



New Ecological Sympathies

Thinking about Contemporary Art in the Age of Extinction

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Abstract At the turn of the previous century Henri Bergson suggested that sympathy offered a way to understand interspecies relationships. Samuel Butler took Bergson's ideas to an absurd extent by mixing them with readings of Charles Darwin and claiming a vital impulse for machines. By interspersing a story of humans and machines with insect life, Butler pointed to a broad imaginative web of interspecies and machinic relationships. Contemporary artists Pierre Huyghe, Ann Lislegaard, and Hayden Fowler use video and installation art to explore interspecies relationships in time and space. In very different ways Huyghe, Lislegaard, and Fowler use the art gallery to demonstrate how humans might sympathetically engage with ecological transformation, and thus the confronting possibility of our own extinction.

In looking back at Bergson and Butler through contemporary art, I suggest that the art gallery gives us a sympathetic space in which we can encounter the knowledges of Bergson and Darwin, temper them with the imaginings of Butler, and ground them with the transformative living machines created by Huyghe, Lislegaard, and Fowler. By entering the spaces of the art gallery and locating ourselves in the place of others, sympathy read alongside machinic evolution suggests a new approach to the ecological disaster of species extinction.

Keywords contemporary art, sympathy, species extinction, machinic relationships, interspecies relationships

May not man himself become a sort of parasite upon the machines? An affectionate machine-tickling aphid?

—Samuel Butler, *Erewhon*

Samuel Butler's imagined world of humans as affectionate machine-tickling aphids never really took off. Today's dominant human to machine relationship remains unaffectionate and quite unlike Butler's parasitic interspecies and machinic understanding. Locked in combat, hardened individual machines and humans vie in their service to capital. Machines have been known to steal jobs from the poor while the everyday activities

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of the wealthy rely on the designer objects of wonder these laboring machines produce. In the current climate it is machines rather than humans that are understood as parasitic. Likewise, the aphid's experience of the machine is mediated through economic structures. Agribusiness holds aphids responsible for devastating crop loss and creates prophylactic machines of mass aphid extermination. At the same time, studies of the loss of aphid biodiversity are used to demonstrate the magnitude of global co-extinction and the "synergistic, or combined, effects of habitat fragmentation and climate change."¹ Aphids are simultaneously a symbol of the expansion of monoculture crops and a useful measure of the impacts of predator extinction across plant and animal species.

In the current context of rapid species extinction, the metaphorical connection that Butler makes between the human, the aphid, and the machine extends beyond the fictional into our broader cultural imaginary. By interweaving a story of humans and machines with insect life, Butler points to a broader "imaginative web"² of interspecies and machinic relationships. Climate change and the rapid loss of biodiversity are cultural as much as scientific events.³ How we imagine and represent these events has a critical part to play in the ways in which we might respond. My suggestion here is that Butler's description presents one half of a possible method to think about how to use the imaginative tools of writing and contemporary art to understand human, animal, and machine relationships in the context of species extinction. The complementary half of my method also draws on insect imaginings via affection and sympathy. Writing at the same time as Butler, the philosopher Henri Bergson used wasps and caterpillars to illustrate his definition of sympathy, in which sympathy is a transformative form of "feeling-knowing" that has the very real potential to provoke cultural understanding.⁴ Between these two imaginaries—one, a fictional triangulation between human, nature, and machine; and two, a philosophical argument for sympathy—I locate a collection of art objects.

The primary objects of study in this essay are works of art exhibited in major public art galleries. It is my contention that sympathy contained in the art gallery is one way to directly address the cultural values associated with imagining and understanding extinction. This essay examines the very real impacts of three artworks and demonstrates that through an interspecies and machinic understanding of species extinction these speculative works create imaginative spaces where we can share our concerns. Critical here is my conviction that the experience of art in art galleries is more than simply one of "aesthetic" pleasure. When confronted with horrific truths of climate change and species extinction, many of us go to the art gallery. There, rather than

1. Kindlmann et al., *Aphid Biodiversity under Environmental Change*, 35.
2. Heise, *Imagining Extinction*, 6.
3. Demos, *Decolonising Nature*, 8.
4. Spuybroek, *Sympathy of Things*, 161.

simply mirroring the horror outside the walls, sympathy teaches us ways to experience and critically question our world. In the art gallery, sympathy emerges as the technique through which we process our concerns and understanding of other bodies, both human and nonhuman. The kinds of objects inhabiting the art gallery have long been considered animate but nonliving. They are animate because they animate life. The art gallery weaves together humans, space, time, animals, objects, and machines in sympathetic environments. By including the animal and the machine (as animators and assemblages) in our equation, it is possible to understand this relationship in the gallery as one not just between humans and objects, but one that encompasses all living and nonliving, animate and inanimate, bodies.

