

The Routledge Handbook of Ecomedia Studies

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INTRODUCTION

*Antonio López, Adrian Ivakhiv, Stephen Rust, Miriam Tola,
Alenda Y. Chang, and Kiu-wai Chu*

We are in the midst of a global climate emergency, yet academic programs that follow traditional approaches to media studies, cultural studies, film, or communications continue to marginalize ecological approaches and issues. Evidence for this can be found by perusing any standard reader or textbook for courses in these fields. Regardless of the good intentions of many in media studies, the environment remains symbolically annihilated, notwithstanding a consensus in the field that there is “nothing ‘outside’ media anymore ... all the experiences in everyday life are connected to media” (Deuze 2021, 6). Indeed, a precondition of globalization is the mediatization of everything, from our personal lives to the entire planet via remote sensing technologies and information communication technologies (ICTs). But as Adi Kunstman and Esperanza Miyake (2022) observe,

Despite decades of critical voices from feminist, post-colonial, diasporic and “global South” scholars [...] mainstream digital communication studies have largely enjoyed – and continue to enjoy! – the luxury of ignoring the deeply material consequences of the digital since such consequences mostly impact those in the Global South and the disenfranchised, racialised and colonised communities in the Global North.

(122)

Addressing this gap, ecomedia scholars propose what would effectively be an “ecological reboot” to media studies and cultural studies. This reboot means combining the material and affective turns with ecocritical and postcolonial projects; expanding the ethical, political, and aesthetic considerations underlying media scholarship to include the other-than-human world and its biotic communities; and acknowledging the legacies of Western colonial epistemology (such as the nature-culture binary) which continue to shape academe and its relations with the broader world.

For the purpose of this volume, ecomedia studies serves as an umbrella term for areas of scholarship that bridge media and environment. But the concept of ecomedia—a contraction of ecology and media—is on the surface not obviously defined or universally understood. As a starting point, ecomedia studies align with ecocriticism’s “triple allegiance to the scientific study of nature, the scholarly analysis of cultural representations and the political struggle for more sustainable ways of inhabiting the natural world” (Brereton 2016, 215). This triple allegiance has enabled ecomedia studies to grow over the past decade, attracting a diverse array of scholars with a wide variety of

expertise and training. Across multiple disciplines, ecomedia studies bridges the epistemological divide between “technology and nature, human and nonhuman, material and immaterial, suggesting that such categories are relationally defined and materially intertwined” (Parks and Starosielski 2015a, 15).

In trying to define ecomedia, two broad areas of inquiry have emerged: (1) media that grapple(s) with ecological issues, frameworks, and approaches; and (2) ecology that grapples with media. The first approach stems from a recognition that ecomedia is commonly used as shorthand for a wide variety of ecologically oriented media texts and contexts, including environmental(ist) media and communications, nature/wildlife/science films, green popular culture, and so on. In practice, however, the term remains in flux, being used either as a genre descriptor or effort to claim certain media as ecological (while thus excluding others) based on content and form. The second concept entails the ecological impacts of media. (Chapter 1 in this volume explores our approach to defining media and ecomedia in more detail.)

The emergence of ecomedia studies roughly parallels the evolution of ecocriticism and ecocinema studies as a series of waves (see Christman Lavin and Kaplan 2017). The first wave of environmental theory (1960s-1970s) formed the basis of ecocriticism, environmental communication, and related fields that emerged in the 1980s. The second wave (1990s) included the application of ecocritical toolsets to popular culture and mass media by cultural studies scholars, and the convergence of science studies, animal studies, and posthumanist discourses to a burgeoning “environmental humanities” literature. Ross’s (1994) formulation of the “ecology of images” and “images of ecology” represented an important marker that moved the study of ecomedia from nature photography and wildlife films to examining popular culture. A postcolonial critique of the Euro-American orientation of ecocriticism led to the development of postcolonial ecocriticism (Guha 2000; Huggan and Tiffin 2015).

The third wave (2000–2010s) saw the emergence of media and environment study groups in major academic associations such as the Society for Cinema and Media Studies (SCMS), the Modern Language Association (MLA), the Association for the Study of Literature and Environment (ASLE), and the establishment of the International Environmental Communication Association (IECA). Ecocinema emerged as an important convergence, highlighted by studies of wildlife films (Mitman 1999; Bousé 2000; Chris 2006), popular cinema (Ingram 2000; Brereton 2004; Murray and Heumann 2009), experimental cinema (MacDonald 2001), and Seán Cubitt’s paradigm-defining *EcoMedia* (2005). Scholars around the world began to map out the contours of a “transnational” ecomedia and ecocinema “beyond the human” (Lu and Mi 2009; Kääpä and Gustafsson 2013; Pick and Narraway 2013). Important research, including Nadia Bozak’s (2011) *Cinematic Footprint*, Hunter Vaughan’s (2019) study of Hollywood and water use, and Susan Hayward’s (2020) application of “doughnut economics” to film ecology, has made visible the natural resources that sustain the film industry. Ecophilosophers focused on ecology and film, such as Adrian Ivakhiv (2008, 2013), expanded upon Félix Guattari’s “three ecologies” and the “circuit of culture” model by viewing materiality, sociality (and power), and perception (or experience) as dynamic, ecological systems engaging audiences with film-worlds within multiple layers of relationality. Working with Cubitt, Stephen Rust and Salma Monani (Rust, Monani, and Cubitt 2016, 2022) have produced two comprehensive collections that summarize the central and emerging themes within ecocinema studies.

