**Metafiction and General Ecology: Making Worlds with Worlds**

*James Burton*

We cannot produce that final adjustment of well-defined generalities

which constitutes a complete metaphysics. But we can produce a variety of partial systems of limited generality. The concordance of ideas within any one such system shows the scope and virility of the basic notions of that scheme of thought. Also the discordance of system with system, and success of each system as a partial mode of illumination, warns us of the limitations within which our intuitions are hedged.

Alfred North Whitehead1

Herein lies the charm and the terror of ecology—that the ideas of this science are irreversibly becoming a part of our own ecosocial system.

Gregory Bateson2

*1 Introduction*

This paper attempts to think the relation between ecology and metafiction, not, primarily at least, in order to continue the task of resituating literature within the new media ecology, effectively pioneered—in quite different ways—by Friedrich Kittler and Marshall McLuhan, and since taken up in a variety of projects, but rather in order to consider the more direct role of metafiction as a non-literary dimension of ecological thinking, specifically in terms of what may be termed, with some qualification, their shared generalizing tendencies. Treating metafiction as ultimately a process or phenomenon that is not essentially literary does not mean, here at least, ignoring its emergence as a concept, critical tool and putative literary category or subgenre within the field of literary criticism; given the extent to which the imbrication of the general and the particular is at stake here, it would seem unwise to neglect a major local context of the emergence and study of metafictional processes. There is however no scope here for engaging in sustained readings of literary works: instead, I begin with a telescoped look at the literary-critical study of metafiction, in order to highlight both the broad cultural and theoretical potential it finds in the concept and its objects of study, *and* the way such study restricts this potential through the maintenance of a set of disciplinary, humanist and critical boundaries.

Most crucially, these restrictions may be said to have given rise to a failure to think metafictively about metafiction. One of the central tasks of the thinking of general ecology, it seems to me, is, in parallel with the challenge of metafiction, to think ecologically about ecology (or the ways the study of ecology fosters ecological thinking), and to attend to the implications of this, both obvious and obscure. ThusI want to point here to some of the ways the thinking of general ecology might seek to avoid the traps encountered in the literary study of metafiction – which should, arguably, have given rise to a general engagement with fictionalizing and metafictionalizing but instead largely restricted itself to an account of the way this challenge was posed by certain literary works; and beyond this, to consider some of the ways ecological thinking, both in restricted and general(ized) contexts, must always-already be considered metafictional—albeit in a sense which, as we will see, converges with a notion of reality-building or worldmaking—and what this may imply for its ongoing study and application.

*2 From generic to general metafiction*

To link literature to ecology is no longer anything new: the rise of informational and media-sensitized paradigms and approaches to literary narratives, under the influence of such diverse figures as Marshall McLuhan, Michel Serres and Friedrich Kittler, has led to the widespread recasting of literature within a contemporary media ecology (or multiplicity of such ecologies).3 To an extent this approach—literature as information, as mediatically in-formed—has superseded and swallowed up the paradigm of metafiction, which was at its most prominent in literary criticism and theory in the late 1980s and 90s. Though some of the insights and implications arising from analyses conducted through the lens of metafiction have now been taken up or reformulated in subsequent work, it is worth taking at least a brief look back at the metafictional approach in this period, for the potential it uncovered, but arguably failed to develop, regarding the wider, more general understanding of metafiction as an aspect of (post)modern culture, rather than a literary sub-genre or trend.

The term “metafiction” came into usage in the early 1970s, in reference to literary writing displaying certain characteristics – in particular, heightened degrees of self-consciousness and self-reference (in various senses), a foregrounding within the work of its status as fictional invention, the thematizing of and playing with the unstable boundary between fiction and reality, and the erosion of the distinction between literature/fiction and criticism. Coinage of the term is generally attributed to William Gass,4 though its adoption by Robert Scholes seems to have been equally important to its dissemination.5 Other terms used before and since, such as “self-conscious fiction,” “surfiction,” “anti-fiction,” overlap with the term's supposed meaning and have been applied to the same examples.6 In French literary academia, the term *metatextualité* has been used in closely-related contexts, in association with writing employing *mise en abyme*, the *nouveau roman* and other literary output sharing many of the convention-challenging strategies and themes which tend to be taken as typical of Anglo-American metafiction.7

One of the most influential Anglophone texts in the field is Patricia Waugh's *Metafiction*.8 Though rightly still regarded as a useful primer for the study of literary metafiction, Waugh's book epitomizes two broad limiting tendencies found in various critical engagements with metafiction: firstly, a tendency to focus on describing the workings and key features of supposedly metafictional writing, at the expense of inquiring into the possible historical and cultural reasons for its emergence; secondly, a tendency to restrict the scope and application of the term to written fiction—i.e. either to “literature,” or to manifestations of a late twentieth-century mutation of/reaction against the literary tradition which would still be defined by their relationship to it—as Jonathan Culler puts it, to “works which, falling outside of established genres, would be treated as […] 'residual' literature.”9 Waugh posits a “sliding scale” of metafictionality, finding a “minimal form of metafiction” in novels which draw attention to the ways their characters “play roles,” citing as examples Muriel Spark's *The Prime of Miss Jean Brodie* (1961) and John Barth's *The End of the Road* (1958), in which a character engages in “compulsive roleplaying” as a form of “mythotherapy.”10 A stage up from this are novels in which characters seem to be aware that they are following a script pre-determined by someone else, and thus “implicitly draw attention to the fictional creation/description paradox.” (120) Then there are categories of what Waugh sees as more radical metafiction—employing “forms of radical decontextualisation,” rebuffing attempts to read them through naturalizing interpretation, and refusing to maintain any “stable tension” between fiction/illusion and reality/truth. (136) Such categories are characterized by various forms of self-contradiction, paradox and the increasing incapacity of the reader to establish any stable frame of reference (e.g. ontological, epistemological, hermeneutic) for making sense of what they are reading, tending towards “total anarchy” through “intellectual overkill” at the extreme end of the scale. (146)

Thus while Waugh considers a range of varieties of metafiction—from novels which “still implicitly invoke the context of the everyday world” to those which continually make radical shifts of context (115)—she nevertheless confines its application to “fictional writing which self-consciously and systematically draws attention to its status as an artefact in order to pose questions about the relationship between fiction and reality.” (2) Her text remains predominantly a survey and description of a literary (or counter-literary) phenomenon. In this, it reflects the convergent interests of several literary studies scholars in the 1970s and 1980s, and, along with Linda Hutcheon's accounts of “historiographical metafiction,” paves the way for a number of subsequent studies employing metafiction as a paradigm for reading (post)modern experimental writing.11 Such accounts do not lose sight of the potential social functions of metafiction—indeed, critical readings carried out in their wake frequently emphasize the ethical implications and political effects of the works they study.12 Yet even so, in such cases the focus remains, in the tradition of critical reading, primarily on how the writing achieves its effects—with an emphasis on critical description at the level of the individual writer or text, just as Waugh and Hutcheon offer critical descriptions of the field of metafiction at a more generic level.13 In short, it is really poetics or literature, rather than the much broader category of fiction, which is at stake in such contexts.

