

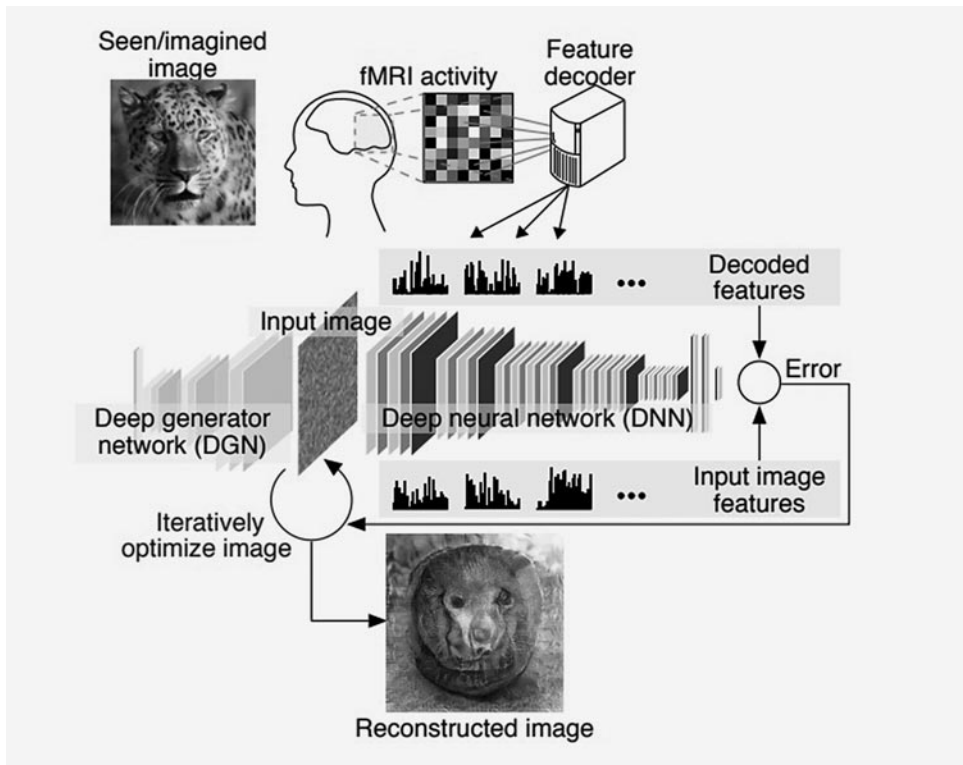
Pierre Huyghe. *Umwelt*,
2018. Installation view,
Pierre Huyghe: Umwelt,
Serpentine Gallery, London
(October 3, 2018–February
10, 2019). Photograph ©
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On Pierre Huyghe's *Umwelt*anschauung: Art, Ecosystems Aesthetics, and General Ecology

LUKE SKREBOWSKI

Pierre Huyghe's *Umwelt* (Serpentine Gallery, London, October 3, 2018–February 10, 2019) develops the ecosystemic turn that the artist announced in 2012 with the production of *Untilled* at Documenta 13, a turn that was prepared by his rejection of predetermined exhibition “choreography” in *The Host and the Cloud* (2009–2010) and which he developed subsequently in *After A Life Ahead* in 2017 at Skulptur Projekte Münster.¹ In this respect, Huyghe's career exemplifies the wider “ecologization” of artistic practice outlined by Eric de Bruyn in his introduction. In what follows I undertake a detailed reading of *Umwelt* that tracks its artistic genealogy and its relation to work by other contemporary artists in the context of wider debates about the emergence of a new theoretical paradigm of general ecology.

Huyghe has claimed that *Umwelt* was motivated in part by a desire to revisit his earlier-career engagement with the moving image in light of the reorientation of his practice effected by his supervening ecosystems works. In particular, he was concerned to explore the possibility for imagery to “react,” “change,” and “self-generate,” escaping the simple, looping linearity of traditional gallery-installed moving-image work in the context of a gallery space rendered porous (deregulating the sealed modernist white cube).² Huyghe's dynamization of the moving image in *Umwelt* was inspired by the work of a group of Japanese computational neuroscientists renowned for using artificial intelligence (AI) to reconstruct images from human brain activity.³ The Kyoto-based scientists—Guohua Shen, Tomoyasu Horikawa, Kei Majima, and Yukiyasu Kamitani—have apparently discovered a way to “read the mind” of individuals by scanning their brain activity and picturing the results using AI technology (specifically, they claim to have discovered a way to reconstruct an object pictured in the mind from scans of the experimental subject's brainwave data by using deep neural networks to produce a synthetic photographic image of a given mental image, constructed from elements montaged from a huge photographic reference database). The images that result from this process



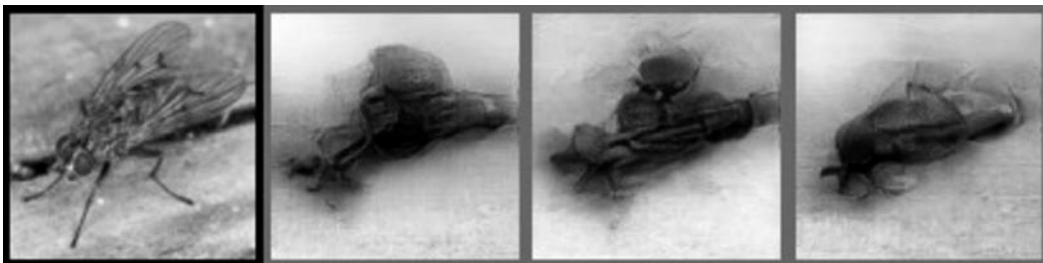
Above: Guohua Shen, Tomoyasu Horikawa, Kei Majima, and Yukiyasu Kamitani. Deep image reconstruction, process diagram, 2017. © Kamitani Lab/Kyoto University and ATR.

