mediated planet increasingly is linked to an emergent, giant computer, or what Benjamin Bratton (2015) calls “the stack.” According to Gabrys (2016a, 16), ecologies of satellites and sensors are assembled into networks of code that produce information so that “[c]omputational technologies are constitutive of environments, have environmental effects, and also in-form environmental practices.” Theorists of “enviromedia” like Adam Wickberg and Johan Gärdebo (2022, 6) describe how the “dialectics of feedback—between knowing and doing the environment through media—continues to present day, where we may speak about a fully mediated planet of data.” Responding to concerns with the way “data eats the world,” an emerging area of scholarship engages a political ecology of data that examines both the materiality of data infrastructures (hardware, software, institutions, and governance) and the social infrastructures by which decisions are made about data (for whom, to what end, etc.) (Goldstein and Nost 2022). As a process of ongoing ontogenesis, this goes well beyond the traditional notion of screen-based subjectivity. As Ivakhiv (2021, 11) asserts,

The technological systems we call “media” are extensions and transformers of how we perceive and respond to the world, a world that already includes political actors, social understandings, economic incentives, contractual agreements, design principles, and much more. Those media are a subset of the broader category of media, which [...] are the technical, perceptual, and bodily modalities by which all things interact with other things. “Media” is simply a word for “mediating apparatuses,” which mediate via the shaping of perceptual and responsive capacities. Mediation is how things work.

Utilizing a multiperspectival approach, ecomedia addresses media as objects, element(al)s, infrastructures, and processes of mediation, with different heuristics aiding us in understanding when media are ecomedia. Any ecomedia “object” is an ecological artifact that becomes an event articulating its infrastructure at any given moment. As events, media are “assemblages or constellations of certain technologies, fields of knowledge, and social institutions” (Horn 2007, 8). According to Melody Jue, “to be articulated as a medium is not about a stable ontological entity (this is a medium, that is not) but about being enfolded into an assemblage such that something performs a function of a medium” (Jue 2020, 24–25). Media as “entities” should “not be approached as detached objects for our subjective sensing and contemplation, but rather as processes in and through which experience, environments, and subjects individuate, relate, and gain consistency” (Gabrys 2016a, 9).

In the inaugural 2020 issue of the *Journal of Environmental Media*, the journal’s editors elected to constrain media to “the study of digital screen culture,” defining the digital as “all that is created by the binary code of 0’s and 1’s and is transmitted electronically.” They wrote,

[O]ur use of the term “media” is limited so as to avoid a number of neologisms and analogical terms that, in our opinion, have the potential to obfuscate the objects of inquiry within environmental media studies; an example of this is “elemental media”, which stretches the definition of “media” to include anything that mediates (animals, air, rivers, clouds), and in doing so baffles attempts at the kind of conceptual clarity that is necessary for interdisciplinary research.

(Shriver-Rice and Vaughan 2020, 4)

Coming out at roughly the same time, the journal *Media+Environment* articulated its focus, by contrast, as encompassing what media do in the world: “media do not merely communicate, transmit, and transport; they also transform. [...] [M]edia are active participants in the social construction and material production of the world” (Chang, Ivakhiv, and Walker 2019, para. 2). Synthesizing these approaches, the Environmental Media Lab states,

Environmental Media means looking at ‘the environment’ as a kind of mediating agent (mediator/medium). Whether this be water, smoke, black holes or DNA (etc.), ‘environmental media’ complicates the boundary between what is thought of as ‘natural’ and what is constructed, and it differs significantly from scholarship that looks at the environment as a place or cause. ‘Environmental media’ is more of a critical framework than a discipline.

(“Environmental Media Lab” n.d., para. 2)

In Iheka’s (2022) account, ecomedia could include conventional media devices and media arts (film, photography, et al.), resource media (oil, uranium, etc.), and elemental media (fire, air, earth, water) whose “making, use, and disuse implicate them in ecological degradation and/or environmental transformation” (6). “Ecomedia processes,” he writes, “catalyze ecological consequences in the form of environmental degradation and/or advocacy for environmental renewal, and sustainability, making this media genre an assemblage of natural elements and cultural attributes with apparent superstructures and implicit infrastructures” (6).

Fundamentally, then, ecomedia are infrastructures and milieus that envelop and orient us in space, time, place, and entanglements with/in the more-than-human world. They are not just about communication and transmission, but they constitute the world as an ensemble of technologies and activities that activate, coordinate, and help us make sense of the world.