Even where metafiction *is* recognised as a widespread contemporary phenomenon—one whose “ubiquity makes it impossible to see metafictional self-consciousness as an isolated and introspective obsession within literature”14—critical discussions have continued to focus on the literary manifestations of this phenomenon. Where metafiction is seen as revealing the instability between literature and criticism, literary narrative and history, language and reality, it is nevertheless usually the techniques and devices by which metafictive writing is able to bring about such revelations—rather than their implications—that are of primary concern.

Though these tendencies may be considered reasonable given the disciplinary contexts in which the discourses around metafiction emerged, they have the unfortunate effect of restricting the critical potential of the concept by confining it to the context of literature.15 Effectively, they treat metafiction as shifting the terms and frameworks of interpretation, meaning, representation which are conventionally used to seek to understand a literary text, or indeed any phenomenon, textual, physical, social or otherwise – yet continue to approach their objects as though these frames remained intact, i.e. in a relatively traditional (albeit modern) form of hermeneutic literary criticism. In Erich Hörl's sense, many of the (anti-)literary texts considered metafictional may themselves be said to acknowledge and enact a “technological shifting of sense” (or of meaning) [*technologische Sinnverschiebung*].16 Sometimes this may entail a thematic attentiveness to modern informational and technological processes and systems, seeming to filter through, as in Thomas Pynchon's *The Crying of Lot 49* (1966) or *Gravity's Rainbow* (1973), to the levels of narrative construction and content, displacing conventions of meaning and sense. Elsewhere, equivalent effects are produced through disrupting the conventional techniques and technologies of literary production, authorship, reading: John Barth's now classic *Lost in the Funhouse. Fiction for Print, Tape, Live Voice* (1968) provides a wealth of examples, from “Menelaid”'s use of multiple quotation marks to indicate concentric narratological layers within layers, to “Life-Story”'s frequent invitations/demands that the reader “fill in the blanks” where information is omitted, to “Frame-Tale”'s transformation of the “codex” structure of the leafed book into the substrate-medium for an infinite, virtually content-less code, in the historically ancient (but perhaps also contemporary) sense highlighted by Kittler, according to which code itself literally means “displacement.”17 As Bruce Clarke writes, “framed narratives suggest the embedding of worlds within worlds,” and stories within stories even more so, such that whatever sense they might make cannot be considered “independent of the medium.”18 Yet literary-critical accounts of metafiction, while acknowledging this shift away from hermeneutic and representational categories as necessitated by such works, seem to a large extent to have ignored its further implications in the modes by which they approach them: that is, their appreciation of the above-mentioned “creation/description paradox” does not extend to the level of their own criticism, which proceeds as though its objects could still reasonably be subjected to analysis within relatively conventional critical frameworks of representation, classification and description. Even if for understandable, practical and professional reasons, such approaches treat metafiction as though it could remain contained within a cage of “literature” whose extreme fragility it has already exposed.

It is here that we may identify a key aspect of the relationship between metafiction and general ecology. For what I have discussed so far as recognized traits of metafiction may be considered to amount, as I will shortly elaborate, to a tendency to generalize certain characteristics and modes inherent to fiction, that is, to expand its scope beyond the confines of “literature” or indeed any other frame or context in which it is operative. Such a tendency, I will argue, can be said to characterize ecology as both mode of being and mode of thought. But if the literary criticism of metafiction has been marked by a tendency (inadvertent or not) to curtail this generalization, the concept and thought of general ecology initially avoids making an analogous restriction, in seeking to outline an ecology of ecologies, ecology as a general, contemporary mode of thought and being, rather than as a descriptor for certain specific phenomena and localized fields of study. Yet at the same time, the task of thinking general ecology, of thinking ecology ecologically, faces what is in a sense an inverted version of the challenge and danger faced by literary studies of metafiction: for while it acknowledges as a starting-point the general ecological character of our time, as something beyond any given discursive or epistemological account of a particular ecology, it may risk losing something of its own critical and creative potential if it loses sight of the way the generalizing tendencies it seeks to grasp, think and develop, are already immanent within those restricted ecological contexts which it seems to situate itself beyond. For as every restricted ecology possesses the potential for its own generalization, so every image of general ecology necessarily retains its own particularities.

*3 Generalization*

In order to develop the above claim and set of concerns, it is worth first considering a little more carefully what kinds of “generality” and “generalization” are at stake here. I suggested above that, to a large extent, metafiction may be understood as characterized by a generalizing (or auto-generalizing) tendency. In the works of Borges and Pynchon, of Raymond Federman and Donald Barthelme, among many others, we observe what might be characterized as an aspiration, often seemingly belonging to the text or narrative itself, to enter or rejoin “the world at large,” the world beyond literature and beyond fiction (narrowly proscribed)—not in the sense of providing an accurate representation of some dimension of “objective” social or political reality (in the sense of the realist novel) or an adequate onto-cosmological reflection of the world (as embodied in what Deleuze and Guattari named the “root-book”)19—but in the sense of recognizing themselves as always-already part of that world, responding to, affected by, and shaping it, as part of it, whether in minor or major ways. Or as Bruce Clarke puts it, “narratives connect to worldly systems not in their putative representational verisimilitude – especially if the narrative is fantastic, speculative, or science-fictional – but in the ways that, at their deepest levels of abstraction, they allow the construction of functional homologies to real processes of life, mind, and society.”20 Sometimes this entails characters and/or narrators becoming aware of their fictionalized status, as in Borges' “The Circular Ruins,” where the protagonist's desire “to dream a man […] with minute integrity and insert him into reality” ends with the recognition that “he too was a mere appearance, dreamt by another.”21 Elsewhere, the book or characters seemingly attempt to interact with the narrator/author, as in Flann O'Brien's *At Swim Two-Birds* (1939);or the story-text itself attempts to incorporate the reader within it, as in Willam H. Gass' *Willie Masters' Lonely Wife* and Italo Calvino's *If on a winter's night a traveller* (1979); or characters come to perceive the fictionalized nature of their world and attempt to cross the diegetic boundary to reach that of the reader, as in Philip K. Dick's *The Man in the High Castle* (1962)*.*

This may be considered a generalizing tendency in that it constitutes, in various forms, an attempt to move beyond a particular perception of reality (e.g. that which is implicit in the construction of a narrative's diegesis) to a more general perspective that would encompass that local perception, along with a multiplicity of others. In other words, they seek to make their environment part of themselves, giving rise to new, larger system-environment couplings. As such, it is a tendency whose generalization may theoretically be continued indefinitely: the terrible realization (though also relief) of Borges' wizard is one which his readers, as well as he as author, must supposedly countenance in relation to their own perceptions of reality, in which “The Circular Ruin” is “only” a short piece of fictional writing; and we may posit that any putatively godlike being for whom all of human life would have the equivalent ontological status and significance of a historical novel, a program running on a computer or a cell culture in a laboratory Petri dish, might be subject to an equivalent subjective self-doubt, especially if prompted by observing it in her human subjects. Generalization is in this sense a means by which the diminished, the *minor,* is able to reach back up to, and affect, the augmented, the major—a means by which the insignificant makes itself significant. A narrative which observes or draws attention to the technological, psychological, social, ontological conditions of its own construction, almost inevitably invites consideration of the effects of such conditions on any perception of reality. By using the narrative's literal role in constructing the reality experienced by its character as a vehicle connecting different levels (intra- and extra-diegetic), a metafictional work simultaneously generalizes the character's specific set of experiences, and at the same time renders them contiguous with the real—no longer considered as the world beyond the fiction, but as the world which constitutes and is partially constituted by that fiction.22

In the terms of Luhmannian systems theory, we might say that the metafictive text shifts attention from its operational closure as a literary work, towards the relations with its environment constituted by its partial openness: in the process it risks, or partially disintegrates its literary identity, in opening itself up to the greater complexity of its environment; its operational closure is reinforced to the extent that we (or literary critics) regard it as a book, a story, a piece of literature, but further disrupted as we observe its participation in (auto-)generalizing metafictional processes.