Contemporary artists Pierre Huyghe, Ann Lislegaard, and Hayden Fowler use the visual and sonic tools of video and installation art to address relationships between species, extending these beyond the human-animal binary into ecological, temporal, and spatial relationships. Their artworks do much more than reflect current concerns; they actively engender new modes of thought that help viewers understand human and nonhuman ecologies in the age of extinction. In very different ways Huyghe, Lislegaard, and Fowler use the space of the art gallery to demonstrate how humans might sympathetically engage with ecological transformation, and thus the confronting possibility of our own extinction. When their works are considered together, the potential emerges for our imagination and understanding to travel outside of the fixed walls of the gallery. By moving with these art objects in the gallery (not just being transported into them but experiencing them as bodies constantly in the making), we can use what we see and learn inside the art gallery to pay attention to a little more of the world outside.

This essay first introduces the concept of sympathy as defined by Bergson. It then travels with this concept through a major retrospective of French artist Pierre Huyghe's work at the Centre Pompidou in 2013. *Flying alongside the wasps and bees*, I show how Huyghe uses sympathy to transform the spatial and temporal boundaries of the gallery to include living bodies. I then turn to Norwegian artist Ann Lislegaard's *H. G. Wells-inspired storytelling fox*. I show how considerations of sympathy in the gallery also extend into the machinic assemblage of a time-traveling digital fox. Lislegaard's use of science fiction returns us to Samuel Butler's journeys to New Zealand, where he too found wasps and bees and used his observations to pen his critiques of Darwin—infuriating both Darwin and Bergson. Picking up the vitality of Butler's understanding of machinic evolution, I last turn to an installation by Australian artist Hayden Fowler that is situated in some ever-after time, sustained by machines, and inhabited by exotic fauna including a future-human. Fowler's work directly engages species extinction and highlights the power of sympathy that includes machines as a way to understand potential environmental catastrophes. The essay ends by suggesting that the art gallery is a sympathetic space in which we can encounter the knowledges of Bergson and Darwin, temper them with the imaginings of Butler, and ground them with the transformative living machines created by Huyghe, Lislegaard, and Fowler.

Bergson's Wasp

The common understanding of sympathy draws on the arguments of English moral philosophers such as John Ruskin, who emphasized sympathy's role in understanding other people. Ruskin defined sympathy as a shared caring, pity, kindness, or compassion for another person.⁵ Ruskin's emphasis was on care, and it is this meaning that Charles Darwin draws on when he declares that any human without sympathy "would be an unnatural monster."⁶ Today, our understandings of sympathy extend beyond the human, and in some cases across species, yet the nuance of "care" gives the wrong emphasis to the concept as originally proposed by Henri Bergson.

In *Creative Evolution* Bergson discusses what he calls the instinctual sympathy of the *Ammophila hirsuta* wasp.⁷ Bergson's wasp is at the center of his evaluation of the varying hierarchical importances and differences between intelligence and instinct as they appear in Darwin's theory of evolution.⁸ The sense of sympathy as expressed by the wasp is built on an intimate and affective knowledge of the other, but it is in no way the extension of care or kindness. Instead, for Bergson's wasp, sympathy reflects a well-developed instinctual way of knowing another body from the inside out.⁹

Ammophila hirsuta is a solitary nest-building wasp that hunts caterpillars that it then serves as live food to its larvae. Bergson describes how the wasp paralyzes the caterpillar in order to provide its larvae with food both immobile and alive. Bergson writes "the *Ammophila Hirsuta* gives nine successive strokes of its sting upon nine nerve-centres of its caterpillar, and then seizes the head and squeezes it in its mandibles, enough to cause paralysis without death."¹⁰ Bergson explains how the wasp's precision in its understanding of the caterpillar cannot possibly be the result of hereditary "knowledge" transmission, a process that according to Darwin is the result of the evolution of a "contracted habit" passed down through the generations.¹¹ Bergson proposes that what is actually happening is "sympathy (in the etymological sense of the word) between the *Ammophila* and its victim, which teaches it from within, so to say, concerning the vulnerability of the caterpillar. This feeling of vulnerability might owe nothing to outward perception, but result from the mere presence together of the *Ammophila* and the caterpillar, considered no longer as two organisms, but as two activities."¹²

Sympathy, Bergson suggests, is a means for thinking about activities, what things do, rather than the makeup of two parties, what they are.¹³ As they spend time together

5. *Ibid.*, 174.