We could finally identify a fourth and current wave of ecomedia studies in the establishment of journals and ongoing research featured in this *Handbook*. While there is no formal field designation or single scholarly association that defines this scholarship, the two important academic journals most closely aligned with the subject, *Media+Environment* and *Journal of Environmental Media*, have since 2019 and 2020 (respectively) provided much-needed venues for the outpouring

of ecomedia studies. Other journals that have also published ecomedia scholarship include *Environmental Communication*, *Interdisciplinary Studies in Literature and Environment (ISLE)*, *Representations*, *Resilience*, *JumpCut*, *Interactions: Studies in Communication and Culture*, *Environmental Humanities*, *Screen*, *Cultural Politics*, *Critical Inquiry*, and *Ecozon@*. Ecomedia scholars engage in diverse research activities about both the tangible and abstract ecological conditions of media, co-evolving with emerging disciplines concerned with making the environment an expanded subject of media research. Most notably, several major theoretical developments have been closely tied to the expanding agenda of ecomedia studies: these include technoscience studies, feminist new materialism, affect studies, the “ontological turn,” postcolonial and Indigenous ecocriticism, queer ecologies, infrastructure studies, political ecology of data, and Black media theory.

Ecomedia studies today is more a “sphere” than a “field,” enfolding various areas of exploration without enforced boundaries. As suggested by the title of one book, *Teaching Ecocriticism and Green Cultural Studies* (Garrard 2016), there is in ecomedia studies a natural affinity between different research interests, such as how ecocriticism is the result of interdisciplinary work between literature and cultural studies. Likewise, ecocinema could be categorized under the umbrella of environmental humanities, but it has its own unique interests and pursuits that are closer to its “natural” home of film/cinema studies. Ecolinguistics is situated in ecocriticism and environmental communication, which offer insights into ecomedia studies’ exploration of environmental discourses and ecoculture. Related fields like ecomusicology, environmental sound studies, environmental visual culture studies, and “media ecology” and “media archaeology” are among the adjacent fields that tackle similar or analogous themes—for example, the cultural construction of nature/society and human/animal binaries, the political ecology of socio-environmental systems, the postcolonial and decolonial critiques of Western modernity, the technological embodiments of human relations with more-than-human ecologies, and the materiality of image and communication regimes—but whose work reflects different disciplinary emphases (Smith 2015; Demos 2016, 2017; Allen and Dawe 2016). As these areas of study continue to cross-pollinate, overlapping ecologies of thought and research open new possibilities and produce “edge effects” (Nixon 2011, 30). What unites all of these is an underlying sensibility that contributes to the larger political project of addressing local and global environmental crises (see Oppermann 2011). As Jennifer Gabrys notes in this volume, “The media ecologies discussed here are ecologies in crisis.”

We purposely maintain a wide perspective to accommodate the transdisciplinary character of scholarship in the field of ecomedia studies. However, we can identify three main streams. The first follows Rust, Monani, and Cubitt (2013, 2016) in taking ecomedia as an umbrella term for media that are *of* and *about* the environment. The second reflects on the changing nature of media, seeing ecomedia as energetic and material exchanges that comprise, encompass, and produce environments, milieus, objects (texts, gadgets, platforms), and infrastructures. This conceptualization moves beyond conventional views of media as the province of texts, industries, and audiences, or narrowly defining media as technologies that record, store, and process information (in whatever form). Though media are associated with communicating meaning, there are also layers of media—such as infrastructures—that have meaning but “do not speak” (Peters 2015, 2). The third stream within ecomedia studies concerns the iterative circuits within which ecomedia take place and have their impacts—the circuits that, in this book, we identify under the rubrics of “ecomateriality,” “political ecology,” “ecocultures,” and “eco-affects.” Combining these three streams—(1) ecomedia are media *of* and *about* the environment; (2) ecomedia involve a revised and expanded definition of media; and (3) ecomedia works through iterative circuits—we can conceive ecomedia as an ensemble of technologies, mediating apparatuses, and critical interpretive approaches that activate, coordinate, and help us make sense of how media entangle the world.