As this reference to systems theory should emphasize, the same (not only analogous, but homologous) generalizing process may be seen in the study and thought of ecology. In *Adventures of Ideas*, Whitehead suggests a distinction between two types of generalization belonging to science and philosophy respectively: whereas science, broadly conceived, draws “inductive generalizations” from “observation of particular occurrences,” giving rise to ways of classifying things according to their functioning, philosophy places emphasis on the intuition of generalizations that aspire to “universal application.”23 Yet the kind of generalization involved in the thinking of general ecology, it seems, would need to be situated between these two, borrowing something from each: at first glance, it seems to arise through an intuitive effort, and is conceivably applicable (or connectible) to an infinite range of aspects of existence (though without going so far as to regard this as an aspiration to what Anglophone analytic philosophy terms “absolute generality,” i.e. of the variety producing statements that are supposed to apply to “absolutely everything there is”);24 yet at the same time, it seems unlikely that it could have become thinkable without the emergence of a wide range of particular, local, “restricted” ecologies. We might think of the generalization that characterizes its relation to these other ecologies, rather than inductive or universalizing, as “associative” or “relational.” That is, the intuitions that give rise to something like the generalization of ecology seem often to appear in passing, alongside and *in connection with*, rather than as a logical consequence of, the study of particular ecological phenomena or contexts, or indeed in connection with projects belonging to seemingly different epistemological spheres entirely. In this, we might already recognize the specifically recursive nature of the generalization that is at work in ecological thinking – in that it is characterized by the modes of relationality and connectivity which it studies.

In contrast to the general ideas Whitehead identifies, which are firmly situated within the history of culture and thought—for example, slavery as a dominant and determining idea for classical Mediterranean culture, or freedom as having a thorough-going and determining influence on his own25—we would have to recognize that in the case of ecology, we are dealing with an idea that already in itself incorporates or implies something like a generalizing process, even, if not most vividly, in its most “restricted” contexts. The history of biological or zoological ecology is the history of the study and theorizing of the processes connecting an individual or organism to its wider environment. Though we might more often refer to such processes using terms such as extension, connectivity, environmentalization, they nevertheless entail an appreciation of the ways one localized situation is connected to and affected by a larger, more general sphere that contains it alongside and connects it with multiple other such localized situations. If, as François Neyrat suggests, the “principle of principles”—the “metaprinciple,” we might say—of ecological thinking is, “everything is interconnected,”26 the pursuit of environmental connections will always be expansive, always a proto-generalizing tendency that moves any set of phenomena or system into relation with what is beyond the initial sphere of its observation or consideration.

Hence whenever one examines an account of such expansive, at least nominally generalizing tendencies at work in the phenomena observed within a particular sphere of restricted ecology, it is possible to observe these same tendencies effectively at work in the thinking that examines them. For example, Jakob von Uexküll's *Umweltforschung* thinks the individual organism in relation to the environment it innately constructs or selects from all physical possibilities, made up of those elements that are significant to it: “As the spider spins its threads, every subject spins his relations to certain characters of the things around him, and weaves them into a firm web which carries his existence.”27 In attributing to each type of creature its own world, Uexküll's schema seemingly restricts the environment to a local set of relations with a given individual, which he figures as a “soap bubble” in order to depict how “the spherical *Umwelt* circles around and contains the limits of each specific organism's life”28—yet situates the uncountable complex of connected soap bubbles as “a harmony composed of different melodic and symphonic parts” in which, through their *Umwelten, “*organisms express themselves outwardly in the form of interlacing and contrapuntal relationships.”29 As Agamben puts it in *The Open,* from the postulation of an “environment as a closed unity in itself,” and the “reciprocal blindness” among individual organisms or actors with their own closed environments, emerges a “paradoxical coincidence,” among worlds that are at the perceptual level “absolutely uncommunicating” yet nevertheless “so perfectly in tune.”30 Uexküll's schema already implies a movement in the direction of a general ecology, in its recognition, for example, of the “highly contradictory” roles played by nature for the astronomer, the marine biologist, the chemist, the nuclear physicist and the student of air waves and the musician, the behaviorist and the psychologist: “Should one attempt to combine her [nature's] objective qualities, chaos would ensue. And yet all these diverse *Umwelten* are harbored and borne by the One that remains forever barred to all *Umwelten.*”31 The generalizing tendency continues today, as, following though by no means in direct lineage with the varying influences of Uexküll's thought on a range of modern thinkers (including Heidegger, Merleau-Ponty, Deleuze and Agamben), the apparent closure of this broader harmonious system of nature as a whole is being broken down in turn and opened up to myriad other ecologies, not least among them ecologies of technology and media.

Thus from the starting-point of considering one restricted environment, we are invited to consider one that would have to be considered more general – with respect to the first, a kind of meta-ecology, though also simply an ecology in its own right. The thinking of ecology gives rise to ecological thinking, as the thought of any given environment leads to the thinking of others that go beyond and include it without being identical with it (including that thought itself). We could trace such a tendency in various more recent examples of ecological thinking—such as, to name just three of the more prominent, Gregory Bateson's ecology of mind or ideas, with its diverse application to “the bilateral symmetry of an animal, the patterned arrangement of leaves in a plant, the escalation of an armaments race, the processes of courtship, the nature of play, the grammar of a sentence, the mystery of biological evolution, and the contemporary crises in man's relationship to his environment”;32 Félix Guattari's “ecosophical” account of the interpenetration of social ecology, mental ecology and environmental ecology, which he refers to as a “generalized ecology,”33 or Lynn Margulis and James Lovelock's Gaia theory, which draws on insights from thermodynamics, cybernetics and information theory in producing an account of the Earth's atmosphere as regulated by life itself, and later by the whole Earth system.34

Thus if we can conceive a “general ecology,” it will always necessarily engender a generalizing tendency that is already operative within ecological thinking and ecological systems. Hörl's coinage of the term recalls Georges Bataille's opposition between a restricted and a general economy: at its simplest, the notion of general ecology thus indicates a thinking and approach to ecology that would be beyond the concerns of the particular biological and environmentalist discourses and projects from which the term first acquired its scientific, political and popular currency. Yet the implications of this are anything but simple, entailing nothing less than “a momentous reclassification of our whole objective state and of the place which we as subjects occupy within it […] a fundamental ecological reorientation of the manner of knowledge and being, whose contours we are only just beginning to make out.”35 If this theoretical or conceptual project first and foremost reflects (and invites us to recognize) an already ongoing, wide-ranging set of transformations of contemporary existence, under the effect of what Hörl calls our “technological condition” [*technologische Bedingung*]—transformations of the relations between humans and nonhumans, technology and culture, each and every identifiable system and its environment, every subject and object—then these changing conditions are no less significant for the task of thinking such transformations than they are for the transformations in themselves.36 Thus in relation to general ecology, as in relation to metafiction, it seems we are dealing with a *particular* kind of generality, in that it must bear within it a recursive relation between the particular and the general.