6. Darwin, *Descent of Man*, 90.

7. Bergson, *Creative Evolution*, 172.

8. *Ibid.*, 172–74.

9. *Ibid.*, 172.

10. *Ibid.*

11. *Ibid.*, 173.

12. *Ibid.*, 173–4.

13. Massumi, *What Animals Teach Us*, 77–78.

the wasp knows the caterpillar from within. Bergson argues that scientific theories (such as Darwin's) are inadequate for grasping the intensity of sympathy as a way of thinking and knowing. He suggests instead that philosophy is the machine through which we might understand the means through which the *Ammophila* possess a lived—"lived rather than represented"—intuition of the caterpillar.¹⁴ In particular, he suggests, instinctual sympathy is a way of thinking about the lived relation between all things.

Bergson's concept of sympathy helps to shift our understanding of the relationship between human and nonhuman in the context of species extinction. When Bergson was writing, the urgency of species extinction as realized in the late nineteenth century had dwindled. Among philosophers and scientists there was a confidence that the natural sciences and histories now understood how species evolved and how relationships formed between animals and their environments.¹⁵ Bergson, then, was interested in how sympathy in animals could help us understand something about the human. Bergson's thoughts reflect the societal concerns of Europe in the early twentieth century: a world before the traumas of the Second World War and the birth of atomic power; a world wherein the mechanistic worldview had not yet lost its glow and the material realities of instinct and intuition seemed natural. Bergson challenged these assumptions with an argument for a clear philosophical alternative—an understanding of evolution based on intuition rather than mechanics.

Darwin's evolutionary model suggests that over time bodies evolve techniques and pass down knowledge (intelligence), a process within a sequential continuum. Bergson counters this, arguing it is the time spent together between the wasp and the caterpillar that allows the wasp to instinctually *know* the caterpillar.¹⁶ Time spent together is synchronous rather than sequential. Bergson's point is that instinct cannot be and is neither reflex nor intelligence. Instinctual sympathy reflects togetherness rather than a sequence of evolving habits. In what would become a leitmotif of later work by Deleuze and Guattari, Bergson argues that instinct and intelligence "differ in kind not degree."¹⁷ Central to Bergson's argument with Darwin was the implication that Darwin adhered to a mechanistic framework that separated mind and body by locating instinct as one of the mechanical processes that made up the body. For Bergson instinct was much more than mechanical.¹⁸ This led Bergson to suggest that rather than being differences of degree (intelligence is a smarter or learnt form of instinct and vice versa) instinct and

14. Bergson, *Creative Evolution*, 176.

15. It was only in 1796 that Georges Cuvier had revealed the truth behind the existence of fossils to be the result of both evolution and extinction, when he exclaimed, "All of these facts, consistent among themselves, and not opposed by any report, seem to me to prove the existence of a world previous to ours, destroyed by some kind of catastrophe"; see Rudwick, *Georges Cuvier, Fossil Bones*, 24.

16. Bergson, *Creative Evolution*, 176.

17. Deleuze, *Bergsonism*, 23; Deleuze, *Difference and Repetition*, 38.

18. Kerslake, "Insects and Incest"; see also Colebrook, "Art of the Future," 76.

intelligence are completely different forms of knowledge. In fact, he says, instinct and intelligence are not a continuum but are different methods for engaging in relationships with the world.¹⁹ In one sense it was instinct that activated matter and gave it its depth. The significance of Bergson's conceptual challenge to rational mechanism was based on a complementary understanding of instinct and intelligence and their relative role in evolution (and thus, formed around the debate about the location of agency in matter or nature).²⁰ This rhythm of relations could equally be described as a vital force: Bergson's elusive and problematic *élan vital* that provides "impetus, sustained right along the lines of evolution."²¹ The argument for sympathy as a way of feeling-knowing draws on and complements his transformative definition of living and vitality. For our purposes here, sympathy is the means through which we spend time together and begin to know and understand other living bodies.