Opposite: Guohua Shen, Tomoyasu Horikawa, Kei Majima, and Yukiyasu Kamitani. Natural image reconstructions obtained with the Deep Generator Network (DGN), 2017. © Kamitani Lab/Kyoto University and ATR.

are, however, heavily digitally artifacted and often indistinct. While the process can render plausible AI-generated “mind readings” of mental images of simple letterforms, more complex mental images yield much less strong results with, for example, a leopard’s head coming out much less recognizably.

Huyghe arranged a collaboration with the Japanese researchers for *Umwelt* under the auspices of the Kamitani Lab that Kamitani heads at Kyoto University. The artist began the collaborative exhibition-making process by selecting a small set of images and descriptions of images (20–30), each of which corresponds to one of three taxa—animal, human, or machine.⁴ (The images and descriptions have not been made public, and their content remains a closely guarded secret). Next, Huyghe passed the images and descriptions to his scientific collaborators. The researchers set up an experiment wherein Huyghe’s images and descriptions were given to one of the lab team members to memorize. That individual was then connected to a functional magnetic resonance imaging (fMRI) scanner and asked to picture the images and descriptions of images from memory. As they did so, their brainwave data was scanned, and this data was then interpreted and reconstructed as images by a deep neural network drawing on a huge image database.

Rather than having the neural network finally settle on a single, optimized output image (as in the original experiments), Huyghe asked the scientists to provide him with thousands of variant images generated by the deep neural network for each source image or image description. Finally, Huyghe chose five of his favorite results sets (generated from five of the original images/image descriptions) to



display on five large, floor-mounted LED walls distributed throughout *UUmwelt* at the Serpentine. The thousands of images in each results set are shown in carousels that flick through at a high frame rate. On occasion, however, the carousel pauses in response to an unknown environmental trigger: the image flow rate is controlled by specific conditions within the gallery via interacting sensors that detect light, temperature, and humidity levels. In this way variables that traditionally are carefully controlled and optimized in the gallery environment are here mobilized and made operative for the elaboration (rather than the preservation) of the work, continuing the emphasis on the interdependency of biotic and abiotic agents that Huyghe inaugurated in *After ALife Ahead* (in contrast to the merely interconnected elements within *Untilled*). The viewer's ability to scrutinize or even see any particular image in any detail is thereby rendered contingent and provisional, disrupting the traditional modality and agency of the gallery viewer. (A long-standing project of Huyghe's has been to challenge the residual influence of spectatorship within art that survived both minimalism's and analytic conceptual art's challenge to the ocularcentrism of formalist modernism.)⁵

While the five AI-generated image sets form visual foci for *UUmwelt*, the other elements of the exhibition are no less integral. These include a community of *Calliphora vomitoria* (blue bottle flies) that are born, grow, live, and die within the exhibition space, emerging from hidden hatcherics in the gallery's floor vents. (Huyghe conceives of the flies as analogous to the exhibition's human visitors, who also "exist and then cease to exist within the exhibition.")⁶ Huyghe also introduces several environmental visual, auditory, and olfactory prompts (in addition to the screens) that are designed to impact human and fly behavior (principally in terms of attraction and/or repulsion). These prompts include revealed skylights and the projection of warm light in the gallery's central dome; distinctive computer-generated sounds broadcast at various points in the gallery (consisting of AI transcodings of brain-wave recordings); and artificial scents (corresponding to the taxa of "human," "animal," or "machine"). Finally, Huyghe employs a previously inaugurated and regularly repeated gesture in his practice: The gallery walls are sanded back with a rotary sander at certain points, revealing the layers of paint that have built up on the gallery walls over time and that stand as indicators, for Huyghe, of "past exhibition conditions that were only visible for a short period of time."⁷ The sanding produces piles of dust that are left on the gallery floor to be moved about over the duration of the exhibition by people's feet and tramped out of the gallery's doors on the soles of their shoes.

As such, *Umwelt* draws together an assemblage of elements that evoke a highly diverse, even apparently jarring, artistic genealogy, including Stan VanDerBeek and John Whitney’s “Cybernetic Cinema” of the 1960s (as theorized by Gene Youngblood in *Expanded Cinema*); Allan Kaprow’s John Cage–inspired happenings; Bruce Nauman’s *Flour Arrangements* (1967); Michael Asher’s light- and space-inflected *Untitled* (1969), realized at the La Jolla Museum of Art, and his *Untitled* (1973), realized at the Galleria Tosselli in Milan (substituting sanding for sandblasting); as well as Hans Haacke’s *Photoelectric Viewer-Programmed Coordinate System* (1968) and *Ant Co-op* (1969)—to name only some of the most obvious historical reference points. Overall, however, when considered as an *ensemble*, it is *Umwelt*’s character as a temporary, constantly varying, ecosystem that offers the key to thinking its artistic genealogy, one that also locates Huyghe’s recent work’s character in relation to the general ecological turn raised by de Bruyn’s prompt.