Studying Ecomedia

The milieu specificity of dominant media scholarship up to now has relied on an epistemology that has been characterized (or caricatured) as “WEIRD,” that is, a Western, educated, industrial, rich, and “democratic” knowledge system. The media ecology tradition, as we have seen, sits comfortably within this characterization. Challenging this approach, Melody Jue (2020) asks how working at a desk, sitting in a chair, and gazing at or through a screen (which is how most scholarship is produced) may direct a certain vantage point. How can we achieve the necessary unfamiliar perspective to see our own thinking and being about media and environment?

The editors of this *Handbook* are inspired by the cultural studies’ “circuit of culture” approach, which uses a multiperspectival analytical method that enables the study of media from different standpoints. In this volume, we characterize those broadly as “ecocultures,” “political ecology,” “ecomateriality,” and “eco-affects.” Ecomedia literacy can be used to explore how all media have an environmental mind/footprint (see López, this volume). This follows from the basic premise that a holistic analysis of media requires examining their material, symbolic, and affective characteristics. “Ecocultures” refers to the shared beliefs and related practices that are conveyed through the multimodal languages of symbols and discourses. “Political ecology” is the study of how economic and power structures design systems and produce impacts on the environment, including the production of ideologies and material goods. “Ecomateriality,” in turn, is the realm of the environmental and material conditions of media, be it the physical properties of a medium (e.g., paper in books or magazines) or of gadgets (chemicals, glass, plastic, metals, etc.). And “eco-affects” refers to the ecology of perception and sensemaking and how media affect our felt sense of place, space, time, embodiment, and relationality amidst a world of complex and always somewhat elusive others. All these standpoints are applied to the object of analysis, which can be a media text, gadget, platform, or hyperobject (a dispersed phenomenon such as infrastructure).

In her insightful analyses of the materiality of media infrastructures, Jennifer Gabrys (2016b) calls for “re-thingifying” media theory by “open[ing] up attention to how things come to be, what sustains things, and the effects that things have on the world” (188). This is consistent with the ontological calls, inspired by the process-relational philosophy of A. N. Whitehead, to rethink media in terms not of what media *are* but of what they *do* (Fuller 2005; Ivakhiv 2013; Manning, Munster, and Stavning Thomsen 2019). And since media involve us, they are also the ways they change us (and we in turn change them). Yves Citton (2017, 23) builds on this in his focus on the ecology of attention:

The biophysical ecology of our environmental resources, the geopolitical ecology of our transnational relations, the socio-political ecology of our class relations and the psychic ecology of our mental resources all depend on the media ecology that conditions our modes of communication.

Ecomedia scholars can follow the lead of “maker media studies,” which calls for being “more attentive to the social, cognitive, affective, biological, and other environments in which media technologies move and have their being” (O’Gorman 2020, 12).

Researching ecomedia is in some ways not unlike studying plastic, which is not bound to a particular location or discipline, but necessitates following “where it leads, attending to the various ways in which it is both reshaping our material surroundings and inviting critical reappraisal of how matter is understood in Western thought” (Davis 2022, 14). Similarly, Nicole Starosielski (2019) describes “elemental thinking” as connecting “media studies to a network of infrastructural

and ecological phenomena: to mines, oceans, roads, and social worlds otherwise located beyond media studies.” Elemental research is “a contact zone, one where scholars are pushing, experimenting with, and redrawing the boundaries of media studies” (3).

Lisa Parks (2016) encourages a phenomenological methodology to physically explore infra-structure. This opens the possibility of engaging in material phenomenology, the “understanding that, whatever its appearance of complexity and opacity, the social world remains accessible to interpretation and understanding by human actors. Indeed, it is a structure built up, in part, through those interpretations and understandings”; actors include “individual actors as single humans, corporate actors as organizations, companies and state agencies as well as collective actors as communities or social movements” (Hepp 2019, 10, emphasis in original). But it is also essential that ecomedia studies decenter humans, embedding them within larger networks of material as well as social and discursive relations.

The emerging paradigm of comparative media studies recognizes interdisciplinarity as key to exploring media from multiple standpoints to engage “juxtapositions, attentive to the materiality of media across a variety of incarnations” (Jue 2020, 26). To investigate the “cloud,” Hu suggests we utilize methods like examining representations of it in popular culture; studying diagrams, terms, and metaphors in computer science; and analyzing games, photos, drawing, and videos: “what the cloud looks like on-screen; how we draw or map its shape; how the cloud grew out of TV/video networks” (Hu 2016, xxii). Empirical ecocriticism draws on social science techniques to test assumptions about textual meanings by engaging “empirically grounded” methods like interviews, focus groups, surveys, and controlled experiments, aided by interdisciplinary approaches that benefit from co-authorship (Schneider-Mayerson, Weik von Mossner, and Małecki 2020).