Life in the Art Gallery

Although they once shared an evolutionary line, bees and wasps are not the same species. The relationship that Bergson initially meditates on is one of a solitary animal, its children, and its need to feed them. The relationship the animal forms is across species. Biologists identify a moment approximately one hundred million years ago, when bees evolved as a distinct species, shifting from the wasp's carnivorous one-to-one relationship to one of foraging, collecting nectar and pollen from plants. Today, whether solitary or social, bees are herbivores. They also take on a different role in Bergson's work. In *Creative Evolution* Bergson uses an ongoing discussion of the social structures of bees to discriminate between the unorganized matter of intelligence and the organized matter that is instinct.²² He notes how bees collectively respond to different environments and the tensions that appear when humans interpret their modes of acting. He observes bees creating new structures and relationships in order to adapt to new conditions, and notes that it is instinct that enables the bees to "give shape to crude matter" and intelligence that performs variations upon this matter.²³ His point is emphasized in print: "*Instinct and intelligence therefore represent two divergent solutions, equally fitting, of one and the same problem.*"²⁴

Bees and wasps, then, offer two different ways to approach the same problem: that of how to explain sympathy as a synchronous activity across and between differing

19. Bergson, *Creative Evolution*, 87.

20. Colebrook, "Joys of Atavism," 286.

21. Bergson, *Creative Evolution*, 87. In *Creative Evolution* Bergson defined *élan vital* not as a vital energy but as an "image that invites us to think outside of the mechanistic framework of the physical sciences and of static metaphysical categories. *Élan vital* is an image for the process of time as duration, that is for time as force." See also Guerlac, *Thinking in Time*, 7.

22. Bergson, *Creative Evolution*, 139–40.

23. *Ibid.*, 142.

24. *Ibid.*, 143.

bodies, whether animal, mineral, or vegetable. The wasp suggests one way to think about relationships with other bodies, not as a form of care but a way of knowing from within. The bees present another way to think about matter; through the creation and variation of shapes and structures.²⁵ Both behaviors depend on sympathy (either individual or collective) as a way of knowing matter from the inside. The activities of matter extend beyond the animal figures and their environments that pepper Bergson's argument. Matter becomes vital; something that is creative, nonmechanical, and understood through sympathy.²⁶ Bergson's focus was on the continuities and discontinuities of life; when he thought about art, it was as an illustration of understandings already formulated in science. To shift his argument to the spaces of the art gallery and the way that contemporary art engages with species extinction means considering who or what is alive in an art gallery.

Art galleries are spaces for the presentation of matter. In the eighteenth century art galleries were considered sites for public education that took people away from their everyday labors.²⁷ For the contemporary audience the art gallery is both an escape (from the "real" life urgency of anthropogenic climate change and the trauma of species extinction) and a space within which these traumas can be critically experienced and thought through. We enter inside the art gallery in order to know something more about ourselves, or to "discover" how another might think or feel the world. The white windowless walls create enclosed spaces within which the art viewer becomes like the art objects themselves: outside of fixed time and space.²⁸ The art objects within the galleries further enfold viewers within their surfaces. But galleries are permeable spaces, and gallery audiences are not so easily predicted. Some works can bring us to tears, and others leave us cold. This unpredictability of experience is made even more complex by specific artworks that encourage us to time travel and transport ourselves in sympathy with other bodies. Art galleries, then, are spaces where sympathy is key to understanding relations between human and nonhuman, living and nonliving. The setting of the art gallery, full of its singular and auratic objects muddled in with interactive and performative user experiences, is thus a site where understandings of species extinction can be explored. What is and is not alive in these spaces is challenged by a sympathetic consideration of machines, bodies, and nature.

Huyghe's Bees

Since the mid-1990s French artist Pierre Huyghe has used the resonant relationship of living to nonliving to create numerous intersecting organic and machinic ecosystems

25. Parikka, *Insect Media*, 37.

26. For a discussion of the contemporary relationship between vitality and matter, see Bennett, "Vitalist Stopover on the Way to a New Materialism," 47–69; and Bennett, "Force of Things," 347–72.

27. Crimp, "On the Museum's Ruins," 51.

28. O'Doherty, *Inside the White Cube*.

inside art galleries. In 2013 at the Centre Pompidou in Paris, Huyghe installed a retrospective of fifty overlapping artworks that introduced viewers to the exhibition environment as an endless swarm of life.²⁹ There were no apparent boundaries between the individual artworks, as both animate and inanimate materials were tied into a perpetual exchange of surfaces. Brushing against an aquarium in order to let another visitor past, there was as much chance of viewers being tripped by a dog or stung by a bee as there was for them to spread an indelible trail of pink pigment or inadvertently leave their hand print in black ice. Installed in this way Huyghe's work broke down the usual fixed borders between artworks and viewers. The works no longer occupied discernable spatial locations and were not arranged in any chronological sequence, and viewers were not able to focus on one particular work for a sustained period of time. Furthermore, inside the gallery walls viewers became part of a swarm occasionally forced into dead ends or circulating patterns with no specific "work" to apprehend.

