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Toward a More Substantive Media Ecology: Postman's Metaphor Versus Posthuman Futures

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The metaphor of "ecology," common in vernacular and academic discourse about communication media, can inhibit substantively ecological thinking about communication. While some have attributed the currency of this metaphor to Marshall McLuhan, I argue that this criticism is better directed at Neil Postman, who helped popularize McLuhan under the banner of "media ecology." I outline the need for substantively ecological thinking, sketch its ontological and ethical contours, and illustrate the ubiquity of a more metaphorical use of "ecology" as applied to communication media. I then discuss Postman and some of his intellectual heirs, linking their dualistic thinking to a metaphorical conception, which I argue inhibits full appreciation of interrelations among humans, our cultures and technologies, and the more-than-human world.

Keywords: *Neil Postman, posthumanism, media ecology, environmental communication, ecological thinking, anthropocentrism.*

> I do not deny this consciousness of being, nor the immediate security of here I am that it breathes into us. What I do deny is that all our convictions must be adjusted to the customary antithesis between the self and the non-self, and that this antithesis is constant.
>
> —Jorge Luis Borges (1999, p. 4)

> John Donne was wrong. Each man *is* an island entire of itself.
>
> —Neil Postman & Charles Weingartner (1969, p. 99)

The past decade has seen the emergence of an idiom that evokes media and communication technologies in ecological terms. Terms like *media ecology* and *media environment* have become commonplace in vernacular English, as well as in scholarly discourse. Whether vernacular or academic, these allusions are often superficial, casual, and—as I will emphasize—metaphorical. The *ecology* and *environment* they refer to consist of human beings and our technologies, and they are *ecological* mainly by virtue of an analogy, rather than a consideration of material connections with biotic ecosystems.

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Despite a tendency to use ecological language in this metaphorical way, the vogue of such language, I believe, reflects a need for the development of substantive ecological thinking in the face of 21st-century realities. The purpose of this article is to critically examine one strand of academic media ecology discourse and to sketch the outlines of a substantively ecological way of thinking about media and communication.

Peters (1999) traces a certain dualism in modern Western conceptions of communication back to John Locke. In such conceptions, human beings are the endpoints —the senders and receivers—of any process of communication. Human discourse is the content and human technology the medium of communication. Humans are thus figured as a special nexus between separate metaphysical and physical spheres, in which a Cartesian ego observes "nature" and "communicates" with other egos in a separate sphere of consciousness, meaning, and discourse. Communication is a matter of transmitting metaphysical ideas, requiring either telepathy—the Shakespearean marriage of minds that Peters points to—or encoding and decoding processes that bridge the gap between immaterial ideas and their material vehicles, between metaphysical messages and physical media.

Students of communication have long been aware of the problems with the latter view, famously formalized in Lasswell's description of communication as "Who Says What In Which Channel To Whom With What Effect?" (1960, p. 117). Still, partly because of its resonance with common sense and partly because of its simplicity and easy operationalization for empiricist research, such an understanding always comes back. The central problem of this article—the use of *ecology* as a conceptual metaphor in academic discussions of communication technologies and the media—can be understood as an illustration of this tendency. The problem is a habit of understanding the interaction of different technological and semantic elements by *analogy with* rather than by their *material connection* to more-than-human ecosystems. The suggested alternative is attention to materiality and embodiment—thinking of the semantic as both material and immaterial, and appreciating that metaphors themselves are material as much as conceptual devices (Hales, 2002; van den Boomen, 2009).

In their recent book on the environmental dimensions of information and communication technologies (ICTs), Maxwell and Miller (2012) lay the blame for the conceptual metaphor of ecology at the feet of Marshall McLuhan. "Although the fortunes of McLuhanism waned academically," they write, a "substitution by the metaphorical still obscures the ecological context of media technology (search any database for media and environment, media and ecology, or related phrases, and you will see what we mean)" (p. 14). I share with Maxwell and Miller a concern to move away from this metaphorical "substitution."

Unlike Maxwell and Miller, however, I think the perspective associated with McLuhan has potential for substantively ecological thinking. McLuhan's most famous epigram, "the medium is the message," in declaring the inseparability of message and medium, suggests ecological unities. It expresses a thoroughly ecological insight about the interplay between the physics of media and the metaphysics of culture. In this article, I focus on a "theory group" that has continued to refer to McLuhan after the waning of his academic star, a group that identifies itself with the highly suggestive term *media ecology*. I especially focus on Neil Postman, the prolific and engaging writer who is credited with popularizing the *media*

ecology label (McLuhan is said to have coined the phrase in private correspondence), and who founded a graduate program by that name at New York University in 1971.

Skeptical of Maxwell and Miller's attribution of the persistent metaphorical interpretation of *ecology* in *media ecology* to McLuhan, I argue that it would be more accurate to point to Postman instead. As already noted, the tendency to abstract communication out of its material conditions is endemic in Western thought and precedes McLuhan by centuries. It is true, however, that leaders of the media ecology group, for whom both McLuhan and Postman are important reference points, acknowledge that most media ecologists treat ecology as "at best a metaphor" (Lum & Strate, 2006, p. 72). If we want to understand this by looking at influences more proximate than the Enlightenment or ancient Greek philosophy, it is to Postman, at least as much as to McLuhan, that we should look.