As Huyghe reflects, the unpredictable interactions and interdependencies among human beings, animals, and machines within *Umwelt* produces an emergent, unplanned dynamic to the exhibition:

You set conditions, but you cannot define the outcome, how a given entity will interact with another. . . . [T]here is a set of elements, the way they collide, confront and respond to each other is unpredictable. . . . I don’t want to exhibit something to someone, but rather the reverse: to exhibit someone to something.⁸

How, then, to construe the nature of the “something” being exhibited to us in *Umwelt*? While much could be said about Huyghe’s operationalization of the climatic conditions of the gallery space and his return to the moving image, I read both major aspects of the work as a subset of the wider “question concerning technology” that the artist addresses here and that he first threw sharply into relief with *After ALife Ahead*.⁹ Where *After ALife Ahead* employed augmented reality to broach the computational character of contemporary culture, in *Umwelt* Huyghe offers a deeper reckoning with pervasive computer technology by way of his focus on the conjunction of AI and neurobiology. With the partial exception of the flies, which serve as active agents in the ecosystem but also, unavoidably, as memento mori, *Umwelt* purges allegorical elements from the work (elements that were more manifest in *Untilled* and *After ALife Ahead*), substituting for them the brute techno-facticity of the rapidly cycling, AI-generated imagery shown on the sort of LED panels that are normally reserved for out-of-home advertising imagery, corporate roadshows, and the telecasting of live sports events and concerts in stadia and arenas.

Huyghe’s use of AI constitutes a speculative proposal to overcome

the differentiation of individual species' *Umwelten*. As the Serpentine exhibition's curator, Rebecca Lewin, explains, "The addition of the extra U on the front of *umwelt*—*UUmwelt*—in the title is to . . . nod towards the idea of bypassing that process [the differentiation of experience into species-specific *Umwelten*]—an un-*umwelt*. The possibility of a connectivity or a communication that can exist between entities, between human and machine for example."¹⁰ In this Huyghe goes beyond his earlier juxtaposition of distinct species—and thus their distinct *Umwelten*—within the *mise-en-scène* of the exhibition format rendered self-reflexive (installation-as-exhibition/exhibition-as-installation). In *UUmwelt* Huyghe stages an experimental, and still self-consciously primitive, attempt to have the machine grasp and reproduce one of the functional components making up the human

Umwelt (i.e., visual perception). The manifest horizon of such experimentation is the future AI-led ability to interpret all of the functional components of our subjectivity, and thus our *Umwelt*, computationally (with all of the obvious risks of commodification attendant on any such development).

What Huyghe actually puts on show at the Serpentine, though, is our current inability—or, at the very best, partial ability—to reduplicate human visual perception. And he does so by staging the grotesque failure of this project: the monstrous images that result from it are only occasionally legible as anything meaningful and largely consist of distorted, heavily artifacted digital textures in implausible conjunctions. (The failure of this process of cognitive reduplication may also be semantically acknowledged by Huyghe in the truncation of the prefix *un-* in the titling of *UUmwelt*.) The machine does not accurately trace images off brainwave data but rather probabilistically extrapolates from sketchily grasped fMRI cues. What results from Huyghe's single-round game of cognitive *cadavre exquis* between human and machine is grotesquely "surrealistic" imagery. And this imagery induces queasy feelings in its audience because we struggle to reconstruct meaningful reference points from the computationally generated photomontages that emanate from the black box of the



Pierre Huyghe. *UUmwelt*, 2018. Installation view, *Pierre Huyghe: UUmwelt*, Serpentine Gallery, London (October 3, 2018–February 10, 2019). Photograph © Ola Rindal. Courtesy the artist and Serpentine Galleries.



Pierre Huyghe. *UUmwelt*, 2018. "Mental Image Trio,"
Pierre Huyghe: UUmwelt,
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Kamitani Lab's deep neural networks. As a result, we grasp at the resulting images impressionistically and are subjected to the psychological phenomenon of pareidolia (mirroring that "experienced" by the neural network that produced the images in the first place).

In *UUmwelt* Huyghe employs a conjunction of neurobiology and artificial intelligence (however currently primitive and "failed" in its implementation) to artificially reproduce human visual perception while simultaneously insisting that human presence is as incidental to the exhibition as the flies that live and die throughout its duration. In so doing he refuses any absolute distinction between the social and the natural at the same time that he refuses the centrality of human experience to the being of the work. Here "relationships" remain "out of the work" in the expanded field. But, contra Robert Morris, they are no longer principally a function of the "viewer's field of vision," which is here rendered incidental rather than central. The flies are as significant here as the human beings to what Rottmann describes as the work's *agencement*. With Bruno Latour (by way of Alfred North Whitehead and Michel Serres), Huyghe's work rejects any humanism predicated on an asymmetrical relation between subjects and objects and with it the "modern constitution" and its ontological distinction between nature and society (and consequently between the natural and the social sciences as different branches of inquiry dedicated to distinct epistemological domains). A question thus obtains as to whether Huyghe, by extension, also rejects the interrelated modern project of critical unmasking and denunciation—a task that Latour glosses as misleadingly seeking to "reveal the true calculations underlying the false consciousness, or the true interests underlying the false calculations."¹¹ Is Huyghe's recent artistic practice thus "post-critical" in the well-established sense that Hal Foster has imparted to the term, specifically developing a critique of Latour?¹²

If Huyghe's artistic work initially involved an immanent critique of the exhibition form and media spectacle (conceived in relation to Guy Debord), then his recent ecosystems work seems to move onto discursive terrain associated with Latour, terrain that has provoked a methodological crisis for art history understood as a humanistic discipline (with the result that such work has been defensively refused in many quarters). Yet Huyghe's recent work begins to think the collapse of the distinction between the natural and the social with, but

also against, Latour (and his rightist politics) in ways that function instructively for art history. In this sense his work is particularly suggestive for the necessary work of revisiting the discipline's methodological presuppositions and frameworks, as de Bruyn urges. Notwithstanding his mobilization of multiple actants (and the speculative proposal to overcome aspects of the differentiation of their individual *Umwelten*), Huyghe's work does not seek to construct an artistic version of an actor-network, if such a project is indeed realizable.¹³ Rather, Huyghe's work can be more productively understood to participate (as indeed does Latour's own more recent work) in a *general* ecological turn in the humanities that is consequent on the refusal of the (modern) separation between the *Naturwissenschaften* and the *Geisteswissenschaften* (and for which work undertaken in *Medienwissenschaft* is an essential reference point).