Foremost in the experience was the realization that the human audience could not be considered the only living element in the gallery. This was a multi-microcosmic space, inhabited by other worlds in which material and sympathetic relations were invoked. In discussion Huyghe said, "I'm interested in the vital aspects of things, in the way an idea, an artefact or a language can flow into contingent, biological, mineral and physical reality. It's not a matter of showing something to someone so much as showing someone to something."³⁰ Each work in the retrospective had been exhibited previously, but not always in the same manner, materials, or configuration. Viewers were left to trace the works through previous experiences or rely on documentation that itself was enfolded within the exhibition. For example, the sculpture *Untilled (Liegender Frauenakt)* had originally been included in the humus-rich garden of Huyghe's biotope *Untilled* at Documenta 13 in Kassel and was now reinstalled on a semi-enclosed balcony on the south side of the Centre Pompidou (fig. 1). *Untilled (Liegender Frauenakt)* is a hollow concrete cast of a neoclassical bronze sculpture of a life-size reclining woman by Swiss artist Max Weber that may itself be a copy of an Amedeo Modigliani painting.³¹ The exact provenance is blurred and adds to the disconcerting sense of whether or not this is the same work as the one first installed at Documenta 13. This apparently inanimate object has had many lives. The closer a viewer gets to the work, the more the tension between alive entities and made things breaks down. Inside the concrete cast is a heating unit that keeps the concrete body alive at a comfortable and constant thirty-seven degrees Celsius. The head of the sculpture is obscured by a flourishing habitat; a densely packed storehouse and nursery built by a colony of bees.

29. Huyghe, *Pierre Huyghe*, Galerie Sud-Centre Pompidou, Paris, October 23, 2013–January 12, 2014.

30. Schipper, "Pierre Huyghe dossier."

31. Amedeo Modigliani, *Reclining Nude (Le Grand Nu)* (ca. 1919), oil on canvas, 72 × 116 cm, Guggenheim Bilbao.



Figure 1. Pierre Huyghe, *Untilled* (2011–12). Living entities and inanimate things, made and not made. Courtesy the artist; Marian Goodman Gallery; Esther Schipper, Berlin.

In the original installation at Kassel, *Untilled* (*Liegender Frauenakt*) was part of a series of interventions that occupied the compost area in the Karlsau Park. There the bees performed pollination duties for an intoxicating garden of deadly and psychotropic plants planted and curated by Huyghe. In the Centre Pompidou the visible garden is absent; the bees forage for nectar and pollen by traveling down a small tube that connects the aesthetic space with the raw streets of Paris outside. In this sense, *Untilled* (*Liegender Frauenakt*) is both a sculpture and a social landscape. The multispecies and sympathetic structure of the sculpture becomes a site for an ever-increasing cycle of living interactions. It travels across time and space. Eventually, the concrete will leach and break down, the speed of disintegration increased by processes of carbonation. Whether or not they are aware of it, the bees have been tasked with the role of artists. Their actions will determine the longevity of their adopted home. If they allow carbonation to occur, they risk their infrastructure dissolving; but if they coat the sculpture with wax, the entire environment could overheat. The primary manipulation of matter has shifted from the hands of Modigliani, to manufacturing by Weber, then Huyghe, and now a collective of bees. Together the bees and concrete are a vital sympathetic system, and as viewers



Figure 2. Pierre Huyghe, *Untilled* (2011–12). Living entities and inanimate things, made and not made. Courtesy the artist; Marian Goodman Gallery; Esther Schipper, Berlin.

we experience the transformation of the concrete by the bees as a relationship of animation and assemblage.