Considering that in academia "luxuriant obscurantism is taken as the litmus-test for profundity," Naughton (2006, p. 2) argues that the clarity and wit of Postman's writing, along with his interest in big ideas rather than narrow research questions, have made him less well known than he should be. Plausible as it is, this assessment passes over Postman's legacy in the media ecology theory group, institutionalized in the Media Ecology Association, publisher of the quarterly *Explorations in Media Ecology*. It also ignores Postman's influence in the field of education and as a popular author. An early co-authored book, *Teaching as a Subversive Activity* (1969), influenced a generation of educators in North America. Postman reached popular as well as academic audiences, with his writing appearing in numerous high-circulation newspapers and magazines in the United States. His best-known book, *Amusing Ourselves to Death* (1985), sold hundreds of thousands of copies in multiple languages and is still in print. Postman was not only an academic with an interest in communication and media. He was a public intellectual whose cultural contribution extended beyond the academy and his native United States.

Matthew Fuller suggests Postman's perspective is "environmentalist" to emphasize that Postman's invocation of *ecology* had the goal of upholding a "relatively stable notion of human culture" (2005, p. 4), through maintaining a sustaining equilibrium. In agreement with this, I argue that in Postman's vision, culture, language, and "semantic environments" are separate from and parallel to physical environments. *Ecology*, for Postman, is a conceptual map that can be applied equally to the separate territories of culture and nature. I am skeptical of the view, put forward by some of his intellectual heirs, that for Postman, "language is not something distinct and separate from [the] environment, but is *part of it*, just as we ourselves are" (Gencarelli, 2006, p. 209).

The argument begins with a brief discussion of the ways technological change is renewing our awareness that perceptions of humanity's centrality in the universe are specious, suggesting thereby the ecology concept to our consciousness and discourse. I then sketch a substantive conception of ecology, not entirely eliminating metaphor, but recognizing metaphors as material as well as conceptual devices. Next, I discuss the more common and superficial conceptually metaphorical understanding evinced in vernacular and academic discourse alike, and particularly in the media ecology theory group inspired by Postman, McLuhan, and others. I illustrate the inadequacy of this conceptually metaphorical notion of media ecology with a brief discussion of a recent article that promises to bring biology into media ecology

(Logan, 2010). All this leads up to a discussion of how Postman, more unambiguously than McLuhan, has contributed to the persistence of a metaphorical understanding of the *ecology* in *media ecology*.

Intimations of Ecology

Ecological language about ICTs, metaphorical as it usually is, can be understood as a response to a set of concrete circumstances that, by unsettling a variety of theoretical distinctions, calls for the kind of substantive ecological thinking I advocate. The most obvious development here is environmental destruction. It is out of a concern for the role played by media technologies in this development that Maxwell and Miller denounce the "metaphorical substitution" they attribute to McLuhan. As they point out, the "substitution" obscures the material environmental impact of the production, distribution, use, and disposal of ICTs, an aspect to which communication scholars are beginning to pay serious attention (Floridi, 2010; Gabrys, 2013; LeBel, 2012; Maxwell & Miller, 2012; Parks, 2004).

Scholarship on the environmental impact of media technologies can be associated with a theoretical revisiting of the relationship between the material and immaterial (e.g., Bennett, 2010; Hayles 1999; van den Boomen, 2009). If the "global society" behind environmental destruction is a sprawling, complex network, as vast and difficult to control as the rest of nature, the information technologies facilitating its growth make information appear as neither entirely material nor entirely immaterial (Thacker, 2010). As we move from a materialist to an informational ontology, empirical materiality gives way to interactability as the main criteria of existence (Floridi, 2010). The depreciation of the material-immaterial distinction is part of a larger evolution in which distinctions between nature and culture and between human and nonhuman are likewise unsettled.

Meanwhile, digital automation and artificial intelligence encourage a non-human-centric view of communication. As computers take on more and more decision-making and content-producing tasks, it is becoming increasingly difficult to locate human beings at the endpoints of technologically mediated, sender-receiver communication. The notion of computer mediated communication figures computers as passive media of transmission, a conceptualization that becomes inadequate when machines are active agents and producers of content. Correspondingly, it makes increasing sense to think of human subjectivity as the media as well as the content of communication (Gunkel, 2012).

Distinctions underpinning how we are accustomed to thinking of human being are further undermined as digital information technologies converge with biological technologies. Sophisticated prosthetics, synthetic biology, and genetic engineering seem set to "radically and permanently alter what it is to be a human being" (Kompridis, 2009, p. 21). This is a vivid vindication of Latour's (1993) argument that it is becoming increasingly difficult to "purify" nature from culture—or, as Thacker (2010) suggests, life from technology.