Handbook Organization

The aim of *The Routledge Handbook of Ecomedia Studies* is to give form to diverse scholarly activities concerning media and the environment and to characterize the current state of the art. It is our desire that these chapters can expand interest and awareness of the issues raised by these contributors to a broader audience, in particular to aid those who are new to the field. By combining overviews of the topic with case studies, each chapter is deliberately self-contained, which means that in some cases, ideas and themes may repeat themselves across the book. We wanted to ensure that individual chapters can be assigned as supplementary materials in curricula that do not focus on ecomedia studies and to provide starting points for those studying or teaching media more generally. With the recommended readings at the end of each chapter, readers can investigate topics in more depth.

By featuring leading established scholars as well as emerging researchers from across disciplines, we sought cultural and geographical diversity, a clear recognition of crucial contributions from the South and the East, and the centering of Indigenous and anti-colonial perspectives often marginalized from debates in media studies. We highlight four critical areas of ecomedia scholarship: ecomateriality, political ecology, ecocultures, and eco-affects. Ecomateriality and eco-affects register the material and affective “turns” that, in some ways, distinguish ecomedia studies from media studies. Given the interdisciplinary nature of ecomedia scholarship, many of these chapters do not fit within a single section but straddle multiple perspectives. For example, in many cases, it is difficult to distinguish between political ecology and ecomateriality, since environmental impacts are closely connected to political and economic contexts. Likewise, themes developed by environmental communication—such as communicating climate concerns or investigating news and journalistic practices—are also important for ecomedia studies and fall under both political ecology and ecocultures. But given that *The Routledge Handbook of Environment and Communication* (Hansen and Cox 2015) and *The Routledge Handbook of Ecocultural Identity* (Milstein and Castro-Sotomayor 2020) already offer thorough overviews of these subjects, we are emphasizing other areas that remain underexplored, such as eco-affects and ecomateriality. In the spirit of cultural studies’ circuit of culture, we keep in mind how all these different zones are interacting. In organizing the chapters for the sections, we selected for each section those scholars whose work best represents its overarching theme.

Ecomedia Theory

This introductory section offers broad conceptual, philosophical, and epistemological considerations for ecomedia studies. Building on several of the foundational works in ecomedia studies, such as the anthologies edited by Stephen Rust, Salma Monani, and Seán Cubitt (2013) and by Nicole Starosielski and Janet Walker (2016), Adrian Ivakhiv and Antonio López open with an overview of the key approaches that have gone into defining what is meant by ecology, media, and, in their combination, ecomedia. They enter into dialogue with key texts in ecomedia scholarship, such as *The Marvelous Clouds: Toward a Philosophy of Elemental Media* (Peters 2015), *Program Earth: Environmental Sensing technology and the Making of a Computational Planet* (Gabrys 2016), *Wild Blue Media: Thinking Through Seawater* (Jue 2020), *On Black Media Philosophy* (Towns 2022), and *African Ecomedia: Network Forms, Planetary Media* (Iheka 2021). Special attention is paid to the significant contributions of feminist theory, postcolonial studies, and Black media theory to ecomedia studies. In the process of critically engaging the metaphorical

implications of media and ecomedia, these explorations grapple with the theorization of elemental media and infrastructure.

In the following chapter, Ivakhiv disentangles some of the historical uses of “ecology” and “environment” in order to prepare the ground for a metaphysical regrouping of ecomedia studies. Drawing on his work in process-relational philosophy, film, and image theory (Ivakhiv 2013, 2018), he builds on Félix Guattari’s “three ecologies” proposal—with its distinction between material, social, and mental or perceptual ecologies—to think through both the “eco” and the “media” ontologically in terms of what they imply for media philosophy, materiality, politics, and perception. Next, Christy Tidwell unearths the relationship between ecomedia and new materialism, beginning with the premise that media’s materiality matters as much as its message and that the two cannot be separated. The chapter explores how to think differently about our relationships to the nonhuman world and the media we use to understand it, while also acknowledging that new materialist concepts echo what has long been present in many Indigenous ontologies.

One of the primary tasks of ecomedia theory is reappraising and resetting the use of ecology and environment metaphors that are used liberally in the history of media studies. As Stephen Rust and Verena Wurth note in their chapter, “metaphors of media ecology are most effective when they further our understanding of both the way that media technologies operate and how such technologies impact the material world humanity exploits to produce them.” They develop the method/framework/approach of “Blue Media Ecologies,” which investigates the meanings and shortcomings of ecological, especially water-related, metaphors in media studies, using David Attenborough’s films about the ocean world as a case study. They consider “blue” ecomateriality and milieu-specificity of oceanic filming and underwater representational strategies.

Building on his essential book, *Digital Media Ecologies: Entanglements of Content, Code and Hardware* (2019), Sy Taffel synthesizes a political ecology of ecomedia with the materialism of ecological science and ecophilosophies. While metaphorical digital ecologies typically discuss flows of information in a disembodied and decontextualized manner, Taffel examines how today’s media systems form vast planetary assemblages that extract, purify, and transport millions of tons of matter, and burn vast quantities of fossil fuels to produce, maintain, and extend the domain of media. This chapter is followed by a conversation with Cajetan Iheka, author of the groundbreaking *African Ecomedia: Network Forms, Planetary Politics* (2021). By grounding ecomedia in the African context, Iheka further explores the various ways ecomedia are used both in the service of empire building and as a form of resistance. In discussing the research in his book, Iheka talks about the transformative agency of African visual media with a focus on the socioecological costs of media processes in different African settings.