Other works from *Untilled* have also made their unruly way into the Centre Pompidou. Huyghe has placed the video *A Way in Untilled* (2012) in a far corner of the gallery. Sharing a name that perhaps indicates an earlier bifurcation of the species, *A Way in Untilled* is a documentary video that follows the foraging practices of Human (a white Ibizan hound with a luminescent magenta leg) as she navigates through the compost surrounding the site at Kassel (fig. 2). An apparently introduced species to this biotope, Human occupies the place of culture to the garden's nature. Through her practices that disturb the dirt, Human activates metamorphosis: the transformation of living matter to dead matter and back again. The film follows her occasionally veering off to investigate a bee in a sunflower or turning away from the screen as she gnaws through an unidentifiable yet bloody animal head. Nostalgia is kept at bay by decomposition, rot, and carnivorous consumption. In the film Huyghe leaves nothing in stasis. The film travels in sympathetic relation to the other works installed in the Centre Pompidou, including the bees cultivating the concrete sculpture of the warm reclining woman. In this new environment no individual artwork can be considered separate from the other works in the retrospective that surround and infect it.

Huyghe completes the cycle of displacement when Human is spotted winding her way through a forest of human legs. Viewed only out of the corner of an eye (and somehow now released from the video screen), this animal is real and spends time every day patiently navigating the exhibition, occasionally giving in to the offer of a sniff or a pat. It is hard to believe she has stepped out of the event of the video, moved beyond the artifact of the screen, and now inhabits the gallery space of encounter. The shifting space of Huyghe's retrospective means it is impossible to separate one's body as a viewer from the other bodies present, and from the living and nonliving objects woven throughout. As viewers we are offered the opportunity to put ourselves in the place of the other, to sympathetically understand the exhibition from within, and as a result we cannot experience the usual relationship of active viewing subject and inert art object. In Huyghe's hands the roles of subject and object are transformed through the sympathetic exchanges of bee, human, and dog. The bees, concrete, dog, and humans all share a presence in space that even if temporary, is the result of simultaneously occupying the walls of the gallery. Huyghe's reworking of his artworks shows how the boundaries of subject and object are challenged by the sympathies of the art gallery. All members of this convoluted and somewhat "unnatural" ecology are apparently alive.

Lislegaard's Fox

If sympathy is a synchronous activity for understanding other bodies, Huyghe has developed the art gallery into a machine that enables this activity to occur. Inside the gallery, and across the fifty works, interspecies and machinic relations break down the borders of animate and inanimate bodies. In this place and at this time, everything is alive. What Huyghe leaves unresolved, however, is the way in which these interspecies relationships might extend beyond the fixed time and space of the gallery. Huyghe has created a machine for seeing and knowing across species that remains trapped in the present space of the gallery. It is as if the gallery is a time capsule and all the works gathered from the past are present, now, waiting. We become entangled within them, we begin to know the art gallery from within, and at the border of the gallery we experience the edge of our sympathies. After seeing the exhibition we will return to our houses, the bees and their sculpture will be gathered up and moved on, Human will go home and curl up on the rug in front of the fire, the videos will be unplugged and stored for the next iteration, the soil at Kassel will be turned in preparation for some future engagement. In Huyghe's work interspecies relationships are understood in the past and present; something else needs to be added to the mix if the gallery is going to be a useful space to think these relationships into the future.

Ann Lislegaard's *Time Machine* (2011) is one work that may help us understand the possibilities of the art gallery for understanding future interspecies relationships (fig. 3). Lislegaard challenges the temporal space of the gallery by suggesting that time travel may be a way to connect between and across species. She asks us to imagine our own



Figure 3. Ann Lislegaard, *Time Machine* (2011). Unfolded mirror box, HD video projection, 3-D animation with sound, 5:26 mins. Exhibited Nineteenth Biennale of Sydney (2014) at Carriageworks, Sydney. Reproduced courtesy the artist and Murray Guy Gallery, New York.

extinction. *Time Machine* is both an environment that houses a machinic animal body and a space that challenges the material constraints of time. The outer boundary of the work is a three-sided mirrored cubicle large enough to house a wild animal. Within its dark and unfolding space a glitchy, reflective, animated fox attempts to recount a recent journey to the future. If this were one fox telling one story then perhaps we could see it as mechanical: a trapped and anthropomorphized fox in imitation of a human. But the box, its reflections, and the continual stuttering unintelligibility of the improbable narrative point toward a different kind of body—one that questions how viewers and artworks are oriented in space and time.