These developments are also changing the way we think about metaphor. As a form of information, metaphor, like language itself, comes to be understood as a material as well as an abstract or conceptual device (Hayles, 2002). Adapting a favorite trope of Postman's, we might say that the map is seen to be interacting with the territory in new ways. Marie van den Boomen points out that the icons of

graphic user interfaces (GUIs) are material metaphors facilitating interaction between human concepts (e.g., "inbox") and the material processes of machines. Thacker observes that "biomedia" require us to think of the relationship between metaphor and materiality "as more than a one-way street" (2010, p. 128). When the genome is "mapped," and genetic information is translated into digital code, the territory becomes a map. The generation of "synthetic life" involves the reverse process. As digital code is transposed back into genetic information, the map becomes the territory.

With this in mind, I am not arguing for an absolutely nonmetaphorical understanding of *ecology*, but for understanding metaphor as more than a purely conceptual apparatus. If *media ecology*, like any other term, is inevitably metaphorical, the metaphor does more than connect two distinct material instances in a separate conceptual realm. Rather, it is an index, in a world in which the conceptual and material cannot be neatly separated, of the dense network of interaction between the two instances. My criticism of a metaphorical understanding of media ecology is not a critique of metaphor per se, but of a purely conceptual metaphor that implies a distinction between the elements it compares—in this case, "nature" and technologically mediated human communication. Such a distinction is increasingly difficult to sustain. As McLuhan put it, "new media are not bridges between man and nature; they are nature" (McLuhan, McLuhan, & Zingrone, 1995, p. 210).

Finally, I note Jody Berland's (2000) suggestion that notions of the "posthuman" and an "invisible" metaphor conflating biological, technological, and social change represent a depoliticizing "cultural technology" falsely equating technological development with social progress. Like Berland, I am skeptical of techno-utopias, but to say that the technological, biological, and social are merging in new ways seems to me more a straightforward observation than an ideologically loaded metaphor. Like associated ecological destruction now gathering force, this may well be the opposite of social progress, but it is certainly more than a conceptual metaphor.

Ecological Thought

If today's zeitgeist is marked by skepticism or doubt about the potential of modernity as an orderly, deliberate, and rationally evolving progressive force, this is not a reversion to a premodern view of a stable social order embedded in and ordained by nature. Rather, it is a hypermodern or postmodern view of an active, dynamic, unstable human society and technology, increasingly deeply interfused with and indiscernible from more-than-human nature. In this context, the *ecological thought* I advocate does not imply a cybernetic emphasis on balance or homeostasis. Nor does it entail a romanticized vision of a "pure" or benevolent nature.

In the first place, ecological thinking seeks to develop a nonanthropocentric perspective. Far from manifesting a futile aspiration to transcend or escape one's own point of view, this is an effort to avoid understanding the human perspective as transcendent. Modern humans have been accustomed to thinking that our linguistic abilities and technological achievements set us apart from other animals on the planet. When thinking about communication, this means positioning human beings at the beginning and end points of the process. Today's technological innovations converge with other developments in reminding

us that the human being is neither alpha nor omega, neither sender nor receiver, but a medium for a larger process.

More fundamentally, ecological thought signals an epistemology and ethics oriented toward a vast organic unity consisting of relations of violence, conflict, dynamism, and silicon no less than harmony, stability, balance, and carbon. It is an a-centric way of thinking, valuing networks of relations (ecosystems) rather than individual essences and processes rather than entities. Walter Ong, a writer identified with the media ecology tradition associated with McLuhan and Postman, writes, "Earlier thought had maximized distinctions; ecological thinking maximizes connections, relationships" (2002, p. 7). Just as analysis implies synthesis, the distinctions that make analysis and communication possible imply connection, contact, and relationship, rather than unequivocal separation and total disjuncture.

In the 19th century, the physicist Ernst Mach sought such disjuncture in the elimination of "metaphysical obscurities" from physics (Kaiser, 2014). The desire to understand reality by separating the obscure from the empirically observable can be understood as a drive to separate the immaterial from the material, message from medium, content from form, mind from body, language and metaphor from reality, and culture from nature. In the 21st century, this goal has lost plausibility. Ecological thinking thus understands metaphysics, mind, and all the first terms in the foregoing pairs, not with reference to a platonic realm outside the network, but by recognizing obscurity as inherent in the network. It takes for granted that it is impossible to precisely and empirically map the entire ontological field.

Apart from the riddle of reflexivity (mind illuminates the world, but its ultimate origins recede from it like reflections in a pair of parallel mirrors), and the complexity and scale of the universe, this impossibility arises given a monist ontology in which the intangible—inevitably somewhat obscure—is understood to be no less real than the tangible. The conscious self, for example, is not understood as transcendent, but it *is* understood as distinguishable from, and not reducible to, the material states of the brain with which it is entangled. Moreover, an emphasis on relationships and process means that self-awareness is not understood as a state of physical or metaphysical isolation, but as a point of reflexivity in a broader field in which physical tangibles are related throughout with intangible metaphysical obscurities. Ecological thinking is thus about a network of connections and relationships among a variety of dynamic material and immaterial elements. Metaphysical obscurity, like *mind* as understood by Gregory Bateson, is understood as an aspect of reality distributed through the network, rather than located within isolated individual experiences (Bateson, 1979; Bennett, 2010; Mathews, 2003).