For the same reason, if the notion of general ecology dispenses with the biological-environmentalist binding of ecology to a certain understanding or image of nature, it still does so to a large extent on the basis of this prior binding, whose salient features are not left behind in this move, but reincorporated, reconstituted and indeed re-imagined: what a restricted ecology attempts to highlight in terms of the pre-determining relation between organism and environment, humanity and the so-called natural world, or between biosphere, geosphere and atmosphere, general ecology attempts to highlight in terms of any and all such pre-determining relations—indeed, in terms of the pre-determining nature of relationality as such.37 Thus if it implies a radically different notion of ecology from those in which ecology remains tied to a particular conception of nature, it also does so also as a kind of extension of those restricted modes it seems to leave behind, paradoxically continuing their immanent tendencies towards their own outsides.

*4 The poiesis of ecological thinking*

One of the implications of this recursive generality is that, in Bateson's sense, and in the sense of Maturana and Varela,38 no essential separation or discontinuity can be maintained between the thinking and the things thought (be they phenomena, processes, relations, systems, objects, organisms, environments, and so on.) Furthermore, if in the case of ecology what is thought consists at least partially (and crucially) in the ongoing formation of new connections or relations, then the implications of this for the thought of ecology ought to be taken into account, by a general ecology most of all. That is, if general ecology is to remain attentive to the “creation/description paradox” acknowledged and yet curtailed in studies of literary metafiction—here recognized as pertaining to any relation to reality or world, including and especially the general-ecological relation—it must grasp the productive, creative dimension of ecological thought, both in restricted or particular contexts, and in its own operations.

In order to better expose what is at stake in this challenge—and at the same time, to further develop the convergence of ecology and metafiction—it will be helpful to reflect on the ways such descriptive-productive processes must already be considered, at least in some sense, fictionalizing—though in the sense in which metafiction reveals all fictionalizing to be, to varying extents, worldmaking.39 In their hyper-connected (ecosytemic) and hyper-connective (environmentalizing, rhizomatic) tendencies, both ecologies and the ecological thinking that seemingly borrows such characteristics from them, must be considered productive of world(s), of ever more and newer relations among things, and of ever more “things” emerging from the growth of relations. To separate such productivity into physical and perceptual (or material and ideal, real and fictional, concrete and imaginary) categories is only possible within older, representational paradigms which (general) ecological thinking – in parallel with the general thinking of metafiction, and in the wake of a host of twentieth century developments, from cybernetics to poststructuralism, from process philosophy to posthumanism, from hermeneutic to posthermeneutic literary, cultural and media studies – necessarily attempts to move beyond.

There are numerous recent and contemporary thinkers to whom we might turn in order to support and develop the notion that fictionalizing is a constituent aspect of any consideration of or belief in reality—that any perception or notion of, or indeed, relation with anything that might be termed “world,” should be considered something that is produced in that process—fictionalized not in the conventional sense (implying illusory, false, purely imagined, unreal), but in the metafictive sense which effectively erodes any form of fiction/reality distinction.40 Nelson Goodman's *Ways of Worldmaking* concisely elaborates this process as immanent to (at least human) existence, without requiring either a return to purely idealist paradigms of philosophy, or having recourse to any of the various contemporary forms of social constructivism.41

By taking it as “hardly debatable” that there are many different, and somehow co-existent world-versions – and the question of “worlds-in-themselves” as “virtually empty,” (4) Goodman sets out to consider not “an ambivalent or neutral *something* beneath these versions but […] an overall organization embracing them.” (5) He considers a number of ways in which we engage in worldmaking processes – such as taking-apart and putting-together existing perceived elements of worlds, “weighting” this or that element over others, or applying various modes of “ordering.”42 Salient for us here in Goodman's argument is that these ways of worldmaking all involve making use of, or constructing from, aspects of existing worlds (those that we have already “built” or come to accept):

The many stuffs—matter, energy, waves, phenomena—that worlds are made of are made along with the worlds. But made from what? Not from nothing, after all; but *from other worlds.* Worldmaking as we know it always starts from worlds already on hand; the making is a remaking. (6)

In this sense, worldmaking as what we might otherwise call fictionalizing—in everyday contexts the choice of the latter term generally connotes merely that a particular made world has not (yet) come to be habitually treated as real, a point I will expand on below—is already akin to metafiction. Our “worlds”—realities as we perceive them—are produced through a kind of poiesis—but one which is always working with the “many stuffs” on hand taken “from other worlds.” This may also be viewed as a form of ecological productivity (it bears more than a little resemblance to the framework developed by Uexküll, whose argument regarding the constitution of *Umwelten* could be considered a “ways of worldmaking” oriented towards the animal as opposed to human organism, the harmonious arrangement of “soap bubbles” paralleling Goodman's “overall organization” relating multiple co-existent worlds). But if so, we would have to consider it characteristic of the ways not only “we” build worlds, but, in an era in which nonhuman, individuating and individuated constellations of all shapes and hues are recognized as active, productive, even creative forces, of the ways ecologies of various kinds themselves build new systems, new ecologies, out of existing ones. This may be exemplified in the media-ecologial operations of artistic production, intensified and heightened in the information era, as identified and explored by Matthew Fuller, among others.43 But we could consider the ways all sorts of systems or collections of processes and phenomena we identify as ecological may display this property—continually re-making themselves through connections with other ecologies, which may seem to produce stasis much of the time (the stable ecosystem) but which may also allow new ecologies to form—even if they will only be recognized/observed to the extent that they are considered relevant/significant.

Goodman's framework has the virtue of allowing us to emphasize how worldmaking (effectively always in some sense a meta-worldmaking, in its constant employment of the “many stuffs” of other worlds to hand) coincides with (meta)fictionalizing, which is relieved of its conventional opposition to the real in the same degree (in fact, at the same stroke) as “world” is relieved of its association with the absolutely concrete or real. This means that fictionalized worlds, including those framed in narrative terms, or fleshed out in a particular medium, are worlds like any other—the only difference being our habitual tendencies to treat some worlds or world-versions as more real than others: “for reality in a world, like realism in a picture, is largely a matter of habit.”44 This reference to habit might suggest (if by a certain philosophical habituation) that in fact we needed to turn to no one more recent than Hume in order to find a strong justification for such a position—though the Hume-version or Hume-world that would be most suited to this task is perhaps made more perceptible through the lens of Deleuze's reading.