The artwork occupies an indeterminate space within the gallery. It teeters on the edge of visible presence, inhabited intermittently by the fox and various black shadows appearing occasionally on the mirrored walls (fig. 4). Lislegaard presents viewers with an illusionistic environment that continually threatens to collapse the mechanical with the machinic, yet somehow resists the temptation. The fox (unlike Vaucanson's infamous duck) is not drunk and will not fall over to reveal whatever mechanisms are

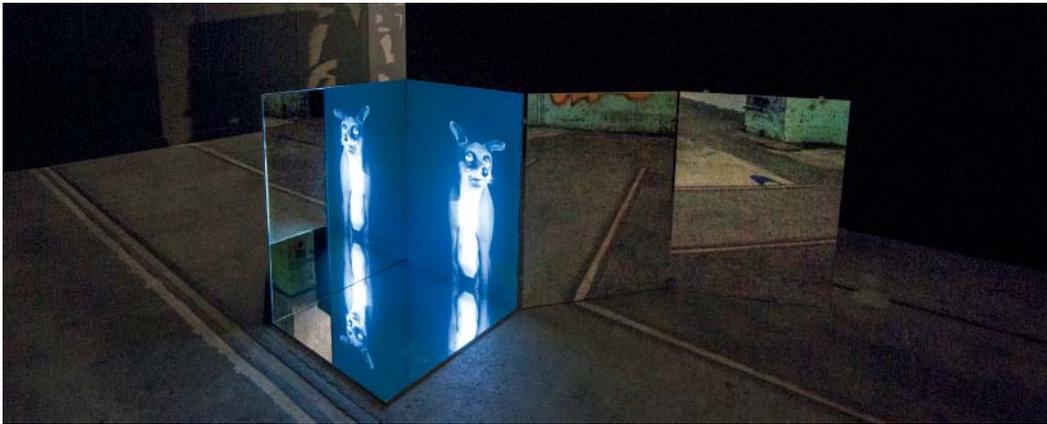


Figure 4. Ann Lislegaard, *Time Machine* (2011). Unfolded mirror box, HD video projection, 3-D animation with sound, 5:26 mins. Exhibited Nineteenth Biennale of Sydney (2014) at Carriageworks, Sydney. Reproduced courtesy the artist and Murray Guy Gallery, New York.

hidden inside its skirt.³² Instead the fox challenges believability at its core. The body is rendered out of the flat planes beloved of 3-D animators, yet is missing the smoothness of Hollywood's computer-generated imagery (fig. 5). Fast movements result in frequent dislocations between body parts. The mouth opens to reveal, nothing—a blank grey un-rendered texture upon a wireframe that seems to be missing a few reference points. A paw freezes and then resumes its insistent twitching as the output frame rate catches up. It is not that the skinning is incorrectly applied or the render sloppy; instead, Lislegaard uses the very nature of these porous digital materials to demonstrate that matter is a mirage. The body before us exists in time and space; it has duration, yet it is neither fully mechanical nor fully alive. Lislegaard presents viewers with an encounter with a lived body that is animated, machinic, and assembled within the spaces of the art gallery.

In a patchy but earnest monologue, the fox retells H. G. Wells's *The Time Machine—An Invention*, and in his tongue the story is set not so far in the future. The fox clears his throat to recount how a war between humanity has separated people into two distinct species. As a result the structures of evolution appear to have broken down. In his horror, the fox introduces us to new kinds of relationships between time and space: “I was, so to speak, attenuated—was slipping like a vapour through the interstices of intervening substances!”³³ Caught in a time trap, he is prevented by glitches from speaking in full sentences. There is no repetition, nor does the narrative evolve; the fox is left

32. Jacques de Vaucanson, *Canard Digérateur*, 1739 (destroyed by fire in 1879); discussed in Burnham, *Beyond Modern Sculpture*, 199.

33. Wells, *Time Machine*, 23.

Figure 5. Ann Lislegaard, *Time Machine* (2011). Unfolded mirror box, HD video projection, 3-D animation with sound, 5:26 mins. Exhibited Nineteenth Biennale of Sydney (2014) at Carriageworks, Sydney. Reproduced courtesy the artist and Murray Guy Gallery, New York.



stuttering, waiting for his own body to catch up with his words.³⁴ It is a nasty, grating, jarring voice—in a word: harsh. And there is desperation in his eyes. It is hard to find sympathy for such a creature, even if on his return from the future he seems wise beyond his years. Yet, as an interspecies truth-sayer, the fox has an important role to play in our broader narrative of matter, sympathy, art, and understanding.