As is the case of this *Handbook*, many scholars engage the media arts (such as photography, video, film) as ecomedia objects to think with. Beyond artifacts of popular culture, Iheka (2021, 10) calls for the engagement of imperfect media, “low-carbon media practices and infrastructures of finitude that are critical for ameliorating ecological precarity in the future,” such as the various Afrofuturist aesthetics practiced by African artists, or some of the “slow” (often analog) media discussed, in this volume, by Jennifer Rauch. By exploring citizen science, maker culture, and artistic practices, Gabrys’s (2016a) methodology, especially in her study of environmental sensors, combines environmental studies, digital culture, and arts with the study of technology and science.

Ecomedia studies has as a prime directive to decolonize how we study and think about media. As a political project, this requires a rigorous focus on political ecology and ecojustice, for instance, on the ways in which media naturalize finance, corporate personhood, hydrocarbon energy, extractivism, sacrifice zones, and endless growth, all of which are extensions of currently hegemonic knowledge systems that govern global institutions. Going deeper into the milieu, what is called for is also a fundamental shift in how we see the universe and our place within it. The aim is to reclaim ecology, regardless of the various ways the term has been (mis)used, as a guiding “methodology of intersectionality, which insists on thinking being and becoming at the cross section of multiple fields of social, political, economic, and material determinations” (Demos 2016, 25).

In a digital economy that is indifferent to “truth” and fails to distinguish information from the mis- and disinformation driving the global climate crisis, we are grappling with what Bram Büscher (2021) identifies as “truth tensions” (as opposed to “truth wars”). Environmental knowledge, in this realm, is produced through a complex negotiation between science and other truth-making processes, with “facts” (or “factishes,” as Latour [2010] called them) emerging out of a

contestation of empirical data points, translations, beliefs, and social negotiations. Reclaiming ecology requires attending to the fundamental problem of the epistemic or “post-truth” crisis that is “an expression of power under platform capitalism” (170). As is the case with ChatGPT cited earlier in this chapter, “whether or not something is true or not does not matter for algorithms or the (commercial success) of the platforms” (171). Büscher calls for a political ecology of truth that dialectically engages not only the power structure of surveillance capitalism but also the everyday praxis of lived realities, which are “messy, contingent, and contentious, and only can be studied as such” (27). In this way, ecomedia studies aligns with ecocriticism’s commitment to combine science, cultural analysis, and ecological politics.

Conclusion

By asking when media become ecomedia, we are asking how media are to be rethought in the context of the climate emergency—that is, in the aftermath of the industrialization that gave rise not only to rapid carbonization of the atmosphere, but to mass media and electronic media as we know (or knew) them. This shift in how we define media is not just a philosophical or intellectual exercise; it is a cultural, ethical, and political—indeed, geopolitical—one as well. For at the basis of planetary geopolitics is a racially unjust, neo-colonial structure predicated on the extraction of resources and the externalization of health and environmental costs (and risks) to low-income regions of the world. By demanding resource extraction, labor exploitation, and the unrestrained release of pollution and toxic waste, this system depends on ecological sacrifice zones and disposable populations. Transforming this neo-colonial apparatus requires a deep shift in priorities and a profound remaking of practices. Ecocritical assessment, considering not only the environmental or material dimensions of the “eco” but its social, political, ethical, and aesthetic dimensions, is mandatory.

Notes

- 1 This move is inspired by media infrastructure researchers who utilize the methodological trick to change the query of “what is an infrastructure?” to “when is it an infrastructure?” (Plantin and Punathambekar 2019, 168).
- 2 The queries cited in this chapter were performed using ChatGPT-3. The purpose is less about ChatGPT’s abilities and more about revealing socially produced conventional thinking about media, technology, and the environment that a trained artificial intelligence (AI) is churning out. Playing with ChatGPT demonstrates the nature and limitations of algorithmic knowledge, and how the assumptions we put into our “searches” are hugely important. AI chatbot natural language processing tools embody not only algorithmic bias but also the cultural and institutional prejudices that form their knowledge base. They are inherently machines of ideology. As Ruha Benjamin (2019) notes, algorithmic codes “operate within powerful systems of meaning that render some things visible, others invisible and create a vast array of distortions and dangers” (7).
- 3 This follows an approach devised by Andreas Hepp (2019) in his formulation of mediatization:

At this point it is helpful to remember again the argument that mediatization is a ‘sensitizing concept’, that is, it sets out to sensitize us to current social transformations. As such, the term cannot stand on its own as a self-contained theory but another point of view might be more helpful: Mediatization is a sensitizing concept around which various researchers have gathered, researchers who are interested in an empirically based investigation of the significance of the role media plays in the transformation of culture and society ... From this point of view, the term mediatization refers to an open, ongoing discourse of theorizing social and cultural transformation in relation to media and communications.