Just as ecological epistemology takes knowledge as provisional and partial, ecological ethics are characterized by humility. Knowledge is understood as reflexive, emerging from what is known, with the "view from nowhere" identified with scientific epistemology recognized as an effective heuristic device rather than an absolute reality. In line with both literary deconstruction and mathematical theory, ecological thought appreciates that knowledge cannot posit the origins of the system from which it emerges (Hayles, 1999). Ethically, ecological thought does not automatically privilege human beings, and equating human beings with ends and nonhuman being with means is rejected on the grounds that responsibility to self is inextricable from responsibility to other. Ecological thinking, in short, does not aspire to fully comprehend or master the organic unity it assumes, and it rejects promethean promises of

omniscience or omnipotence. The network or ecosystem it posits encompasses the entire ontological field and therefore does not set up the problem of "nodocentrism" (Mejias, 2013). The network here is a metaphor, and a mode of understanding, for a field that exceeds our capacity for exhaustive comprehension.

Currency of Ecological Language

The view just outlined contrasts with the discourse, prevalent in academic and vernacular contexts alike, in which a conceptual metaphor is drawn between biotic ecosystems and networks established by communication technologies. John Naughton (2010), for example, writes colorfully on how the Internet suggests that we "think ecology, not economics":

> It's as if a world in which large organisms like dinosaurs (think Time Warner, Encyclopeadia Britannica) had trudged slowly across the landscape, exchanging information in large, discrete units, but life was now morphing into an ecosystem in which billions of smaller species consume, transform, aggregate or break down and exchange information goods in much smaller units. (Think Ecology, Not Economics section, para. 3)

The Internet seems to compel the drawing of such conceptual metaphors to biology. We speak of software as "native" to a given operating system; hardware and software fit into particular "niches"; machines can enter "sleep" mode and be "infected" with "viruses," and it is unsurprising to hear technological experts refer to Internet structures as "living systems" (Hu, 2013).

Such metaphors can be expansive, as when Johnathan Zitrain describes an evaluation of Internet security as a "digital environmental impact statement" (2008, p. 60), or narrow, as when technology writers compare Google's "ecosystem" with Apple's. In some variations humans rather than technologies are contemplated as the elements of the ecosystem, with new digital technologies simply mediating the ecology of relationships, as in Tim Wu's "ecosystem of bloggers, programmers, Wikipedia editors and amateur content producers" (2011, p. 273). The ecosystems in question here are evidently conceptually distinct from the organic networks that sustain life. That is, they are conceptually metaphorical, drawing an analogy, not a concrete connection, between networks of technology, their human users, and more-than-human biotic networks.

Media Ecology

Metaphors like these put us in the territory of the intellectual tradition identified with McLuhan, and dubbed *media ecology* by Postman (1970). They encourage us to think about "media as environments," in Postman's words, or perhaps media as species that interact with one another (Scolari, 2012). Whereas most humanists have been interested—as Maxwell and Miller point out—in *texts,* media ecology is principally interested in the *media* in which texts are inscribed and transmitted. Media ecologists are as guilty as most other communication theorists of the "metaphorical" perspective Maxwell and Miller blame on McLuhan, but media ecology's emphasis on the medium rather than the message or text means

that it is well positioned to produce a strong *substantive* account of ecology and media. Because of its axiom that the metaphysics of the text is inseparable from the physics of the medium, it disposes us to think ecologically in a substantive way, rather than conceptually metaphorical one.

The media ecology tradition tends to view all technologies as media, so that "technology" and "media" are usually synonymous. Technologies are understood as structuring thought and expression in the same way language does. Language itself is taken as paradigmatic and is of fundamental interest. Language is identified by McLuhan as a "master technology" (Gordon, 2011, p. xv), and by Postman as "our most fundamental technology" (Postman, 1993, p. 14). Language is simultaneously understood as an "environment" (Postman & Weingartner, 1969; Gencarelli, 2006). Here again there is potential to develop a substantively ecological view of communication and media: Language is given as an independent fact, as it connects our external environment and inborn physiology. It is also part of who we are as collective and individual agents, bound together and constituted by culture and biology. As a technology, it extends our selves, not from the edge, but from the center of our experience—not from the boundary between "me" and "not me," but from the ontological depths at which this boundary does not exist.

A substantive ecological perspective does not lose sight of the fact that language does not lift us out of these depths. Language affords analytical power, but not a "view from nowhere." Analysis remains situated, reflexively parsing the process from which its own self emerges. Lance Strate, a leader in the media ecology group and student of Postman, seems to appreciate this: "We are concerned with the one and only environment that we, as human beings, find ourselves within, the single, indivisible *ecology* that we are a part of, the *common ground* we share with the rest of existence (Strate, 2011, p. 3). For Strate, the interaction of the material and immaterial is expressed in terms of *transformations*. Media ecology, he says, is the study of transformations in our environments, transformations that occur across linguistic-symbolic and material modes as processes that are both physical and metaphysical, mental and material. Thus Strate affirms that the metaphysical elements of conscious subjectivity, language and other representational technologies do not exist in a different dimension or separate realm from the physical or "objective" world, but are generative, creative forces immanent in the world. He highlights this perspective by identifying media ecology with the tradition of rhetoric and the sophists as against the dominant philosophical tradition of Plato and Aristotle (Strate, 2006, ch. 14).