Among the many thinkers working on the ecological turn, the German media theorist Erich Hörl argues distinctively that the "onto-epistemological movement of ecologization" has to be understood as a moment in "the history of rationality itself," leading to "the birth of an ecological rationality" and a concomitant transition—indeed, paradigm shift—to an "age of ecology."¹⁴ For Hörl, the work of Niklas Luhmann (contra Jürgen Habermas) is epochal, while Latour "merely reiterates the caesura in the history of rationality which Luhmann had already attested."¹⁵ Hörl thus comes down on Luhmann's side of the celebrated Habermas/Luhmann debate over the theoretical and ethical implications of systems theory in the 1970s (a debate that extended over the subsequent duration of both thinkers' careers).

Hörl's notion of ecological rationality can thus be understood, at one level, as responding to the legacy of the first generation of the Frankfurt School and specifically the problematic of "reason after its eclipse," to borrow a phrase from Martin Jay's work on Habermas. Jay frames Habermas's project as developing out of first-generation critical theory's failure to develop an alternative, emphatic and objective, conception of reason that could be set against instrumental/technological rationality. According to Jay, the aesthetic stood as an alternative "placeholder" in Adorno's work that Habermas rejected.¹⁶ The first-generation Frankfurt School's conception of aesthetic reason here needs to be described more precisely, however, going beyond Jay's characterization of it as merely a "placeholder" by way of Jay Bernstein's concise explanation of aesthetic reason/rationality as a "split off part of reason itself." Aesthetic reason is no mere placeholder, Bernstein argues, but rather an integral part of any emphatic conception of reason that might contest reason's instrumentalization.¹⁷ Yet, one might reasonably object, Huyghe's recent work, rather than seeking to engage the problematic of aesthetic reason, seems to derive precisely



Pierre Huyghe. *Umwelt*, 2018. "Mental Image Trio," Pierre Huyghe: *Umwelt*, Serpentine Gallery, London (October 3, 2018–February 10, 2019). © Kamitani Lab/Kyoto University and ATR. Courtesy the artist and Serpentine Galleries.

from the onto-epistemological “ecological” break inaugurated, on Hörl’s account, by Luhmann (and thus against the Frankfurt School tradition extended by Habermas) given the way in which the artist’s professed interest in “self-organizing” biotic and abiotic agents takes up the concept of autopoiesis from second-order cybernetics that was central to Luhmann’s methodological innovations in sociology contra Habermas.

How then to characterize the relationship between ecological rationality and aesthetic rationality in Huyghe’s recent ecosystems work? Answering this question requires us to locate Huyghe’s work more precisely in relation to the general ecological turn. Additionally, while Huyghe exemplifies this orientation toward general ecology, our broader aim here is to go beyond considerations of how any one artist relates to the ecological paradigm and consider how particular practices reveal wider shifts that qualify our understanding of contemporary art (for which particular artists and works serve as models or exemplars). In this sense the broader goal is to explore particular artistic problematics and conjunctures in contemporary art in light of a reconsideration of their historical genealogies in order to find new ways to characterize the development of art in the post-conceptual expanded field that better capture these current developments—developments for which well-established art-historical categories such as (post)medium, institutional critique, and site-specificity, for example, no longer seem fully adequate (no matter their “generation”).¹⁸

Within this broad conjuncture, Huyghe’s work can be distinguished from the attempt at an ecological expansion of institutional critique (eco-institutional critique) after context art as developed in the work of Nils Norman and Tue Greenfort, among others, and theorized in a pathbreaking manner by T.J. Demos.¹⁹ Elsewhere I have argued, in dialogue with Demos’s work, that Greenfort’s eco-institutional critique constitutes an important attempt to expand the critique of institutions in ecological terms; namely, through recognition of the fact that the art system can no longer be bracketed from those other systems in which it is embedded and thus, for example, recognizing art’s own environmental footprint.²⁰ In Greenfort’s eco-institutional projects the limitations of instrumental/technological rationality are clearly demonstrated, but the potential to challenge the social domination encoded within that rationality, by contesting

the repressed claims of sensuousness in recognition of the aesthetic character of reason, for example, is not seriously entertained. Ultimately, therefore, such work exhibits a skepticism about the power of art to meaningfully challenge the domination of technological rationality, against its own stated ambitions, which is a corollary of its “realism,” or anti-utopianism. Does Huyghe’s recent “ecological” work suggest alternative, more fruitful possibilities?