The significance of Hume's *Treatise of Human Nature,* at least for Deleuze, lies in his highlighting of the roles of belief, affect and habit—but also, of the imagination—in the nature of reality as we perceive and understand it: every relation of cause and effect is fictionalized in the sense and to the extent that it is believed in and affects those beings which perceive it, despite having no absolute necessity which pure reason can access. The perception that the existence of one thing (e.g. an effect) depends on another (e.g. its putative cause) can be affirmed only through belief, which is accrued “by custom or a principle of association.”45 Or, as Deleuze puts it, “causality is *felt*. It is a perception of the mind and not a conclusion of the understanding.”46 But in addition to highlighting how Hume raises the question of the roles of relations, affect and belief as key elements of our existence, Deleuze also highlights, if seemingly in passing, a further aspect of importance for us here: the notion of a general idea—and specifically, the recursive form of generality that is at stake in such (perhaps all) non-rationalist thinking.

At the end of the first part of the *Treatise* (following his first treatments of relations, modes and substances)Hume provides an argument in support of Berkeley's position according to which “all general ideas are nothing but particular ideas annexed to a certain term, which gives them a more extensive signification, and makes them recall upon occasion other individuals, which are similar to them.”47 In Deleuze's account of Hume's “associationism,” it is the easy passage among ideas, brought about by relations (one idea introduces another), substance and mode (several simple ideas combine to form a more complex one) and the general idea, which produce the mind (or “human nature”) as a set of tendencies. But if, as Hume argues, any particular idea may take on the role of the general, and no idea is by itself intrinsically general, then every general idea must be considered as an instance of the recursive generality discussed above. More crucially for us, since relations are necessarily beyond the grasp of reason alone, and yet are perceived, they must in some sense be imagined: “Hume, in fact, observes that general ideas must be represented, but only in the *fancy,* under the form of a particular idea having a determined quantity and quality.”48

If we apply this reasoning to the thinking of general ecology, the implication is that any image of the general ecology we construct will ultimately fall short of full generality by virtue of its own particularity. On the one hand, this may indicate that the general idea (of ecology) can never fully dispense with the particular ideas from which it has arisen. On the other hand, to the extent that, through these processes, the thought of a general ecology *does* present something other than, beyond or in excess of every restricted ecology, we would still have to recognize that every presentation of this thought will have its own particularity, will give rise to a particular image. No two presentations of this idea will be exactly alike, any more than two metafictions (or even two accounts of metafiction as a general idea, category or genre), as emphasized by the differences between Cervantes' and Pierre Menard's *Don Quixote*s.49

This should not be considered a flaw or impasse for the thinking of general ecology, however. For if the image or *representation* of a general idea has a particular form in the imagination, the *operation* of a general-ecological mode of thinking may consist in a constant or reiterative liberating of the generalizing potential in every such quasi-stable form. If every particular or restricted idea of ecology has a tendency towards (or at least, an immanent potential for) its own generalization—and if this generalization tends towards something which can only be thought, in some sense, through imagination—then the thinking of general ecology may, perhaps paradoxically, rediscover the generalizing tendency it seeks to grasp in the process of approaching, describing, producing, using each particular image of ecology—not only those of existing examples of (restricted) ecological thought, but in the particularity of its own general images.

*5 Ecological metafictions*

The thought of general ecology may thus be considered a metafictional mode of thinking in the sense that it retools a generalizing, worldmaking potential operative in any local ecology or its study (as literary metafiction rediscovers and illuminates the strange, boundary-crossing capacities of fiction per se), and extends this potential in the course of its own worldmaking activity.

Metafiction—understood now in terms of processes operative well beyond the sphere of literature, perhaps even central to our psychological and material existence—is not invoked here as the basis for a mode of relativist constructivism: in particular, the products of fictionalizing are seldom neutral. My concern with a generalized idea of metafiction, while seeking to move it beyond the restricted/restricting scope of literary criticism, is no less particular than any image of a general ecology (or of any general idea). While the idea of metafiction could be used to support a perspective aspiring to neutrality, whereby its main purpose would be to show that—and to help describe how—all reality is (all worlds are) produced through the fictionalizing (worldmaking) use of elements of existing fictions (worlds), for me at least, such a perspective is only worth developing in connection with a consideration of the *kinds* of worlds we want. As Goodman puts it, “recognition of multiple alternative world-versions betokens no policy of laissez-faire. Standards distinguishing right from wrong versions become, if anything, more rather than less important.”50 Recognizing the ongoing, productive role of fictionalizing in any world is a first step towards actively engaging in worldmaking processes, and is arguably crucial in our dealings with the ecological.

We cannot embrace everything—every set of connections and relations, every putative emergent ecology—any more than we can track or observe it: nor should we want to, if we want to retain any political agency, as Neyrat's call for an “ecology of separation” in this volume makes clear; or as Steven Shaviro suggests, in parallel manner, in light of the contemporary tendency to see everything (computers, rainforests, intelligence, the capitalist economy) as a network, and under constant pressure to integrate oneself ever more fully in the network society, “the problem is not how to get onto the network, but how to get off.”51 To recognize that there is critical and political value in disconnection, separation, restriction in this context, it is enough to acknowledge that capitalism has its own general-ecological modes, as do the control society (e.g. as elaborated in Tiqqun's “cybernetic hypothesis”),52 the network(ed) society, or the late modern global form of domination named “Empire” by Hardt and Negri.53 Their ecological character is perhaps most discernible in their tendencies to connect with and encompass one another, even as they extend their reach ever further into the psychological, material, biological and social structures of existence, whether we figure this in terms of Guattari's “integrated world capitalism,”54 or Foucault's biopower. The residual and recurrent particularism of every image or thought of general ecology, coupled with a grasping of its metafictional potential as a collection of worldmaking processes—grasping not simply in the sense of understanding, but of taking-hold, making ready-for-use—may well be crucial to its capacity to curb these other general-ecological proliferations, both “in the fancy” (at the level of its critical-epistemological engagement with them) and, by contiguous passage, in concrete, material existence and experience.

Examples from apparently restricted, nature-bound contexts of ecological thinking may reveal how metafiction has already played key roles in the strategic generalization of ecology in response not only to the threat of environmental disaster, but in light of numerous ongoing and long-established forms of political and social violence which operate ecologically, both through steering hyper-connective proliferation in particular directions, and by their imbrication with the processes of environmental change. For environmentalism can no longer be considered “purely” a question of nature, or even politics, in an era in which, as Michel Serres suggests, pollution (including pollution through noise and images, as well as in physical forms of waste and excrement) becomes a means of activating “perfectly conscious and organized plans by owners for waging open war to invade the world and occupy space”;55 and in which, as Adrian Lahoud puts it, the struggle over an issue such as global carbon capacity becomes “in very real terms a war, but a war whose agents, weapons, and theater of operations bear little resemblance to the conflicts of the past.”56

To take a concrete example, the *Whole Earth Catalog* of the late 1960s and 1970s can be understood as a metafictional enterprise aiming to counter a certain, dominant image of a future global society rationally organized and efficiently managed through the application of technology and underpinned by faith in scientific progress. The *Catalog*'s famous cover image of the “Earthrise” photograph of the Earth seen from space—for most people offering a radically new perspective—brought the planet as a fragile, interconnected, shared system into popular consciousness: yet this perspectival shift should be seen as a key element in the literal construction of a new fiction or world (following Goodman) through the reappropriation of central elements in the pre-existing fiction or grand narrative of scientific and technological progress—including space travel, military technology, and Cold War capitalist ideology. In discussing their recent exhibition on the influence of the *Catalog,* Diedrich Diederichsen and Anselm Franke highlight the ways this thinking, and the image, emerge from effectively the same paradoxical situation in which metafiction arises (i.e. that of being simultaneously inside and outside of a world, fostering aporetic modes of self-reference):

DD: The image of a planet, just like a system, is something you watch from the outside. But at the same time you're also inside it. And this is the aporia of the system, because the system always tells us: you can't look at a system when you're

part of it. But you're *always* part of it.