While Strate aims for a substantively ecological vision, he observes that many media ecologists continue to treat the *ecology* in *media ecology* as a (conceptual) metaphor (Strate & Lum, 2006, p. 72). As noted, the problem with this is that it essentially ignores the more-than-human ecosystems from which we, and our technologies, emerge. With this in mind, it is notable that environmental destruction is not at the center of the concerns of the media ecology tradition as articulated by Postman and his heirs (Meyrowitz, 2009).

Understanding the ecology in media ecology as a conceptual metaphor also undermines clear analysis, as seen in Robert Logan's (2010) application of the conceptual metaphor. Logan argues that "biology and culture no longer can be studied separately" (p. 143), but his "biological approach to media ecology" (p. 151) turns out to hinge on a reifying metaphor. Inspired by the analogy drawn by Richard Dawkins (1976)—that memes are to genes as cultural evolution is to biological evolution—Logan proposes

"that language and media can be treated as though they are living organisms because of the fact that they replicate themselves and because of the way in which they evolve and compete with each other for survival" (p. 144). On this explicitly metaphorical basis, Logan argues that media ecology can be talked about as "the study of the interaction of agents acting as organisms" (p. 148), suggesting that we think of language's emergence as "the co-evolution of two organisms, the human host and natural language" (p. 146).

Treating two different aspects of biological life as equivalent but distinct instances of "organism"—that is, treating a metaphorical "organism" as substantively equivalent to the physical beings that the term normally denotes—sets up a fallacy. Logan's reasoning implies that because it can be meaningful to say that the eyes of the poet's mistress are like the sun, it is appropriate to attribute to them the mass of the sun, its gravitational field, nuclear fusion, and all the other physical properties of that star. While language and culture may behave *like* organisms in many ways, in just as many ways they are manifestly *not* organisms. The homology Logan recognizes between language, culture, technology, and biology is of great interest, but it should be obvious that it does not arise because languages and organisms are two different instances of the same thing. It arises because they are different parts of the same whole. The distinction between biological and cultural aspects should not be understood as signifying a categorical chasm that can be bridged only by resorting to conceptual metaphors. Rather, it should be understood, like all distinctions, as provisional and contingent—a site of connection and interaction, no less than disjunction.

Postman's Metaphors

My central contention is that, to the extent that the common application of a metaphorical notion of ecology to the study of media technologies can be identified with the legacy of Marshall McLuhan, it is not McLuhan himself, but McLuhan's popularizer and interpreter, Neil Postman, who is most responsible for this.

Postman dedicated most of his career to a sustained critique of television and electronic media, which he saw as undermining literate rationality. He first presented the concept of media ecology in 1968, shortly before he established a graduate program at New York University under the same name. The term *media ecology* fits in well with a series of metaphors of the "environment" Postman used over the years: "language environment" (1969a, p. x), "semantic environment" (1969b; 1976); "information environment" (Postman, 1979) and the "media environment" (2000). In a speech on the "humanism of media ecology," Postman (2000) explained that media ecology was conceived as a double-barreled "biological metaphor," with both "media" and "ecology" having metaphorical significance. If in biology a "medium" is something in which a bacterial culture grows (as in a petri dish), in media ecology, the medium is "a technology within which a [human] culture grows." This is the idea of media as environments. The metaphor of ecology was used to indicate an interest in "the interaction between media and human beings" as well as—and here we see what Fuller identifies as Postman's "environmentalist" commitment to equilibrium and cybernetic homeostasis—a culture's "symbolic balance" (Postman, 2000, pp. 10–11).

What comes through in this explanation is a dualism that is detectable throughout Postman's writing and which sustains a metaphorical conception of the *ecology* in *media ecology*. There are two related aspects of this dualism. First, media ecology as Postman conceived it was an inquiry into human beings and our technologies, basically to the exclusion of the more-than-human world. Second, Postman not only understood the symbolic as the more or less exclusive province of human beings, but treated it as unequivocally distinct from the material realm.

In his 2000 speech, Postman declared, "human beings live in two different kinds of environments." He elaborated:

> One is the natural environment and consists of things like air, trees, rivers and caterpillars. The other is the media environment, which consists of language, numbers, images, holograms, and all of the other symbols, techniques, and machinery that make us what we are. (2000, p. 11)

The explicit dualism in this formulation is related to a more fundamental dualism that Postman often expressed with another metaphor, inspired by the Polish polymath Alfred Korzybski, of language as a "map" of reality. The metaphorical map, a staple of Postman's thinking (Postman & Weingartner 1969; Postman, 1988, 1993), is described, following Korzybski, as "the world of words," while "the territory we call reality" is the "world of not words" (Postman, 1988, pp. 141–142).