By opening on to the larger concept of general ecology, Huyghe avoids the limitations inherent to a more narrowly conceived environmentalist ecopolitics, as well as the endgame problems attending institutional critique and a notion of site-specificity that has been expanded to a multinodal point at which the very specificity at stake in the term begins to collapse. Nonetheless, Huyghe’s recent practice has for some writers, such as Sven Lütticken, opened itself to a different charge: “systems aestheticism.” Lütticken describes the artist’s work this way when discussing *Influants*, Huyghe’s 2011 exhibition at Esther Schipper in Berlin.²¹ Huyghe’s recent ecological installations are heavily indebted to the historical work of Hans Haacke, specifically his environmental systems works of the 1970s, which Haacke elaborated as part of a broader systems aesthetic articulated in close dialogue with Jack Burnham. What might the charge of “systems aestheticism” mean in the context of Huyghe’s work? Since Lütticken does not explicitly characterize it, we must infer its specific import in his argument.²² Lütticken justly notes that Burnham’s systems aesthetics emerged as a repudiation of formalist modernism’s commitment to an “idealist duration of traditional art and its appreciation” (following Michael Fried’s extension of Clement Greenberg) by way of a sustained engagement with real-time systems, both natural and technological.²³ In the course of his argument Lütticken traces systems aesthetics’ critico-historical trajectory, noting its significance within the post-formalist debates of the 1960s but also its rapid descent into apparent obsolescence from the 1970s onward, whereupon Burnham’s work was increasingly “rejected by the left for its perceived links to the cybernetic military complex and when the use of MIT-facilitated high tech in art came to be viewed with increasing suspicion.”²⁴ Drawing on Caroline A. Jones’s and my own previous assessments of the legacy of Burnham’s work, Lütticken also notes the renewed interest in Burnham’s thought from the 1990s onward (intensifying up to the present), when it came to again seem prescient in light of sociotechnical developments (most notably the widescale adoption of the internet). In the post-1990s context, however, Lütticken claims that “the focus was now less on the concept of the system, which was turned into a theoretical fetish during the late 1960s, and more on the realities of interdependence in the global

economico-ecological system.”²⁵ The crucial shift is that “later practices regard the natural and the social as homologous and coextensive. We are part of the ecosystem, which we have transformed almost beyond recognition.”²⁶

On Lütticken’s reading, then, a systems aestheticism might imply a naive (or ironic), “formalist,” and fetishistic representation of the original look (and “function”) of 1960s systems aesthetics practice (as much 1990s neoconceptualism ironically reproduced analytic conceptual art’s “look”). Alternatively, it might mean a kind of facile version of the renewed, post-1990s version of the practice that treats the condition of ecological interdependency, and the specific ethical stakes of human implication within it, in an unserious and/or unsustainable sense. Given Lütticken’s claim that, “at his worst,” Huyghe’s systems aestheticism functions as a “blue-chip funhouse display with ‘big ideas’ justification,” the latter of the two possibilities seems to be the one intended (although Lütticken is not thereby dismissing Huyghe’s practice in toto but rather putting critical pressure on aspects of it).²⁷ Lütticken is correct—but only partially so—to insist that “Burnham, and Haacke in his wake, followed Ludwig von Bertalanffy in regarding systems theory as the master discipline and cybernetics as one specific if important form of ‘general systems theory’ (dealing with communication).”²⁸ This is persuasive in terms of the “systems” aspect of Burnham and Haacke’s systems aesthetics but misses the specifically *aesthetic* aspect of Burnham’s theoretical project and thus its distinctive (albeit theoretically problematic) syncretism.²⁹ In his systems aesthetics Burnham misunderstood Herbert Marcuse’s speculative, neo-Schillerian claims about the potential sublation of technological rationality by aesthetic rationality, mistakenly arguing for the possibility of “synthesis” between incompatible rationalities under actually existing postwar capitalism. Burnham thus deradicalized, whether wittingly or not, Marcuse’s political claims and misunderstood his aesthetic ones. He argued for a process of artistically led social reform, rather than revolution, and thought this might be achieved by a technology based on aesthetic values.

Can the radicality, if not the specifics, of such a challenge to technological rationality be recovered today? If so, how should we conceptualize and pursue such a line of inquiry? Here the crucial theoretical development since the late 1960s lies in moving from thinking the character of natural, social, and technical systems as *analogous* (as we find exemplified in Haacke’s work) to an understanding of natural, social, and technical systems as *homologous* and *coextensive* (as we find exemplified in Huyghe’s work), a changed situation that has been occasioned by the increasing power of technology to reach directly into life in ways that were not previously

possible via, for example, developments in computational neurobiology and artificial intelligence, both disciplines that Huyghe engages in *Umwelt*.

For Hörl (following the work of Jean-Luc Nancy), the fundamental implication of the emergence of the new ecological paradigm is the appearance of an ecology beyond or without nature—in contrast to the traditional association of ecology with nature—that bears witness to an *inversion* of the relation between *technics* and *phusis* as construed in the Western philosophical tradition since Aristotle.³⁰ Here then the teleological character of rationality is held to collapse and with it technics' adherence to “an instrumental logic of means-ends relations” producing a technoecological condition in which “nature's essential technicity” comes to be recognized alongside technology's lack of determinate ends.³¹ The corollary of this “non-modern deterritorialization of the relationship between technics and nature,” is, for Hörl, a collapse of the “Occidental order of teleology,” leading to a pluralized concept of ecology within which “rationality and relationality” can be, and have to be, rethought.³²

The ultimate result of these developments, for Hörl, is the autonomization of contemporary technology and the emergence of a “technosphere,” understood, following the work of Peter Haff as a “formation and a global cooperation of natural and non-natural, human and non-human actors and forces—from all kinds of flows of energy and communication, via processes of production, to bureaucracies, states, and human beings—in which technology becomes an autonomous entity and matrix.”³³ The emergence of a technosphere is an event that is held to have world-historical consequences (at a geological evolutionary level) with profound implications for human subjectivity, agency, and biological survival. For Haff, “Humans have become entrained within a matrix of technology and are now borne along by a supervening dynamics from which they cannot simultaneously escape and survive.”³⁴ In this scenario human beings have become analogous to the moss in Haacke's *Transplanted Moss Supported in an Artificial Climate* (1970), perhaps the most advanced of Haacke's biological systems works and one in which the inversion of *technics* and *phusis* is broached (but in which the notion of “transplantation” and “artificial” still speak to a residual “modernism” in the Latourian sense).