Applying various theoretical ecomedia approaches to a historical case study, Carlos Nugent situates how “ecomedia of empire” helped remediate and shape the material, infrastructural, and imaginative US-Mexico borderlands to form the modern Southwestern United States. Expanding on the theory of petroleum media, Nugent develops the novel concept of “irrigation media” as a narrative template of Manifest Destiny’s worldbuilding strategy to colonize the borderland territory. He also highlights how anti-imperialist ecomedia can counter European cartographies. Continuing an exploration of US-Mexico borderlands, Janet Walker develops spatial documentary studies by probing the weaponization of the Sonoran Desert. Drawing on critical environmental media justice studies, this chapter countermaps an Anthro/scenic cartography being razed upon the desert. Crucially, it puts elemental media into dialogue with Kathryn Yusoff’s (2018) theorization of the White Anthropocene, calling attention to questions of racial violence in the historical unfolding of media and of ecology.

Closing this section, Antonio López offers strategies for applying ecomedia studies in the classroom. Building on his work developing ecomedia literacy (2021), he offers prompts for learners to make sense of how ecomedia infrastructures and our engagement with them connect with eco-justice. Just as environmental communication is a “crisis discipline” that seeks to intervene into the status quo, the goal of ecomedia literacy is to promote a normative shift in eco-ethical cultural policies, practices, and attitudes to transform existing media practices, industry structures, and government regulations.

Ecomateriality

Ecomateriality describes a significant area of emerging scholarship that documents how media are materially embedded in and extracted from the environment in forms including the infrastructural (cables, satellites, electromagnetic energy, server farms) as well as the directly ecological (mining, manufacturing, energy consumption, waste production and disposal). As we move around with our cell phones, all of us have a piece of Africa, China, or South America in our pockets (Bratton 2015; Parikka 2015). The infrastructures that deliver electricity and the internet depend heavily on minerals and chemicals, and the sources of energy that power our information exchange—especially the server farms that make up the digital cloud used for our streaming services, data, and social networks—are largely powered by non-renewable fossil fuels like coal and fossil gas. Chip production and even packaging, which requires paper pulp, are resource and energy intensive, while shipping and manufacturing also add to greenhouse gas emissions. We also have to consider the end of our screen technologies’ life cycles and e-waste. A toxic brew of chemicals, plastic, glass, and metal devastates the health of workers and local ecosystems as our electronic trash gets tossed away and shipped across the world. Additionally, the ecomaterial flows (i.e. material impacts) of filmmaking, TV production, video game manufacturing, and so on are significant. The aim of this section is to embrace the material turn in the study of media, covering the significant impacts of media on the physical environment.

Over the past decade, a growing number of ecomedia scholars, including the contributors to this section of the *Handbook*, have enhanced our understanding of media infrastructures and materiality. Jennifer Gabrys’ examination of the environmental impacts of digital information and electronic waste in *Digital Rubbish* (2011) has led to such innovative research as Elodie A. Roy’s (2020) look at recorded music and the logic of waste and Mehita Iqani’s (2021) broader investigation of the role of waste in popular culture. Richard Maxwell and Toby Miller’s *Greening the Media* (2012) has sparked a growing body of scholarship on the manufacturing and disposal of screen technologies, including Seán Cubitt’s examination of extractive mining in the life cycle of media technologies in *Finite Media* (2017), and Laura U. Marks’ research on the carbon footprint of streaming technologies (Marks et al. 2020) and her call for media producers to limit the file-size of media as a mitigation strategy (Marks et al. 2020). Lisa Parks and Nicole Starosielski’s critical look at media infrastructures in *Signal Traffic* (2015b) has provoked scholars like Anne Pasek (2020) to creatively interrogate the role that energy infrastructures play in everyday life and Rahul Mukherjee (2020) to explore how media coverage of infrastructures impacts public opinion on environmental issues. Inspired by Nadia Bozak (2011) and Hunter Vaughan (2019), others have deepened our understanding of cinema’s environmental impacts, while Alenda Y. Chang (2019), Benjamin Abraham (2022), and others are exploring the ecology of video games. The chapters in this section extend such efforts in hopes of inspiring the next wave of materialist ecomedia scholarship.

The section opens with a co-authored chapter by Nicole Starosielski, Hunter Vaughan, Anne Pasek, and Nicholas R. Silcox that develops an infrastructural literacy approach to studying the

material impacts of the internet. The authors provide an overview of the various infrastructures that compose the internet to support their claim that if scholars peripheralize their current focus on data centers and other hubs of network infrastructure, it is possible to develop a more localized, relational approach to the study of internet infrastructures that may lead, in turn, to the development of a more sustainable global system.