(9)

Further Reading

- Cubitt, S. 2016. *Finite Media: Environmental Implications of Digital Technologies*. Durham, NC: Duke University Press.
- Maxwell, R., Raundalen, J., and Vestberg, N. L. eds. 2015. *Media and the Ecological Crisis*. London; New York: Routledge.
- Peters, J. D. (2015). *The Marvelous Clouds: Toward a Philosophy of Elemental Media*. Chicago, IL: University of Chicago Press.
- Rust, S., Monani, S., and Cubitt, S. eds. 2016. *Ecomedia: Key Issues*. London; New York: Routledge.
- Starosielski, Nicole and Janet Walker, eds. 2016. *Sustainable Media: Critical Approaches to Media and Environment*. New York; London: Routledge.

References

- Abram, David. 1996. *The Spell of the Sensuous: Perception and Language in a More-than-Human World*. New York: Pantheon Books.
- Anderson, C.W. 2016. “News Ecosystems.” In *The SAGE Handbook of Digital Journalism*, edited by Tamara Witschge, C.W. Anderson, David Domingo, and Alfred Hermida, 410–23. London: SAGE Publications Ltd. <https://doi.org/10.4135/9781473957909>.
- Benjamin, Ruha. 2019. *Race after Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity.
- Bollmer, Grant. 2019. *Materialist Media Theory: An Introduction*. New York: Bloomsbury Publishing, Inc.
- Bozak, Nadia. 2011. *The Cinematic Footprint: Lights, Camera, Natural Resources*. Piscataway, NJ: Rutgers University Press.
- Bratton, Benjamin H. 2015. *The Stack: On Software and Sovereignty*. Cambridge, MA: MIT Press.
- Büscher, Bram. 2021. *The Truth about Nature: Environmentalism in the Era of Post-Truth Politics and Platform Capitalism*. Oakland: University of California Press.
- Castree, Noel, and Bruce Braun, eds. 2001. *Social Nature: Theory, Practice, and Politics*. Malden, MA: Blackwell Publishers.
- Chang, Alenda, Adrian Ivakhiv, and Janet Walker. 2019. “States of Media+environment: Editors’ Introduction.” *Media+Environment* 1 (1). <https://doi.org/10.1525/001c.10795>.
- ChatGPT. 2022. Personal Communication, December 16.
- Citton, Yves. 2017. *The Ecology of Attention*. Cambridge: Polity.
- Cubitt, Sean. 2016. *Finite Media: Environmental Implications of Digital Technologies*. Durham, NC: Duke University Press.
- Cucchiatti, Fernando, Joana Moll, Marta Esteban, Patricio Reyes, and Carlos García Calatrava. 2022. “Carbo-lytics: An Analysis of the Carbon Costs of Online Tracking.” *Carbolytics*. February 16, 2022.
- Davis, Heather M. 2022. *Plastic Matter*. Durham, NC: Duke University Press.
- Deleuze, Gilles, and Félix Guattari. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press.
- Demos, T. J. 2016. *Decolonizing Nature: Contemporary Art and the Politics of Ecology*. Berlin: Sternberg Press.
- Emejulu, Akwugo, and Callum McGregor. 2019. “Towards a Radical Digital Citizenship in Digital Education.” *Critical Studies in Education* 60 (1): 131–47. <https://doi.org/10.1080/17508487.2016.1234494>.
- “Environmental Media Lab.” n.d. <https://environmentalmedialab.com>.
- Escobar, Arturo. 1995. *Encountering Development: The Making and Unmaking of the Third World*. Princeton, NJ: Princeton University Press.
- Fuchs, Christian. 2020. “Everyday Life and Everyday Communication in Coronavirus Capitalism.” *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society* 18 (1): 375–98. <https://doi.org/10.31269/triplec.v18i1.1167>.
- Fuller, Matthew A. 2005. *Media Ecologies: Materialist Energies in Art and Technoculture*. Cambridge: MIT Press.
- Gabrys, Jennifer. 2016a. *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet*. Minneapolis: University of Minnesota Press.
- . 2016b. “Re-Thingifying the Internet of Things.” In *Sustainable Media: Critical Approaches to Media and Environment*, edited by Janet Walker and Nicole Starosielski, 180–95. London: Routledge.