Notwithstanding the self-avowed technological determinism of such an account (common to much *Medienwissenschaft* in the Kittlerian tradition), the glaring problem here, as acknowledged by Hörl himself, is “the proximity of this transformation to—if not its total derivation from—the technocapitalistic form of power, which at least runs through it, and may well have produced it in the first place.”³⁵ Thus we are returned to the problem of critique within nonmodernity. Can

there be a critical project of nonmodernity (after the real subsumption of lifeworld by system in “absolute” capitalism)? And what would be the position and role of art in such a project? According to Hörl, there is a “neocritical” project proper to the ecological turn, but it is one that is “no longer negativistic” and is instead characterized by “non-affirmative affirmation.”³⁶ Hörl develops his neocritical problematic by way of a reading of Félix Guattari’s affirmative ecosophy as articulated in *Chaosmosis* and references Guattari’s conception of the emergence of a “new aesthetic paradigm” pertinent to general ecology. Guattari constructs the character of this “new aesthetic paradigm” against the “aesthetic paradigms of modernity” and in sympathetic relation to pre-Kantian, premodern “archaic societies” within which “diverse modes of semiotisation” functioned on an equal footing and wherein, as he explains, “an individual’s psychism wasn’t organized into interiorised faculties but was connected to a range of expressive and practical registers in direct contact with social life and the outside world.”³⁷

Perhaps because, as de Bruyn notes, Hörl is not specifically concerned with works of art (even in the most general, “anthropological” sense), in his account of the emergence of a general ecology he glosses Guattari’s notion of the aesthetic paradigm as “aesthetic because it appeals primarily to affects and is no longer linguistic.”³⁸ Such a characterization does not, however, capture the way in which Guattari himself both mobilizes and elides the terms art, aesthetic, and affect in *Chaosmosis*. At one point in his argument Guattari suggests

It might . . . be better . . . to speak of a *proto-aesthetic paradigm* [and to] emphasise that we are not referring to institutionalised art . . . but to a dimension of creation in a nascent state, perpetually in advance of itself, its power of emergence subsuming the contingency and hazards of activities that bring immaterial Universes into being.³⁹

Such a definition of the aesthetic (or proto-aesthetic) paradigm in terms of an ur-creativity seeks both to reinfect the term *aesthetic* (as nonmodern) and to bracket the question of aesthetics’ relation to (institutionalized) art. Given Hörl’s investment of Guattari here, we see that a major challenge attends any attempt to mobilize Hörl’s discussion of the ecological rationality–aesthetic rationality relation within the paradigm of general ecology (as he defines it) for the discussion of modern and/or contemporary art such as Huyghe’s. (Although this challenge does resonate with Burnham’s attempt at a syncretic combination of general systems theory and Marcusean aesthetics.)⁴⁰

Returning to Lütticken’s contention about the “systems aestheticism” exhibited by Huyghe’s recent work, we can at least begin to refine our



critical terminology in light of the concise genealogy of the general ecological problematic I have outlined here. In this regard it is helpful to qualify the terms of the charge of an *ecosystems aestheticism* against which to test Huyghe's work. The challenge becomes to consider the possible critical character of Huyghe's *ecosystems aesthetics* (beyond but also incorporating nature, including human nature).⁴¹ This formulation explicitly and terminologically emphasizes the genealogical debt to Burnham's work, specifically his insistence on thinking of art in terms of relations rather than essences, but it also marks Huyghe's recent work's adherence to the ecological turn.⁴² In particular, we must confront Huyghe's Deleuzo-Guattarian "affirmationist" approach to the problem of critique with the challenge of, in Benjamin Noys's terms, "an immanent conception of negativity" set

Pierre Huyghe. *Umwelt*, 2018. Installation view, *Pierre Huyghe: Umwelt*, Serpentine Gallery, London (October 3, 2018–February 10, 2019). Photograph © Ola Rindal. Courtesy the artist and Serpentine Galleries.

against “the flat world of ontological positivity and affirmation.”⁴³ The problem for “affirmationism,” as Noys summarizes, is how it proposes to “actualise a disruptive subjectivity in the face of capitalism’s subsumption of those lines of flight on which liberation was supposed to be produced.”⁴⁴ In the face of this, as de Bruyn proposes, one approach is to explore the possibility of a renewed dialectics. Such a project, moreover, as Jason Moore argues, can proceed on the “ecological” basis of the rejection of the modernist division between nature and society but with, rather than against, Karl Marx (in contradistinction to both Latour’s and Luhmann’s politics).

Moore’s thesis is that, in what he terms the “Capitalocene,” capitalism must be recognized as engaged in a cobecoming with nature, mediated by technics, *from the very beginning* (and in this sense he refuses any technologically deterministic arguments about the autonomization of technology, whether recently or at any point). Here there is a recognition that capitalism is an endogenous rather than exogenous actor in relation to the web of life. “To follow through on Marx’s philosophy of internal relations,” Moore argues, “is to grasp historical change as co-produced by humans and the rest of nature.” He goes on to note that the “dialectical thrust of Marx’s philosophy is to see humanity/nature as a flow of flows. . . . This is a challenge to the conceit of Cartesian dualism.”⁴⁵ The rapidly flickering, ecosystemically controlled screens of Huyghe’s *Umwelt* dramatically stage the requirement to construct a radical praxis of ecological materialism, one that renounces the Cartesian distinction between *res cogitans* and *res extensa* (as primitively demonstrated by the crude “materialism” of the Kamitani Labs image sets) but in which science and technology also escape their indenture to capital (as indicated, negatively, by the images being framed by a display apparatus whose mode of address is resolutely commercial). The challenge is to imagine and produce new modes of being for humanity-in-nature/nature-in-humanity in which human and extrahuman actors coproduce historical change by way of a fundamental, postcapitalist restructuring of the forces and relations of production, respinning the contemporary web of life. On this matter, for the moment, Huyghe’s ecosystems works remain highly suggestive but predominantly diagnostic.