Next, Laura U. Marks undertakes a frank reckoning with the environmental demands of ICTs and the need to scale down future expectations around technology's ubiquity and accessibility in order to address current inequities and ecological impacts. Extending this work, Jennifer Gabrys considers that while electronics consume energy, they are also used to manage energy consumption and monitor changing environments to achieve greater sustainability. By developing the concept of "electronic environmentalism," Gabrys considers how to account for the environmental impacts of electronics while analyzing how they also inform broader energy practices.

Extending his previous scholarship, Rahul Mukherjee's chapter moves beyond theorizing radiant infrastructures such as nuclear power plants, cellular towers, and solar energy panels to consider the wider environmental and health implications that stem from the radiation emitted from such infrastructures. Mukherjee further examines how the socio-material relations that emerge with the introduction of such radiant infrastructures in the Global South are imbricated in questions about energy transitions and media materialities that are also crucial for ecomedia and environmental justice.

The chapters by Alenda Y. Chang and Elodie A. Roy zoom in on specific media forms in order to enhance our understanding of distinct sites where media consumers engage in the impacts of materiality. Chang provides a look at both the micro- and macro-climatic contexts of digital and analog gameplay (from computer cases and man caves to mass sporting events) to consider what one of the paradigmatic media forms of the twenty-first century can teach us about the cultures, infrastructures, and atmospheres of media use. Roy explores the theoretical and practical implications of material history of shellac-based gramophone discs in relation to music history and media archeology. Rather than understanding the raw materials of music as neutral substances divorced from historical and political times, Roy's approach sheds light on the material entanglement of gramophone discs with colonial and postcolonial practices of extractivism. Roy's contention that media resources are relational and become activated through material, social, and historical processes of association and encounter aligns well with the approach taken by Starosielski, Vaughan, Pasek, and Silcox.

Concluding the section, Mehita Iqani examines the *Core Dump* art project as an effective lens through which to examine the aesthetics and materiality of e-waste. *Core Dump* deploys a site-specific creative process that parallels the geographical journey of technological waste from mining locations in Congo, to manufacturing sites in China, consumer markets in the USA, and e-waste recycling and dumps in Senegal. Iqani's chapter brings the discussion of media materiality full circle through a consideration of our personal aspirations to be digitally connected alongside awareness of the deeply problematic forms of toxic detritus and working conditions in the Global South that result from industry's drive to provide that connection at a profit.

Political Ecology

This section considers the entanglements between the undesirable environmental impacts of media production, consumption, and disposal, and larger dynamics of exploitation and dispossession. Early studies in media ecology (Postman 2000) distinguished between the natural environment consisting of land, air, and nonhuman beings, and media environments consisting of symbols,

language, and technologies. By defining the media environment as exclusively anthropogenic, this perspective perpetuated the divide between society and nature. In contrast, the *Handbook of Eco-media Studies* privileges a political ecology of media that examines the interdependencies between political economy, power, and environments.

This approach investigates the structural constraints influencing media processes as well as how the media circulate environmental ideologies that contribute to the reproduction of dominant socio-ecological relations. It contends that materiality and discourse are entangled rather than oppositional (Taffel 2019). Crucially, it also accounts for environmental justice responses to these dynamics, often illuminating the role of media in socio-environmental conflicts. In addition to analyzing system design and the socio-environmental costs of media processes, a political ecology of media draws attention to mainstream media's propagation of the ideology of unlimited economic growth and consumerism. This includes normalizing the design of screen technologies that cannot be upgraded or repaired so that consumers are compelled to continuously update (and discard) outdated gadgets in order to participate in social and economic life. By obscuring the environmental dimension of digital technologies, advertising and popular culture reinforce the belief that our digital lives are "immaterial" and disconnected from questions of resource appropriation, labor exploitation, and waste. Further, digital platforms drive climate disinformation and the news media adopt the rhetoric of sustainability echoing corporate narratives of ecological transition, while marginalizing a variety of alternative perspectives on environmental justice, just transition, and degrowth.

The authors in this section provide insights on the political ecology of global communication systems, explore questions of property ownership, labor exploitation, and environmental policies in the media industry. They provide a decidedly decolonial perspective by foregrounding Indigenous struggles that contest the violence of extractive economies and center Indigenous sovereignty and self-determination in ecomedia.

Drawing on critical political economy of communication and extending the theoretical framework developed in the book *Carbon Capitalism and Communication: Confronting Climate Crisis* (Brevini and Murdock 2017), Benedetta Brevini and Daisy Doctor examine communications systems as assemblages of material devices and infrastructures. Their chapter explores the nexus between the accelerating impact of human activities on the planet and the rapid expansion of communication and computational systems, including developments in artificial intelligence (AI).