[…]

AF: […] whenever you look at or talk about this image, you are actually surfing a sort of schizo-meridian, a borderline between being part of it and being on the outside of it.57

The almost intrinsically metafictional situation of a particular ecological perspective—in this case, the human subject's self-observation as both within and outside the planetary ecology—gives rise to further metafictionalizing (or worldmaking) strategies. This is seen in the wealth of information, advertising and imagery contained in the *Catalog*, which continues the re-appropriation of the dominant elements of technocapitalism by offering the reader (or user) access to knowledge and tools, both practical and educational, that may allow her to participate in and foster an agriculturally attuned, self-sustaining way of life, “to conduct [her] own education, find [her] own inspiration, shape [her] own environment, and share [her] adventure.”58 In short, environmentalist concerns are already imbricated here within questions of social and mental ecology in ways that anticipate Guattari's “ecosophy.”

Instances of what may be considered strategic metafictionalizing in various (restricted—but generalizing) ecological contexts, even if not directly identified as such, are discussed in a number of essays collected in the recent volume *Forensis,* many of which attend to the complex interrelations between natural, technological and material environments in contexts of political and social violence.59 For example, the metaphor of the “hole” in the ozone layer, as Eyal Weizman writes, though the product of meterological and geophysical observation and analysis, was “constructed as a concept and an image in order to call for action,” and subsequently mobilized in debates against climate change skeptics' denial of the gradual depletion of ozone levels in the stratosphere.60 Meanwhile, Paulo Tavares discusses the complex ecological, political, historical and legal circumstances surrounding the recognition, in Ecuador's new constitution of 2008, of the rights of nature.61 The legal theory behind this development has its roots in Christopher Stone's argument, originally put forward in 1972, that, in light of the numerous “inanimate rights-holders: trusts, corporations, joint ventures, municipalities” which are recognized through the convention of “legal fictions” as “persons” or “citizens” for various “statutory and constitutional purposes,”62 we should “give legal rights to forests, oceans, rivers and other so-called 'natural objects' in the environment – indeed, to the natural environment as a whole.”63 Following Ecuador, Bolivia's passing of the Law of the Rights of Mother Earth in 2010 actualizes this suggestion, combining the much older, mythologically inflected apostrophization of Nature with the modern legal technique of assigning personhood, in upholding the rights of Mother Earth as “a living, dynamic system composed of the indivisible community of all systems of life and living beings, interrelated, interdependent and complementary, that share a common destiny.”64

Such examples may seem a far cry from the (residually) literary metafictions with which we began. One might argue that they constitute a rhetorical deployment of metaphor and imagery in ecological discourse that is closer to Hayden White's account of the narratalogical character of historical writing than to the strange, paradox-embracing, frame-shifting constructions of Borges, Pynchon or Barth.65 Yet they arise from and perpetuate the same deconstruction of fiction/reality, truth/illusion boundaries: the ozone layer and Mother Earth are *both* fictional and real phenomena, components of worlds which we are *both* inside and without. Furthermore, their acknowledgement of the complex, nonlinear relations which characterize ecological systems gives rise in post-Humean fashion not only to an appreciation of the roles of affect, belief, habit, imagination in the perception of (especially causal) relations, but to attempts to engage these roles in the mobilization of alternative world-versions against those habitually dominant in everyday perception or promoted by the grand narratives of modernity.66 If such complexities require relatively simplistic fictions in order to be rendered more conceivable and communicable, these are nevertheless underpinned by the deeper level of invested fictionality underpinning all perception of relations, which the thinking of general ecology both grasps and mobilizes in its own recurrent particular forms.

The generalization operating in the notion of general ecology moves it even further beyond the associations with nature which continue to characterize most of the ecological examples I have discussed here—which could be said to be “residually” natural in the way Culler, as noted above, described certain metafictional texts as residual literature. Yet among the present and future tasks of thinking the general ecology, it seems to me, is the challenge of recognizing these characteristics across ecological thinking, to produce a generalization of generalizations, a metafiction of metafictions—and at the same time to recognize that this in turn will never attain to absolute generality, to universality, but will always bring with it new blindspots, such that every image or thought of general ecology will have its own particularities, at various levels, from the historicity of its terminology and vocabulary, to the political and institutional contexts of its production, to its visualizations of possible current and future realities—its ways of worldmaking. The challenge is to activate this residual particularity as a worldmaking property—which is to say, reality-building, creative, metafictionalizing capacity—as opportunity rather than limit: to combine the recognition of the shapelessness enabling every shape, the processes and relations prior to every form, with the ongoing capacity to make shapes and forms, a capacity that is also an ineluctable necessity.

For if the idea of a general ecology, at least to some degree, shares the particularity of the restricted ecologies it considers, even as it seeks to move beyond them, extending their immanent potential for moving beyond their own epistemological and ontological milieux, and, further, acquires its own particularity in each image or reflection, this residual and recurrent particularity may ultimately form a valuable means of restricting – in a different sense – of reshaping and affecting, even if in minor ways, the forms of general ecology that are already exercising their worldmaking capacity upon us.

1 Alfred North Whitehead, *Adventures of Ideas* (1933; Harmondsworth: Penguin, 1972), 172.

2 Gregory Bateson, *Steps to an Ecology of Mind* (Northvale, NJ: Jason Aronson, 1972), 510.

3 The essays collected in Joseph Tabbi and Michael Wutz, eds., *Reading Matters. Narratives in the New Media Ecology* (Ithaca, NY: Cornell University Press, 1997) offer a variety of examples of this broad approach, particularly as informed by influential works by Friedrich Kittler such as *Discourse Networks, 1800/1900*, trans. Michael Meteer with Chris Cullens (Stanford: Stanford University Press, 1992), and *Grammophone, Film, Typewriter,* trans. Geoffrey Winthrop-Young and Michael Wutz (Stanford: Stanford University Press, 1999). Marshall McLuhan has arguably had the most general and widespread influence in terms of the displacement of literary and related traditional humanities paradigms by categories pertaining to a wider media ecology, (e.g. oral and print culture, electronic media, a range of technological modes of communication), in texts such as *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto: University of Toronto Press, 1962) and *Understanding Media* (New York: McGraw Hill, 1964). Michel Serres' various engagements with literature in the five *Hermès* books, and subsequent works such as Feux et signaux de brume: Zola (Paris: Grasset, 1975) and *Le Parasite* (Paris: Grasset, 1980) have been influential for the interdisciplinary study of literature and/as information, taken up, for example, by William Paulson in *The Noise of Culture: Literary Texts in a World of Information* (Ithaca: Cornell University Press, 1988) and *Literary Culture in a World Transformed: A Future for the Humanities* (Ithaca: Cornell University Press, 2001).