Notes

1. *Umwelt* was occasioned by an invitation from Hans Ulrich Obrist to realize a work for the Serpentine after the curator had seen *Untilled*. By the time Huyghe came to work on and realize the commission, he had also produced *After ALife Ahead*.

2. “Pierre Huyghe in Conversation with Hans Ulrich Obrist,” YouTube video, 1:12:33, from a conversation held at Serpentine Gallery, London, on 3 October 2018, posted by Serpentine Galleries, 17 October 2018, <https://www.youtube.com/watch?v=emYOOVRzG8E>, 31:38–31:44.

3. The researchers in question work within and across the Kamitani Laboratory, ATR Computational Neuroscience Laboratories, and Kyoto University. For a recent paper in the public domain summarizing the experimental process developed by the Kamitani Laboratory, see Guohua Shen et al., “Deep Image Reconstruction from Human Brain Activity” (preprint version), bioRxiv, 28 December 2017, <https://www.biorxiv.org/content/biorxiv/early/2017/12/30/240317.full.pdf>. For details about the Kamitani Laboratory see, <http://kamitani-lab.ist.i.kyoto-u.ac.jp/tagged/about>. For details about the ATR lab, see <https://bica.tr.jp/neuroinfo/tanaka/indexE.html>. For a popular account of the character of this work, see Catherine Clifford, “Japanese Scientists Just Used A.I. to Read Minds and It’s Amazing,” CNBC online, 8 January 2018, <https://www.cbc.com/2018/01/08/japanese-scientists-use-artificial-intelligence-to-decode-thoughts.html>.

4. This simple taxonomic schema was inspired by the collection of the closed Musée National des Arts et Traditions Populaires, formerly overseen by Claude Lévi-Strauss, that features in *The Host and the Cloud* (2009–2010).

5. Huyghe explained his aversion to conceiving his audience as “viewers” in conversation with Marie-France Rafael: “The situation isn’t such that it imposes itself on the individual, whom I don’t actually conceive of as a viewer. It consists of conditions for separations and encounters. The expectations and the preconceived modes of behavior are what I try to deregulate. An encounter should be a deviation.” Marie-France Rafael, *Pierre Huyghe: On Site* (Cologne: Walther König, 2013), 19.

6. Pierre Huyghe, *Umwelt*, exh. pamphlet (London: Serpentine Gallery, [2018]), n.p.

7. Huyghe, *Umwelt*, n.p.

8. Huyghe, *Umwelt*, n.p.

9. As discussed by Rottmann in his article elsewhere in this issue of the journal and by Dorothea von Hantelmann, “Situated Cosmo-technologies: Pierre Huyghe’s *Untilled* and *After ALife Ahead*” [2018], in press pack from Serpentine Galleries, https://www.serpentinegalleries.org/files/press-releases/full_press_pack_-_pierre_huyghe_final_0.pdf. Hantelmann’s article will also be included in the forthcoming exhibition catalogue for *Pierre Huyghe: Umwelt*.

10. Rebecca Lewin in *Pierre Huyghe, Umwelt* [2018], YouTube video, 7:18, posted by Serpentine Galleries, 30 October 2018, <https://www.youtube.com/watch?v=enx-vyWn7UU>, 06:28–06:52.

11. Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge, MA: Harvard University Press, 1993), 44.

12. See, Hal Foster, “Post-critical,” in *Bad New Days: Art, Criticism, Emergency* (London: Verso, 2015), 115–26.

13. For a consideration of actor-network theory in relation to art, see Francis Halsall, “Actor-Network Aesthetics: The Conceptual Rhymes of Bruno Latour and Contemporary Art,” in “Recomposing the Humanities—with Bruno Latour,” special issue, *New Literary History* 47, nos. 2–3 (Spring/Summer 2016): 439–61.

14. Erich Hörl, "Introduction to General Ecology: The Ecologization of Thinking," in *General Ecology: The New Ecological Paradigm*, ed. Erich Hörl and James Burton (London: Bloomsbury Academic, 2017), 6.

15. Hörl, "Introduction to General Ecology," 6.

16. Martin Jay, *Reason after Its Eclipse: On Late Critical Theory* (Madison: University of Wisconsin Press, 2016), 142–43. Axel Honneth has further tightened the screw on this critique by asking how such a reformed conception of reason could even be secured under social conditions that the first-generation thinkers of the Frankfurt School took to be characterized by deformed rationality and, furthermore, even if secured, how such a "rectified" version of rationality could then be linked to an effective praxis that would be capable of realizing it, even at the most basic individual level of alleviating personal suffering, given the prevailing social conditions of domination. See Axel Honneth, "A Social Pathology of Reason: On the Intellectual Legacy of Critical Theory," *The Cambridge Companion to Critical Theory*, ed. Fred Rush (Cambridge, UK: Cambridge University Press, 2004), 352–57.