Pietari Kääpä and Hunter Vaughan's chapter takes a deeper look at an issue Kääpä explored in his book *Environmental Management of the Media* (2020), namely the lack of coordination between media organizations, content creators, and regulators in establishing who has accountability over the environmental impacts of the screen media sector. The authors call ecomedia scholars to pay more attention to the complexities of media governance. In the following chapter, Jannice Käll extends her analysis of digitally mediated property developed in the book *Posthuman Property and Law* (2022). Here, Käll explores the ecology of blockchain technologies, such as NTFs (non-fungible tokens), in terms of property rights.

As with several other co-authored chapters in this volume, Patrick Murphy and Emmanuel Septime Sessou's essay is the result of a fruitful partnership between a well-established and an emerging scholar. Expanding on Murphy's (2017) past explorations of media commons and the environment, Murphy and Sessou revisit the distinction between hegemonic "global media commons" and alternative "communications commons." Building on this distinction, they analyze the divergent media treatment of two conflicts over common pool resources (CPR): the Grand Ethiopian Renaissance Dam project in Africa and the Dakota Access Pipeline in North America.

In partnership with Puyallup tribal council member Anna Bean, Ellen E. Moore deploys the interview strategies she developed for her book *Journalism, Politics, and the Dakota Access Pipeline* (2019) in their co-authored chapter. Discussing Bean's role as a leader in the effort to block construction of a liquid natural gas facility in Tacoma, Washington, Bean and Moore address the strengths and challenges of using social media as a tool for environmental activism. Furthering this section's engagement with decolonial struggles and digital media, Corrinne Sullivan and Jessica McLean problematize the misrepresentation of Aboriginal Australian peoples in non-indigenous digital spaces while also highlighting the potential of digital worlds that affirm the sovereignty of such groups.

The concluding chapter in this section reunites Toby Miller and Richard Maxwell, whose book *Greening the Media* (2012) has deeply influenced ecomedia studies over the past decade. Here, Miller and Maxwell examine the key points in the cellphone supply chain at which workers face hazardous working conditions and inhumane treatment at the hands of corporations. Reinforcing their more recent research on smartphones (2020), they urge each of us as consumers to keep using our current devices as long as possible, encourage our workplaces and other institutions to do the same, and pressure governments to better regulate working conditions and environmental waste.

Taken together, these chapters invite us to grapple with the materialities of political economy and the ways in which the close attention to dynamics of exploitation and dispossession can advance ecomedia studies.

Ecocultures

The next section of the *Handbook* addresses the myriad ways in which ecomedia shape culture(s) and different cultural responses to the environmental crisis. The term "ecoculture" thus corresponds with meaning, values, lifestyles, identity formations, ways of knowing, and rituals and practices mediated through shared interpretations and sense-making practices. From the standpoint of systems of representation, this section of the book explores semiotics alongside a variety of languages, discourses, and narratives.

Speaking of ecocultures in their plurality recognizes that there are diverse ways that cultures shape and are shaped by ecomedia. Building on recent scholarly work on "provincializing" and "pluralizing" the often universalized Anthropocene discourse (DeLoughrey 2019; Mentz 2019), ecomedia as a cultural discourse, too, demands being provincialized and pluralized as a way to acknowledge the "eco-territorial turn," as Diana Coryat highlights in her chapter. The section begins with Tema Milstein, Gabi Mocatta, and José Castro-Sotomayor's follow-up to their *Routledge Handbook of Ecocultural Identity* (Milstein and Castro-Sotomayor 2020). Here, the authors examine media's role in shaping ecocultural identity across four international case studies, in which media contribute both to the reproduction of existing anthropocentric identities and catalyze more regenerative ecocentric identities. For these authors, media ultimately may be less helpful than embodied experiences of our new climate realities.

Recently, there has been a proliferation of books that explore diverse ecocultural traditions and practices within global media contexts. In addition to the vast number of publications on North America and Europe, growing attention toward the Global South has been reflected in books such as *The Latin American Ecocultural Reader* (French and Heffes 2021); *Pushing Past the Human in Latin American Cinema* (Fornoff and Heffes 2021); *African Ecomedia: Network Forms, Planetary Politics* (Iheka 2021); *Chinese Environmental Humanities* (C. Chang 2019); and *Environment, Media, and Popular Culture in Southeast Asia* (Telles, Ryan, and Dreisbach 2022). Such a global

turn is reflected in Coryat's discussion of work by audiovisual media collectives in Ecuador that brings ecomedia scholarship into necessary conversation with social movement cultures and political ecologies of the Global South. Focusing on global pandemic films produced in Hong Kong and Laos, Chia-ju Chang turns to Buddhism and East and Southeast Asian traditional cultures as a way of thinking beyond the nature-culture binary and the tenaciousness of the "Othering" of women and minority groups in contemporary power structures.