If the "world of words" corresponds to the "semantic," "information," or "media environment," the map metaphor suggests that such environments are distinct from the environment of the "territory we call reality." Thus, as Postman put it, "humans live in two worlds—the world of events and things, and the world of *words* about events and things" (1988, p. 141). Postman not only made a distinction between semantic (metaphysical) and real (physical) environments, but prioritized the one over the other. "The most immediate danger to our survival is . . . a badly polluted semantic environment" (1969b, p. 13). The physical environment is thus demoted in importance, after the most "immediate" importance of the semantic environment. Similarly, the "survival" Postman is concerned with is metaphysical at least as much as it is physical: "When the map is inaccurate or inappropriate, our chances of survival are decreased. And not only at the physical level. We can talk ourselves into emotional death, or moral insensibility" (1969a, p. ix).

Given Postman's overriding concern with how language and technologies mediate how we think, what does it mean to say, as Gencarelli does, that Postman considers language to be "part of" the environment? The answer can be explained in terms of Korzybski's concept of "self reflexivity" (Strate, 2011, p. 24). Applying the map metaphor, we can say that if a person in a particular terrain uses a map of that terrain to navigate and act on that terrain, the map has become part of the space it represents.[1] That

[1] Up until recently, maps only represented themselves ("You Are Here") within the terrain they represented under very specific, static circumstances. Today GPS maps routinely represent themselves as they move through space. Google Earth similarly suggests new ways in which the gap between the map and the territory appears less than absolute.

is, what we do in and to the physical world is a result of the perceptions and moral dispositions language and media technologies foster. Actions in the "world of not words" are thus figured as secondary effects, mediated by the subjectivity that words tend to produce. For Postman, this is the main role of media technologies in the physical world: First, the physics of the medium influence the metaphysics of how humans think and perceive. Only secondarily (or "self-reflexively") do these metaphysical perceptions affect the physics of the world by affecting how humans act in the world.

A more substantive ecological view would go beyond this, to recognize that the physical impact of our words, and of all the various technologies we use to transmit symbols and representations, is not limited to a kind of second-order effect. Thus scholars like Maxwell and Miller are beginning to document the immediate and direct physical impact of media technologies, in addition to whatever impact might follow from the subjective dispositions they help to produce. The ecological destruction caused by communication technologies does not run parallel to changes in our perceptions or our "moral theology" brought about by the biases of media. Rather, the two types of change intersect. The physical effects of media technologies on "the world of not words" ultimately affect our consciousness no less than the psychological effects of media on the world of words ultimately affect the physical world. The concept of "the environment," for example, arises from both environmental destruction *and* from our ability to produce and share information about such destruction.

Postman's emphasis on human language and subjectivity underlines or reinforces a typically modern (as opposed to postmodern or premodern) view of humanity as significantly apart from "nature." This entails an overdrawn distinction between the "inner" world of the conscious subject (and her world of words) and the "outer" world of not words. This is closely associated with the view that humans are exceptional because of our capacity for abstraction, identified with our unique capacity for language. "The naming of things . . . is an abstraction of a very high order (entirely beyond the capacity of animals) and of crucial importance" (Postman, 1988, pp. 140–141). In light of contemporary animal psychology, the parenthetical statement appears an overstatement. In conjunction with another statement—"what we perceive, and therefore can learn, is a function of our languaging processes" (Postman & Weingartner, 1969, p. 101)—it reveals a flaw in Postman's thinking. Nonhuman animals' powers of abstraction—of *con*-ception—may be more limited than ours. Given a perspective that inflates this limitation to an absolute lack, the suggestion that our perceptions are a function of language leads to the obvious error of positing that nonhuman animals do not perceive the world. *Con*-ception may be a function of language, but *per*-ception comes before language and self-consciousness (Bateson, 1979).

This is the crux of the problem with the conceptual metaphorical perspective. The "world of words" is seen as existing outside of—as taking us beyond—the ontological depths where our selves are indistinguishable from the network of connections from which we emerge. Michael Steinberg (2005) argues that the identification of language with thought is closely associated with a dualism in which the self is identified with a conscious, rational subject, and is isolated from the rest of the world. In line with Latour, Bateson, and others, Steinberg points out that while the "linguistic subject"—the subject of conscious experience—may be lonely, internalized, and separate from the rest of the world, there is more to the subject than language and conscious experience. Most importantly, the subject as agent does not occur in isolation, and is not actuated exclusively (or even mainly) by self-conscious thought.

This consideration, centrally important in a view that does not privilege human agency, is underdeveloped, if not entirely absent, in Postman's writing. It recalls Bateson's idea of an anti-ecological "conscious purpose"—an underappreciation of the ontological level at which the boundary between me and not-me does not exist. Postman (1976) says he is influenced by Bateson and recommends Bateson's *Steps to An Ecology of Mind,* as "well-written and brilliant but strange" (Postman, 1976, p. 259). However Bateson may have influenced Postman, it is clear that it was not through his conception of mind or his interpretation of self-consciousness. Rather than exploring Bateson's views on such topics, Postman ended his career with a book extolling 18th-century optimism about the power of conscious reflection and ratiocination.