- Goldstein, Jenny, and Eric Nost, eds. 2022. *The Nature of Data: Infrastructures, Environments, Politics*. Lincoln: University of Nebraska Press.
- Guattari, Félix. 2008. *Three Ecologies*. London: Continuum.
- Haraway, Donna Jeanne. 2008. *When Species Meet*. Minneapolis: University of Minnesota Press.
- Hepp, Andreas. 2019. *Deep Mediatization*. London; New York: Routledge. <https://doi.org/10.4324/9781351064903>.
- Hörl, Erich, and James Burton, eds. 2017. *General Ecology: The New Ecological Paradigm*. London: Bloomsbury Academic.
- Horn, Eva. 2007. "Editor's Introduction: 'There Are No Media.'" *Grey Room* 29 (October): 6–13. <https://doi.org/10.1162/grey.2007.1.29.6>.
- Hu, Tung-Hui. 2016. *A Prehistory of the Cloud*. Cambridge: MIT Press.
- Iheka, Cajetan Nwabueze. 2021. *African Ecomedia: Network Forms, Planetary Politics*. Durham, NC: Duke University Press.
- Innis, Harold Adams. 1999. *The Bias of Communication*. Toronto: University of Toronto Press.
- Ivakhiv, Adrian. 2013. *Ecologies of the Moving Image: Cinema, Affect, Nature*. Waterloo: Wilfrid Laurier University Press.
- . 2014. "Beatnik Brothers? Between Graham Harman and the Deleuzo-Whiteheadian Axis." *Parrhesia* 19: 65–78.
- . 2017. "Nature." In *The Oxford Handbook of the Study of Religion*, edited by Michael Stausberg and Steven Engler, 414–29. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780198729570.013.29>.
- . 2018. *Shadowing the Anthropocene: Eco-Realism for Turbulent Times*. Goleta, CA: Punctum Books. <https://doi.org/10.21983/P3.0211.1.00>.
- . 2021. "In Defense of Ecological Metaphor." *Immanence* (blog). February 19, 2021. <https://blog.uvm.edu/aivakhiv/2021/02/19/in-defense-of-ecological-metaphor/>.
- Jue, Melody. 2020. *Wild Blue Media: Thinking through Seawater*. Durham, NC: Duke University Press.
- Kaplan, Stuart Jay. 1990. "Visual Metaphors in the Representation of Communication Technology." *Critical Studies in Mass Communication* 7: 37–47.
- Kittler, Friedrich A. 1993. *Draculas Vermächtnis: Technische Schriften*. 1. Aufl. Reclam-Bibliothek 1476. Leipzig: Reclam.
- Kuntsman, Adi, and Esperanza Miyake. 2022. *Paradoxes of Digital Disengagement*. London: University of Westminster Press. <https://doi.org/10.16997/book61>.
- Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- . 2010. *On the Modern Cult of the Factish Gods*. Durham, NC; London: Duke University Press.
- Law, John. 2004. *After Method: Mess in Social Science Research*. London; New York: Routledge.
- Manning, Erin, Anna Munster, and Bodil Marie Stavning Thomsen, eds. 2019. *Immediation I*. Place of Publication Not Identified: Open Humanities Press.
- Maxwell, Richard, and Toby Miller. 2012. *Greening the Media*. New York: Oxford University Press.
- McQuail, Denis. 2012. *McQuail's Mass Communication Theory*. Los Angeles, CA: SAGE.
- Mignolo, Walter D. 2007. "Delinking: The Rhetoric of Modernity, the Logic of Coloniality and the Grammar of De-Coloniality." *Cultural Studies* 21 (2–3): 449–514. <https://doi.org/10.1080/09502380601162647>.
- Milstein, Tema. 2016. "The Performer Metaphor: 'Mother Nature Never Gives Us the Same Show Twice.'" *Environmental Communication* 10 (2): 227–48. <https://doi.org/10.1080/17524032.2015.1018295>.
- Mitchell, W. J. T. 2003. "Foreword." In *Animal Rites: American Culture, the Discourse of Species, and Post-humanist Theory*, edited by C. Wolfe, ix–xiv. Chicago, IL: University of Chicago Press.
- Morton, Timothy. 2013. *Hyperobjects: Philosophy and Ecology after the End of the World*. Minneapolis: University of Minnesota Press.
- Mumford, Lewis. 1970. *The Pentagon of Power*. New York: Harcourt Brace Jovanovich.
- Nadler, Anthony. 2018. "Nature's Economy and News Ecology." *Journalism Studies* 20 (6): 823–39. <https://doi.org/10.1080/1461670X.2018.1427000>.
- O'Gorman, Marcel. 2020. *Making Media Theory: Thinking Critically with Technology*. New York: Bloomsbury Academic.
- Parikka, Jussi. 2015. *A Geology of Media*. Minneapolis: University of Minnesota Press.
- Parks, Lisa. 2016. "Earth Observation and Signal Territories." In *Ecomedia: Key Issues*, edited by Stephen Rust, Salma Monani, and Sean Cubitt, 141–61. London; New York: Routledge.