Evidence that ecological worldviews are not normative can be found across many different kinds of media, ranging from "green popular culture" to ecocinema, from activist media to corporate board reports. This section therefore also gives diverse examples of how ecology is expressed through different platforms and genres of media (cinema, digital maps, music, CGI artworks, and so on). Using Ani DiFranco's experimental folk music as a case study, John Parham offers a multifaceted study of "green music" by considering its generic conventions (folk and rock); technical renditions (synthesis of studio-engineered sounds with natural and animal sounds); and eco-thematic concerns (climate change, pollution, and animal perspectives) in order to argue that folk rock's blending of popular appeal and grassroots commitments to the land and the local can reach a broader audience with environmental messages. Salma Monani and Sarah Gilsoul discuss their collaboration on an ongoing Indigenous Pennsylvania digital Storymap project as a means of going beyond land acknowledgment statements in North American contexts, and as an instance of what they call "d-ecomedia," a shorthand for ecomedia projects that foreground decolonial methodologies. They argue that in order to be sustainable, "d-ecomedia" digital mapping projects operate within a process-oriented and relational framework that in turn requires institutional and public commitment and support.

While the material and ideological impacts of media are major contributors to the global climate crisis, media also afford access to information, produce the network effect of spreading and sharing information, and generate "weird solidarity" when "new forms of sociality are formed [...] across unlikely alliances and with unexpected things, people, communities and institutions" (McLean 2020, 23). In their transcribed and edited conversation, scholar of Black media philosophy Armond R. Towns and visual artist Jeremy Kamal find surprising resonances between Kamal's speculative Afrofuturist computer-generated worlds and Towns's reinterpretation of classical theories of communication studies through the lens of Black Studies. Their lively and stimulating discussion delves into a broadened perspective of media ecology, exploring the colonial assumptions about nature, Black radical thinking, and reflections on artistic design and resistance. Jacopo Rasmi and Noélie Martin give us a glimpse into the practical workshops of experimental film lab networks, which in this case turned to plants and other unusual, "animistic" ingredients to reimagine cinematic materiality through the chemicals and emulsions used to produce images. The new ecologies created by these experimental film labs are in a sense "ecoculture" that is built upon the complex networks of human and nonhuman beings. Ecocultures, in other words, are never solely about human culture; they also, as the range of forms and communities in this section attest, invite transgressive or "improper" affiliations with the more-than-human (Chen 2012).

Eco-Affects

Finally, "Eco-affects" explores the ways in which humans, including media users and audiences, feel and experience being part of our environments in and through the use of media. This area of inquiry corresponds with the "affective" and "sensorial" turns in cultural and literary studies. As Alexa Weik von Mossner writes, "Both reading and watching are highly embodied activities not only in that we need our senses in order to be able to perceive things, but also in that our

bodies act as sounding boards for our mental situations of storyworlds and of characters' perceptions, emotions, and actions within virtual worlds" (Weik von Mossner 2017, 3). Weik von Mossner's *Affective Ecologies: Empathy, Emotion, and Environmental Narrative* (2017) and her edited anthology *Moving Environments: Affect, Emotion, Ecology, and Film* (2014) are among the pioneering efforts to chart this area. Other important scholarship includes E. Ann Kaplan's work on climate trauma (2016), Simon Estok's writing on ecophobia (2016), Pat Breerton's (2004) and Adrian Ivakhiv's (2011) explorations of cinema's utopian and dystopian affects, and the work of Robin Murray and Joseph Heumann on environmental nostalgia in eco-disaster movies (2005) and on the "monstrous natures" of eco-horror films (2016).

More broadly, this work builds on studies of environmental emotions and media "effects" including "positive" emotions (such as wonder, awe, optimism, and desire for action) as well as "negative" emotions (especially guilt, grief, and melancholia) in environmental and climate communication, eco-rhetoric, and sustainability education (Rozelle 2006; Dobrin and Morey 2009; Schneider and Nocker 2014; Lockwood 2016; Albrecht 2019; Jensen 2019). It also dovetails with a growing interest in cinematic and media moods, atmospheres, ambience, "elementality," and eco-phenomenology (Sinnerbrink 2012; Hven 2019, 2022; Müller and Kappelhoff 2020).

The study of new media further highlights how our increased dependence on smartphones and related devices impacts our sense of place, space, and time. It affects our attention, wrapping us within perceptual and "attentional" ecologies, as well as our experience and implication within ecologies that encompass the more-than-human world. Sustainability educators argue that environmental responsibility and action start when humans learn to care about their habitats and develop a "sense of place" (Orr 1992; Thomashow 1995; Capra 2005; Blewitt 2006; Sterling 2009). Increasingly, travel and gadget usage has made many of us global citizens but also have increased a sense of alienation and disconnection from living systems (Louv 2005; Rauch 2018). The role of interactive media in shaping users' cognitive and affective preparedness for environmental action is an active topic of study within environmental communication (Bendor 2018) as well as ecomedia studies.

Taking its cue from the affective turn in media and cinema studies, this section explores the impacts of ecomedia on our mental health, our perception and reception of the natural world, and of characters contending with specific environmental situations. It opens with Yves Citton's critical discussion of our collective state of mind and attentional foci in a time of crisis ("a house on fire"), in relation to ecomedia studies. By drawing upon his previous discussion of ecology of attention and "mediarchies" (2017, 2019), Citton argues digital media today exacerbate our "ecomentia," the schizophrenic dementia reflected in the mediated experience in our collapsing ecological milieu. He calls instead for cultivating "collapsonaut attention" in order to correct the excesses and negligence of our dominant extractivist attention.