There is a tension between Postman's interest in thinking ecologically and his preference, in the end, for an essentialist idea of isolated human individuals. In *Teaching as a Subversive Activity* (Postman & Weingartner, 1969), for example, Postman and his coauthor make the point that we need to be aware of how language is always a metaphor and that as such it places limitations on thought. One such limitation, they say, is that language makes it seem that "each of us is separate and distinct from what is outside our skin" (p. 87). However, just a few pages later they assert, with no apparent irony, "We can never get outside our own skins" (p. 90).[2] They go on to begin the following chapter of the book with the consummately anti-ecological renunciation of John Donne's famous bon mot, reproduced in the epigram at the beginning of this article.

Postman does not think ecologically in a substantive way. Rather, he thinks in a way that separates and privileges human beings on the basis of our powers of language, abstraction, and self-conscious thought. Consider his distinction between "processes" and "practices." Processes belong to the *world of not words*. They have nothing to do with human intelligence, are governed by "immutable laws," and are "determined by the structure of nature." Practices, which correspond to the *world of words*, "result from human decisions and actions" and are not determined by "immutable laws" (Postman, 1993, p. 148). As an illustrative example, Postman suggests that blinking is an unconscious *process* and winking is a deliberate *practice*. As anyone who has ever paid conscious attention to the motions of their eyelids can recognize, classifying every such motion in one or the other category—as either voluntary or involuntary—is not an entirely valid procedure. Our actions are a combination of unconscious and conscious impulses. The *world of words* and the *world of not words* converge in them.

The excessive dualism in Postman's distinction between practices and processes, and his exclusive emphasis on *human* agency, are of a piece within a perspective that tends to see human subjectivity as separate from the world, and thus separate from all the other sentient beings the world contains. This apparently finds an extreme expression in Suzanne Langer, to whose work an anthology

[2] This assertion is made with reference to the Ames experiments on perception, which prompted Bateson (1979) to conclude that perception happens "quite outside my consciousness" (1979, p. 35). Postman and Weingartner come to a different conclusion: "We do not get our perceptions from the 'things' around us. Our perceptions come from us. . . . Reality is a perception, located somewhere behind the eyes" (p. 90). They do not consider that perception might be something that transpires *among* the various elements involved: the eyes, the thing perceived, the brain, and so on.

dedicated to Postman's memory (Lum, 2006) devotes two chapters. Langer argued that humans are the only beings that communicate (Powers, 2006, p. 311). She apparently arrived at this judgment because she understood the abstraction in language as transcendent and because she overestimated the uniqueness of human beings' capacity for such abstraction. Her view is at odds with current scientific understanding of animal cognition, with emerging experiences with artificial intelligence, and with millennia of interspecies cooperation and communication between humans, dogs, horses, and other animals.

Langer deliberately drew a stark line between biology and language. Logan, as we have seen, by reifying a metaphor, redrew this line even as he sought to reach across it. The problem with the metaphorical view of media and language comes into sharper focus here: It cannot escape from Langer's human exceptionalist view, and so it gets in the way of substantively ecological thinking about media and communication. It inhibits our appreciation of the medium as entangled with the message, of understanding as entangled with the understood, and of communication as a more-than-human ecological process.

This limitation manifests itself in a certain failure of vision on Postman's part. For all his fears about *Technopoly* (1993) and the threat of autonomous technology, Postman appears not to have grasped, even at the end of his life, the real extent of technology's power. He evidently missed the significance of Haraway's *Cyborg Manifesto* as heralding the concerns of a posthuman reality. "Human nature may stay the same," he said in his 2000 speech, "the question is, what part will be released and nurtured" (Postman, 2000, p. 15–16). In his last book, he wrote, "If we mean by 'human nature' our genetic structure or biological needs or fundamental emotions, no one has argued that technology will alter human nature (at least not by much)" (Postman, 1999, p. 51). These statements were offered just as such "some ones" as Habermas and Derrida were waking from a dogmatic slumber to the real probability that human nature will, shortly, be altered *by much* (Kompridis, 2009). They reveal how Postman's metaphorical focus on the impact of media as environments on *the world of words* led him to neglect developments in *the world of not words*. His interest in the response of the conscious self to technology distracted him from how the mutual influences of consciousness and technology are increasingly taking place through interventions in physiology—of how the map and the territory are converging in new ways.

Postman's Legacy

Metaphor is a necessary and felicitous aspect of language. It is a problem only to the extent that it imbues analytical, heuristic distinctions with an unwarranted ontological permanence. As signaled at the beginning, the criticism of the conceptual metaphor in media ecology is at bottom a reprise of the oft-expressed dissatisfaction with the dualism in the tradition of Plato, Locke, and the Western canon generally. This tradition is incompatible with substantively ecological thought. Considering the Darwinian success of Western culture, awareness of this incompatibility might be understood as an instance of John Stuart Mill's axiom that "success discloses faults and infirmities which failure might have concealed from observation."