- Patel, Raj, and Jason W. Moore. 2018. *History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet*. Oakland: University of California Press.
- Peters, John Durham. 2015. *The Marvelous Clouds: Toward a Philosophy of Elemental Media*. Chicago, IL: University of Chicago Press.
- Plantin, Jean-Christophe, and Aswin Punathambekar. 2019. "Digital Media Infrastructures: Pipes, Platforms, and Politics." *Media, Culture & Society* 41 (2): 163–74. <https://doi.org/10.1177/0163443718818376>.
- Plumwood, Val. 1993. *Feminism and the Mastery of Nature*. London; New York: Routledge.
- Quijano, Anibal. 2007. "Coloniality and Modernity/Rationality." *Cultural Studies* 21 (2–3): 168–78. <https://doi.org/10.1080/09502380601164353>.
- Richter, Felix. 2022. "Are You Not Entertained?" Statista. December 12, 2022. <https://www-statista-com.jcu.idm.oclc.org/chart/22392/global-revenue-of-selected-entertainment-industry-sectors/>.
- Rust, Stephen, Salma Monani, and Sean Cubitt. 2016. "Introduction: Ecologies of Media." *Ecomedia: Key Issues*, 1–14.
- Schneider-Mayerson, Matthew, Alexa Weik von Mossner, and W P Malecki. 2020. "Empirical Ecocriticism: Environmental Texts and Empirical Methods." *ISLE: Interdisciplinary Studies in Literature and Environment* 27 (2): 327–36. <https://doi.org/10.1093/isle/isaa022>.
- Serres, Michel. 1982. *The Parasite*. Translated by Lawrence R. Schehr. Baltimore, MD: Johns Hopkins University Press.
- Shriver-Rice, Meryl, and Hunter Vaughan. 2020. "What Is Environmental Media Studies?" *Journal of Environmental Media* 1 (1): 3–13. https://doi.org/10.1386/jem_00001_2.
- Starosielski, Nicole. 2019. "The Elements of Media Studies." *Media+Environment* 1 (1). <https://doi.org/10.1525/001c.10780>.
- Starosielski, Nicole, and Janet Walker. 2016. "Introduction: Sustainable Media." In *Sustainable Media: Critical Approaches to Media and Environment*, edited by Janet Walker and Nicole Starosielski, 1–19. London: Routledge.
- Sultana, Farhana. 2022. "Critical Climate Justice." *The Geographical Journal* 188 (1): 118–24. <https://doi.org/10.1111/geoj.12417>.
- Towns, Armond R. 2022. *On Black Media Philosophy*. Oakland: University of California Press.
- Wahl-Jorgensen, Karin. 2015. "The Chicago School and Ecology: A Reappraisal for the Digital Era." *American Behavioral Scientist* 60 (1): 8–23. <https://doi.org/10.1177/0002764215601709>.
- Warren, Karen J. 1993. "The Power and Promise of Ecological Feminism." *Environmental Philosophy: From Animal Rights to Radical Ecology*, 320–42.
- Wickberg, Adam, and Johan Gärdebo. 2022. "Editors' Introduction: What Is Environing Media?" In *Environing Media*, edited by Adam Wickberg and Johan Gärdebo, 1–12. London: Routledge. <https://doi.org/10.4324/9781003282891-6>.
- Williams, Raymond. 1980. "Ideas of Nature." In *Problems in Materialism and Culture: Selected Essays*, 67–85. London: Verso.
- Ziser, Michael. 2016. "Ecomedia." In *Keywords for Environmental Studies*, edited by Joni Adamson, William A. Gleason, and David N. Pellow, 75–76. New York; London: NYU Press.