17. "In opposition to Nietzsche and the Kantians, however, they [the first-generation Frankfurt School] denied that the rational and the sensible belonged to intrinsically incommensurable domains; on the contrary, the governing animus of Critical Theory aesthetics is to claim that sense is indeed the repressed or repudiated other of reason . . . as a repudiated and hence split off part of reason itself. For them, reason without sense is deformed and deforming (irrational in itself and thereby nihilistic), sensory matters belong intrinsically to reason. The domain of art (or, more widely, culture) is the social repository for the repressed claims of sensuousness, society's sensory/libidinal unconscious. Simultaneously, it is the social locale where the normative binding of reason and sense is forged, elaborated, and reproduced." Jay Bernstein, "'The Dead Speaking of Stones and Stars': Adorno's *Aesthetic Theory*," in *The Cambridge Companion to Critical Theory*, 141.

18. Here my analysis is largely in accord with Rottmann's, although I am more skeptical about the possibility that any meaningful notion of medium survived the historical challenge of conceptual art.

19. See, T.J. Demos, "Art after Nature," *Artforum*, April 2012, 190–97.

20. Luke Skrebowski, "After Hans Haacke: Tue Greenfort and Eco-institutional Critique," *Third Text* 120 (2013): 115–30. My argument here derives in part from this earlier article.

21. Sven Lütticken, "Abstract Habitats: Installations of Coexistence and Coevolution," *Grey Room*, no. 59 (Spring 2015): 117.

22. After the writing of my article, Lütticken published a review of *Umwelt* titled "Systemic Aestheticization." However, notwithstanding the title of the review, Lütticken still does not explore the term but rather develops his critique in a more general direction, suggesting that "what Huyghe practices is an *aestheticism of speculation* in which almost anything goes—both for better, and for worse." Sven Lütticken, "Systemic Aestheticization," *Texte zur Kunst*, no. 114 (June 2019): 170.

23. Lütticken, "Abstract Habitats," 110.

24. Lütticken, "Abstract Habitats," 114.

25. Lütticken, "Abstract Habitats," 114.

26. Lütticken, "Abstract Habitats," 114.

27. Lütticken, "Abstract Habitats," 117.

28. Lütticken, "Abstract Habitats," 112.

29. In this respect I want to reemphasize the otherwise almost entirely unacknowledged "aesthetic" aspect of Burnham's—and, by extension, Haacke's—systems aesthetics in ways that I have previously articulated in this journal (after the publication

of Lütticken's article) and as a corrective extension of my own early engagement with Burnham's work. Notwithstanding his prescience, insight, and pioneering attempt at a postformalist art theory, Burnham's later-career embrace of esotericism, as well as the tensions and inconsistencies in his thought, mean that his work remains an issue for art history as a discipline. But Burnham's eventual mysticism resulted from the persistent frustration of his syncretism. It emerged from an attempt to reconcile the tensions that marked his artistic and theoretical project, which sought to consider the relationship between art and technology by advocating the application of aesthetic rationality to technological development and thereby resist the "disenchantment of the world" effected by modernity (as diagnosed by Max Weber via Friedrich Schiller and developed by Herbert Marcuse in Burnham's era). See Luke Skrebowski, "Jack Burnham Redux: The Obsolete in Reverse?," *Grey Room*, no. 64 (Fall 2016): 88–113.

30. "The supplementation of nature by technics no longer seems to be inscribed in nature and its guarantee of purposes, no longer circumscribed and regulated by nature in the manner described in the second book of the *Physics*, which was fundamental to an entire, long-enduring epoch of rationality." Hörl, "Introduction to General Ecology," 2.

31. Hörl, "Introduction to General Ecology," 2.

32. Hörl, "Introduction to General Ecology," 2.

33. Hörl, "Introduction to General Ecology," 10.

34. Peter Haff, "Technology as a Geological Phenomenon: Implications for Human Well-Being," cited in Hörl, "Introduction to General Ecology," 11.

35. Hörl, "Introduction to General Ecology," 4–5.

36. Hörl, "Introduction to General Ecology," 5. The specific inflection of "non-affirmative" is left unstated, but via a footnote the reader is given a pointer to Rosi Braidotti's work on a critical theory of affirmation.

37. Félix Guattari, *Chaosmosis: An Ethico-aesthetic Paradigm*, trans. Paul Bains (Bloomington: Indiana University Press, 1995), 98–99.

38. Hörl, "Introduction to General Ecology," 16.

39. Guattari, 101–102; emphasis added.

40. More significantly, general ecology's insistence on the autonomization of technics (wherein it is held to be freed from means-ends rationality) and the wider rejection of teleology that this implies poses major challenges to the sense of aesthetics that remains hegemonic within art history and art theory—that is, Kantian and post-Kantian in inflection—intrinsically linked, as this tradition is, to natural teleology by way of Immanuel Kant's foundational contention that aesthetic judgment exhibits "purposiveness without purpose."

41. This concept is emphatically not a more narrowly conceived eco-aesthetics of which there have been various formulations, from Rasheed Araeen to Malcolm Miles.

42. "Art," Burnham claimed, "does not reside in material entities, but in relations between people and between people and the components of their environment." Jack Burnham, "Systems Esthetics," *Artforum*, September 1968, 30–35, 31.

43. Benjamin Noys, *The Persistence of the Negative: A Critique of Contemporary Continental Theory* (Edinburgh: Edinburgh University Press, 2010), 88. Noys's comments here are explicitly directed at Latour's work and his antirevolutionary instincts (in the context of a wider critique of the notion of affirmative critique in recent French theory), but they can also be posed to Hörl's general ecology and its underelaborated notion of a nonaffirmative affirmation.

44. Noys, 66.

45. Jason W. Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (London: Verso, 2015), 22.