The success of ideas consists largely in establishing the terms under which thinking takes place. With this in mind, I point out that notwithstanding his aspiration to a substantive ecological perspective, Strate—whose debt to Postman is explicit—allows the dualism implied in the metaphorical view back in to his writing. Indeed, there are moments when Strate seems to articulate the metaphorical perspective he explicitly seeks to avoid. This makes for a tension in his writing that is much more acute than in Postman. For example, Strate writes of "how media, by separating us from our environment, become our new environment" (Strate, 2011, p. 50). The notion that our media separate us from the world is not without meaning, but it is an anti-ecological way of understanding how technology, like biology, mediates our relationship with our environment. An ecological perspective requires that we think of this mediation—the process by which identifiable individuals are constituted—as a matter of connection (which implies difference) rather than separation (which, as the metaphorical notion of memes paralleling genes suggests, can set up distinction based not on difference, but on a dualistic cleavage between otherwise identical, parallel entities).

An emphasis on separation reflects an anti-ecological habit of mind, which we can describe—using a phrase of Korzybski's—as a "hardening of the categories" of self and other. Strate reveals this habit in his use of the familiar terms of "internal" and "external" worlds, writing of phenomenology that "internal processing forms the basis of external perception" (2006, p. 90). Such language undermines the substantively ecological perspective that Strate seeks to uphold. A substantively ecological perspective is mindful that the distinction between "internal processing" and "external perception" does not pre-exist perception, but is rather a result of perception itself. In this way, it resonates with the idea of a distributed "mind" in the world at large (Bateson, 1979; Mathews, 2003).

Understandably enough, Strate identifies the notion of distributed mind with the New Age movement, calling it "an updating of paganism and animism" (2011, p. 229). While he declares that it is "a highly efficient . . . pragmatic and effective way to relate to natural phenomenon," he seems to think this view is incompatible with modern science. This reflects, I would argue, a fundamental misunderstanding of the view of distributed mind associated with Bateson and others, arising from a too-strong commitment to the alienating and reductive distinction between self and not-self. While a substantively ecological perspective appreciates that we—the diverse elements of the world—*are* mind and body, Strate sticks with the alienated formulation that we *have* minds and bodies, interpreting "animism" as saying that stones, rivers, tree, the sun, the moon, and lightning, "have minds" (2011, p. 229). The formulation seems to preclude the possibility of saying that a stone partakes of mind without attributing Cartesian interiority to the stone. Without excessively anthropomorphizing the nonhuman world, we can acknowledge that nonhuman beings, neither more nor less than human beings, are part of an ontological field with metaphysical as well as physical dimensions.

Conclusion

In 2014, it is incumbent on any theory of communication to take the more-than-human world into account. Technological change and ecological emergency oblige us to start thinking of communication as more than something that passes between human beings, with inert *nature* or *technology* in the middle as media. The tradition associated with Innis, McLuhan, and others, and dubbed *media ecology* by Neil

Postman, is particularly interested in the interaction of human subjectivity with the environment. It clearly has something to contribute here. At the same time, following Postman's lead, *media ecology* is often considered in conceptually metaphorical terms, figuring networks of linguistic human subjects and technologies of representation as ecosystems parallel to, rather than integrated with, the ecology that sustains biotic life. This cancels out the tradition's potential to contribute to a substantively ecological understanding of media and communication. Separating the *world of words* from the *world of not words* is antithetical to ecological thinking, and can lead to bizarre analyses of questionable validity.

The substantive ecological view I have traced is an alternative not only to Postman's vision, but to the more generalized metaphorical "substitution," identified by Maxwell and Miller (2012), in most discussions of media and communication. The main thing for this alternative is that it understands information—the stuff of communication—as both physical and metaphysical, and avoids privileging human abstraction by seeing it as but one form of information. Humans communicate as agents, but as agents, we are not actuated exclusively by conscious reflection. Our communication is not only a matter of conscious reflection, but also of expressing unconscious impulses and needs. In this respect, and like other elements in the ecosystems we inhabit, we are media as well as messages.

The impossibility of not communicating (Chang, 1996; Watzlawick, Bavelas, & Jackson, 1967) suggests that human intention or consciousness (which often does not seek to communicate) is not the reason communication takes place. It takes place because difference exists—that is, because information exists. From this view, human subjectivity appears as an aspect of some communication rather than the basis of all of it. Considering that communication involving nonhuman elements is an increasingly salient aspect of the world we inhabit, and will certainly grow in importance going forward, it would be worthwhile to think this through further.

The distinction between the human and more-than-human world is provisional and partial, and we need not make too much of it. Indeed, contemporary conditions require that we strive *not* to make too much of it. A substantively ecological approach would facilitate recognition and analysis of diverse aspects of the physical *and* metaphysical dimensions of media technologies. It is a necessary component of the kind of epistemological and ethical attitude made necessary by ongoing technological transformations of humanity and communication, and by the urgent need to mitigate the destruction of the Earth's ecosystems. As a critical engagement with the "technopoly" he decried, this approach just might be embraced by Neil Postman.

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