4 William H. Gass, *Fiction and the Figures of Life* (New York: Knopf, 1970). In an example of the combination of randomness and unexpected ordering that characterizes the multi-layered undermining of fiction/reality distinctions which this term denotes, and indeed their seemingly inherent tendency to multiply beyond the contexts of their initial deployment, Gass was born in the small North Dakota town of Fargo, whose name was borrowed by the Coen brothers for the title of their metafictional film *Fargo* (1996), which begins with the statement “THIS IS A TRUE STORY” and ends with the standard disclaimer that all its characters are completely fictional. None of the film was shot in Fargo, despite occasional incidental references in the narrative that suggest that this is where its events take place.

5 Robert Scholes, “Metafiction,” *Iowa Review* 1 (Fall 1970).

6 See Raymond Federmann, *Surfiction. Fiction Today and Tomorrow* (Athens, OH: Swallow Press, 1973); Robert Alter, *Partial Magic. The Novel as a Self-Conscious Genre* (Berkeley: University of California Press, 1975); Bruce Kawin, *The Mind of the Novel. Reflexive Fiction and the Ineffable* (Princeton: Princeton University Press, 1982).

7 Centre de recherche inter-langues angevin (CRILA), *Métatextualité et métafiction: théorie et analyses* (Rennes: Presses Universitaires de Rennes, 2002).

8 Patricia Waugh, *Metafiction. The Theory and Practice of Self-Conscious Fiction* (London: Routledge, 1984).

9 Jonathan Culler, “Towards a Theory of Non-Genre Literature,” in *Theory of the Novel. A Historical Approach*, ed.Michael McKeon (Baltimore: Johns Hopkins University Press, 1975), 52.

10 Waugh, *Metafiction,* 117.

11 SeeLinda Hutcheon, *A Poetics of Postmodernism. History, Theory, Fiction* (London: Routledge, 1988), 105–23.I would not want to give the impression that such critical and theoretical writing lacks interdisciplinary awareness: Hutcheon in particular employs a broad range of contemporary cultural theory and sensitivity to political and social issues in situating metafiction, among other facets of modern literary writing, within the context of postmodernism. My point is that, for whatever reasons, fiction, and with it metafiction, remain effectively reduced to literature in such discourses, rather than constituting a much larger set of processes that becomes particularly legible in literary contexts.

12 See, for examples, Bernd Engler and Kurt Müller, eds., *Historiographic Metafiction in Modern American and Canadian Literature* (Paderborn: Schöningh, 1994); Ulf Cronquist, *Erotographic Metaficion: aesthetic strategies and ethical statements in John Hawkes's 'Sex Trilogy'* (Göteborg: Acta Universitatis Gothoburgensis, 2000); Christina Kotte, *Ethical Dimensions in British Historiographic Metafiction: Julian Barnes, Graham Swift, Penelope Lively.* (Trier: WVT, 2001).

13 Hayden White's paradigm of “metahistory,” influential for Hutcheon, may seem to offer the prospect of an extension of the implications of metafictionality into realms beyond literature as traditionally conceived, namely historical consciousness and narrative. However, I would suggest (though there is not the scope to develop such an argument in detail here) that while such an extension is to a degree implicit in his undermining of conventional separations of fact from fiction, reality and representation (in parallel with various structuralist and poststructuralist thinkers), his development of a “poetics of history” is ultimately more focused on the application of traditional categories of literary criticism to historical narrative than with the role of specifically metafictional thinking as something which, though arising within literature, implies and fosters the breaking down of such literary-critical categories and approaches. His is another, parallel and related particular or restricted conception of metafiction, though even in this it offers further indications of its potential generalization.

14 Mark Currie, ed., *Metafiction* (London: Longman, 1995), 2.

15 This combination of wider potential and disciplinary restriction may be considered parallel to, if not overlapping with the state of affairs identified by Bruce Clarke in narratological theory, which he sees as “well en route” to a more general systems theory, but held back by “a common stock of humanist tropes.” Bruce Clarke, *Posthuman Metamorphoses. Narrative and Systems* (New York: Fordham University Press, 2008), 33. A systems-theoretical approach of the kind Clarke uses to expose the interrelation of narratological and biological metamorphosis would form a further excellent basis for thinking the relation between metafiction and ecology, though one I unfortunately can only allude to here in passing.

16 Erich Hörl, “Die technologische Bedingung. Zur Einführung,” in *Die technologische Bedingung. Beiträge zur Beschreibung der technischen Welt*, ed. Erich Hörl (Berlin: Suhrkamp, 2011),11. The dilemma faced by the Anglophone reader, in deciding whether to treat the German *Sinn* as “meaning” or “sense,” is effectively reflected in this shift itself, which sees the former dominance of hermeneutic paradigms giving way to a post-hermeneutic emphasis on the sensory and perceptual modes and effects of communication.

17 Friedrich Kittler, “Code, or, How You Can Write Something Differently,” in *Software Studies. A Lexicon,* ed. Matthew Fuller (Cambridge, MA: MIT Press, 2008), 45.

18 Clarke, *Posthuman Metamorphoses,* 114.

19 Gilles Deleuze and Félix Guattari, *A Thousand Plateaus. Capitalism and Schizophrenia,* trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 5.

20 Clarke, *Posthuman Metamorphoses*, 35.

21 Jorge Luis Borges, “The Circular Ruins,” trans. James E. Irby, in *Labyrinths. Selected Stories and Other Writings* (New York: New Directions, 1964).

22 Thus in its seeming transcendence of its own conventional limitations, this generalizing tendency of (literary) metafiction engenders a kind of radical immanence. Numerous parallel gestures might be identified in modern philosophical thought—perhaps the most stringent and committed in the non-philosophy of François Laruelle, which, under a certain, if largely and strategically negated, poststructuralist influence, attempts to reject every philosophical “decision” as the establishment or reinforcing of philosophy's privileged separation from the Real, recognising itself as nothing more nor less than an immanent aspect of reality. See François Laruelle, *Principles of Non-Philosophy,* trans. Anthony Paul Smith and Nicola Rubczak (London: Bloomsbury, 2013); John Mullarkey and Anthony Paul Smith, “Introduction: The Non-Philosophical Inversion: Laruelle's Knowledge Without Domination,” in *Non-Philosophy: An Introduction*, ed. John Mullarkey and Anthony Paul Smith, (Edinburgh: Edinburgh University Press, 2012).

23 Whitehead, *Adventures* *of Ideas,* 169–70.

24 Agustin Rayo and Gabriel Uzquiano, “Introduction,” in *Absolute Generality*, ed. Agustin Rayo and Gabriel Uzquiano(Oxford: Oxford University Press, 2006), 1.

25 The shift in dominance from the first to the second can be said to be the basis for the emergence of what Lyotard identifies as a determining metanarrative of modernity, “humanity as the hero of liberty.” See Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge,* trans. Geoffrey Bennington and Brian Massumi (Manchester: Manchester University Press, 1984), 31.