Chapters in the section also reflect the diverse manifestations of human affectivities to environments and nonhuman worlds according to conventions of different film genres. Through a cognitive ecocritical lens, Alexa Weik von Mossner shows how Jean-Marc Vallée's biopic movie *Wild* (2014) engages us in processes of embodied simulations (of the individual characters' experience of the environments) guided by a diverse range of sight and sound, which generate a complex interplay of attention, cognition, embodiment, and emotion. David Ingram approaches ecomedia in the form of a British social realist film, Clio Barnard's *Dark River* (2017), that addresses environmental issues in a scale differing from commercial blockbusters and their (frequently) network narratives. Ingram intentionally focuses on a small-budget family drama to show, with the aid of ecological psychologist James J. Gibson's concept of "affordances," how social realist cinema can provide a range of cognitive and affective experience for conveying thoughts about climate change and environmental crisis.

Surveying works of satire as both a mode and practice of ecomedia, Nicole Seymour and Anthony Lioi's study of *Sarah Cooper: Everything's Fine* (2020) and *Don't Look Up* (2021) shows how ecopolitical satire makes use of techniques such as exaggeration to push viewers to feel and think more openly about environmental issues in current political landscapes of the Global North. Eco-satires, they argue, allow us to adopt "a less strictly instrumental approach" to media and art that recognize the need for unimportant, frivolous, playful yet affective spaces that do not necessarily go anywhere or mean anything. Moving beyond fictional films, Katrina Maggiulli examines how American educational environmental media make use of tropes from the classical horror genre to cognitively frame "invasive species" with fear and disgust, villainizing them to draw public attention to environmental problems. As she shows, however, these tropes also risk misdirecting or overdirecting fear toward undeserving targets.

Affect is closely related to time in the sense that the duration and speed of mediated experience hugely shape one's affective and emotional responses toward the environment. Reminding us to consider ecomedia studies by slowing down our own experience, this section closes with Jennifer Rauch's examination of "slow media" and its transformative capacities through mindful media practices. Rauch argues that slow media cultivate an ecomedia perspective that stimulates our disengagement from digital media and encourages people to engage in more traditional forms of print and analog media in order to repair perceptions of physical reality.

Given the rapidly evolving state of ecomedia studies—made more elusive by the broad definitions we insist on for both the "eco" and the "media" (delineated further in the opening chapters of the "Ecomedia Theory" section)—any attempt to capture the field in a single handbook can only be considered partial and incomplete. Indeed, many important works either lie outside or freely intermingle the frames we have established here of materiality, affect, culture, and political ecology. Works like Jacob Smith's *Eco-Sonic Media* (2015), Paul Roquet's *Ambient Media: Japanese Atmospheres of Self* (2016), Marie-Luise Angerer's *Ecologies of Affect: Intensive Milieus and Contingent Encounters* (2017), Erin Manning and Sense Lab's *Immediations* project (Manning, Munster, and Stavning Thomsen 2019), and various contributions to ecocinematic animal studies (2011), with their proposed goal of a "non-anthropocentric cinema" (Lawrence and McMahon 2015), and to technoscience studies and media biopolitics (Da Costa and Philip 2010; Väliaho 2014), cross boundaries between several of these categories, even as they map out further dimensions for transdisciplinary study of media and environments. We can only imagine that as such work continues to flourish, media in general, as Adrian Ivakhiv and Antonio López propose in Chapter 1, will indeed become *ecomedia*.

Lest that sound pollyannish, we should note that media today are far from ecologically (or socially) benign in their aggregate impacts. Our planetary ICTs would not exist without conflict minerals, fossil fuel energy, exploited labor, and e-waste. In their present form, they parasitically extract our attention, enable increased surveillance to predict our behavior and monetize it, and create vast openings for disinformation entrepreneurs, conspiracy theorists, and propagandists, whose political impacts obstruct and curtail humanity's ability to respond to the many dimensions of the climate crisis. Many of those on the receiving end of the outsourced systemic violence have experienced it for centuries; it is the "slow violence" of colonialism and its capitalist variations that voices of Indigenous people, ecojustice activists, and the Global South have long identified and resisted.

What has changed is that our globally interconnected media systems ensure that few today are isolated or immune to these impacts. We share an interconnected world, and our media are at

the core of that interconnection and of the ways in which we share it, equitably or otherwise. Our media today *are* necessarily ecomedia: the question is, what *kinds* of ecomedia are we shaping, to whose benefit, and at whose cost? These are the kinds of ethical and political concerns that animate the contributions of this volume and that we believe are shaping the field of ecomedia studies within the rapidly evolving, highly “mediatized” environments making up the contemporary world.

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