26 François Neyrat, “Elements for an Ecology of Separation,” this volume, x.

27 Jakob von Uexküll, “A Stroll Through the Worlds of Animals and Men. A Picture Book of Invisible Worlds,” in *Instinctive Behavior. The Development of a Modern Concept,* trans. and ed. Claire Schiller (New York: International Universities Press, 1957), 14.

28 Brett Buchanan, *Onto-Ethologies. The Animal Environments of Uexküll, Heidegger, Merleau-Ponty, and Deleuze* (Albany: State University of New York Press, 2008), 23.

29 Ibid., 25–6.

30 Giorgio Agamben, *The Open*. *Man and Animal,* trans. Kevin Attell (Stanford: Stanford University Press, 2003), 41–2.

31 Uexküll, “A Stroll Through the Worlds,” 76–80.

32 Bateson, *Steps to an Ecology of Mind*, 1.

33 Félix Guattari, *The Three Ecologies,* trans. Ian Pindar and Paul Sutton (London: Athlone, 2000), 41; 52.

34 James Lovelock and Lynn Margulis, “Atmospheric Homeostasis by and for the Biosphere: The Gaia Hypothesis,” *Tellus* XXVI, no. 1-2 (1974).

35 Hörl, “Die technologische Bedingung,” 25 (my translation).

36 Cf. Erich Hörl, “A Thousand Ecologies: The Process of Cyberneticization and General Ecology,” in *The Whole Earth: California and the Disappearance of the Outside,* ed. Diedrich Diederichsen and Anselm Franke (Berlin: Sternberg Press, 2013), 127: “these unnatural ecologies [...] have begun not only to bring about the far-reaching ecologization of sense-culture, but are also furthering the ecologization of the critical theory which accounts for them, and necessitating a general ecologization of thought.”

37 “If one thing has become clear, it is that the new sense of sense […] involves a radically different experience and therefore a renegotiation of the meaning of relation and reference as such.” Erich Hörl, “Other Beginnings of Participative Sense Culture: Wild Media, Speculative Ecologies, Transgressions of the Cybernetic Hypothesis” (lecture given at the symposium “Reclaiming Participation: Technology, Mediation, Collectivity,” Universität Konstanz, May 8, 2014).

38 Humberto Maturana and Francisco Varela, *The Tree of Knowledge. The Biological Roots of Human Understanding* (Boston: Shambala, 1998).

39 The apparent circularity of this statement (worldmaking processes are fictionalizing processes because fictionalizing processes are worldmaking processes) is not intended to obfuscate, but ultimately to point to a single underlying type of process, in a sense a general *poiesis,* which manifests in various forms of imaginary and concrete, technical and psychical production, these being distinguished largely according to intellectual habit and cultural convention.

40 We might think of this as a placing of “fiction” and its terminological variants under erasure, or a returning of fiction to its etymological roots in the Latin *fingere,* meaning to form, mould, construct.

41 Nelson Goodman, *Ways of Worldmaking* (Indianapolis: Hackett, 1978).

42 See ibid., 7-17 for this account in full.

43 Matthew Fuller, *Media Ecologies. Materialist Energies in Art and Technoculture* (Cambridge, MA: MIT Press, 2007).

44 Goodman, *Ways of Worldmaking,* 20.

45 David Hume, *A Treatise of Human Nature*, (1738; Oxford: Clarendon, 1896).

46 Gilles Deleuze, *Empiricism and Subjectivity. An Essay on Hume's Theory of Human Nature,* trans. Constantin V. Boundas (New York: Columbia University Press, 2001), 26.

47 Hume, *Treatise of Human Nature*, 17. Cf. Deleuze, *Empiricism and Subjectivity*, 25: sometimes an idea “becomes capable of representing all these ideas with which, through resemblance, it is associated (general idea).”

48 Deleuze, *Empiricism and Subjectivity,* 25.

49 See Jorge Luis Borges, “Pierre Menard, Author of the *Quixote*,” in *Labyrinths. Selected Stories and Other Writings* (New York: New Directions, 1964).

50 Goodman, *Ways of Worldmaking,* 107.

51 Steven Shaviro, *Connected, or What it Means to Live in the Network Society* (Minneapolis: University of Minnesota Press, 2003), 3–5.

52 Tiqqun, “The Cybernetic Hypothesis,” available online: http://cybernet.jottit.com (accessed May 18, 2014).

53 Michael Hardt and Antonio Negri, *Empire* (Cambridge, MA: Harvard, 2000).

54 Guattari, *Three Ecologies,* 47 and *passim.*

55 Michel Serres, *Malfeasance,* trans. Anne-Marie Feenberg-Dibon(Stanford: Stanford University Press, 2011),60.

56 Adrian Lahoud, “Floating Bodies,” in *Forensis. The Architecture of Public Truth,* ed.Forensic Architecture(Berlin: Sternberg/Forensic Architecture, 2014), 496–7.

57 Ana Teixeiro Pinto, “The Whole Earth: In Conversation with Diedrich Diederichsen and Anselm Franke,” *e-flux*,no. 45 (May 2013).

58 Stewart Brand, ed., *Whole Earth Catalog* (Fall 1968), 2.

59 Forensic Architecture, ed., *Forensis. The Architecture of Public Truth.* (Berlin: Sternberg/Forensic Architecture, 2014).

60 Eyal Weizman, “Matter after Memory,” in *Forensis. The Architecture of Public Truth,* ed.Forensic Architecture(Berlin: Sternberg/Forensic Architecture, 2014), 367. Seth Denizen, “Three Holes: In the Geological Present,” in *Architecture in the Anthropocene. Encounters Among Design, Deep Time, Science and Philosophy*, ed. Etienne Turpin (Ann Arbor: Open Humanities Press, 2013).

61 Paulo Tavares, “Nonhuman Rights,” in *Forensis. The Architecture of Public Truth,* ed.Forensic Architecture(Berlin: Sternberg/Forensic Architecture, 2014).

62 Christopher Stone, *Should Trees Have Standing? Law, Morality, and the Environment,* 3rd edition (Oxford: Oxford University Press, 2010), 1–2.

63 Ibid., 3.

64 *Ley Corta de Derechos de la Madre Tierra,* Bolivian Plurinational Legislative Assembly Law 071, Article 3 (“Madre Tierra”).

65 Hayden White, *Metahistory: The Historical Imagination in Nineteenth-Century Europe* (Baltimore: Johns Hopkins University Press, 1975).Cf. note 11 above.

66 If the language here is reminiscent of Lyotard's *petit recits* in contrast to the metanarratives of modernity, which each have their own metafictionalizing (worldmaking) structures, this should perhaps serve as a further indicator of the precarious path the thinking of general ecology must take, and of the importance of its cultivation of residual forms of particularity (and by implication, difference, dissensus). See Lyotard, *Postmodern Condition.* If there is an easy slippage from a minor generalizing tendency to a major, absolute or general universalizing category, it is perhaps reflected in the proximity of the senses of *meta-* in metafiction (reflexive, about, “working upon”) and metanarrative (overarching, dominating).

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