The speculative fabulations of the fox draw on an evolutionary myth that has much in common with Donna Haraway's cyborg.³⁵ Like the cyborg, the fox was not present in the garden of Eden, and in a "triumph over mechanism" his is a living body formed from the intersection of technology and organism.³⁶ The fox warns humans of

34. Deleuze reads Bergson: "Not only do duration and matter differ in nature, but what so differs is difference itself and repetition. . . . Bergson makes an effort to show us that difference is still a repetition and repetition already a difference." Cited in Guerlac, *Thinking in Time*, 179.

35. Haraway, *Simians, Cyborgs, and Women*.

36. Bergson cited in Deleuze, *Bergsonism*, 107.

our own parasitic tendencies by showing us how the divisions of bodies into species created a situation where animate and inanimate bodies were no longer sympathetic. It was this division between species, understood across the instinct/intelligence line, that Bergson was trying to turn around. The relationships between machine, animal, and human that opened this essay return as key concerns in Lislegaard's work. Now the triangulation is understood as an assemblage that can travel backward and forward in time. The wasp that knows the body of another from the inside out and the bees that create hives on a concrete model of the human body offer two models for understanding the synchronous and interspecies activity of sympathy. The stuttering fox adds a third perspective. In the fox's retelling, Wells's story is transformed into a prophecy about the cultural values and broader contexts of understanding surrounding extinction. Lislegaard's installation points toward a series of complex relationships that emerge across unstable materials in art galleries. Its elements—viewer, fox, Wells, time, and space—cannot be easily differentiated.³⁷ The glitching noises and feedback in the installation are the catalyst between the fox and the viewer as together they pass a threshold toward sympathy, through which they can imagine new models for living.

Huyghe's bees, Human, and Lislegaard's fox challenge the boundaries of living and nonliving in the art gallery. These artworks present interspecies relationships and machinic assemblages that help us understand other bodies of all kinds as living things. Now, we need to place this understanding more explicitly within the cultural and social contexts of species extinction.

Butler's Aphid

In 1859 another time traveler, Samuel Butler, set sail to New Zealand with a presentation copy of Darwin's text in his luggage.³⁸ Once established on a sheep farm in mid-Canterbury, Butler wrote to Darwin praising his work. However, as he began to think and write independently about evolution, Butler, the amateur philosopher, began to doubt his initial enthusiasms.³⁹ While negotiating the ecological environment that was the colonial farming enterprise, he discovered a location in which he identified many interspecies relationships that seemed to challenge Darwin's evolutionary theories.⁴⁰ To Butler, Darwin's theories of evolution now seemed to contain the very real possibility of handing evolutionary power to machines:

We have used the words "mechanical life," "the mechanical kingdom," "the mechanical world" and so forth, and we have done so advisedly, for as the vegetable kingdom was

37. Deleuze, *Difference and Repetition*, 260–65.

38. Watts, "Samuel Butler Project."

39. Mazlish, "Butler's Brainstorm," 228–39.

40. After his return to London, in addition to his newspaper articles, Butler wrote four books focused on evolution: *Life and Habit* (1878); *Evolution, Old, and New* (1879); *Unconscious Memory* (1880); and *Luck, or Cunning* (1887).

slowly developed from the mineral, and as in like manner the animal supervened upon the vegetable, so now in these last few ages an entirely new kingdom has sprung up, of which we as yet have only seen what will one day be considered the antediluvian prototypes of the race.⁴¹

We were, he suggested, entering a “new phase of mechanical existence.”⁴² It would be a time when humans would find themselves the inferior species, and witness to extraordinary events like “a fertile union between two steam engines.”⁴³ “Day by day” he wrote, “the machines are gaining ground upon us; day by day we are becoming more subservient to them.”⁴⁴ His observation was that Darwin had made possible completely new relations between humans and the world around them, and that we had better pay careful attention to the nonhuman, animal, and machine members of our societies. The uncontrolled copulation of machines may spell the extinction of the human species.

Butler stretched both the scientific facts of Darwin and the philosophical realities of Bergson into a fictional space that challenged both established science and new concepts of nature. In the novel *Erewhon* the tussle over the machinic place of instinct as opposed to intelligence results in a human world driven mad in fear of the machines. In the country of the Erewhonians, humans, afraid of the evolutionary tyranny of machines, have risen in revolt. Their attitude to machines is born from an acknowledgment of the machine’s potential consciousness:

But who can say that the vapour engine has not a kind of consciousness? . . . Is not machinery linked with animal life in an infinite variety of ways? The shell of a hen’s egg is made of a delicate white ware and is a machine as much as an egg-cup is: the shell is a device for holding the egg, as much as the egg-cup for holding the shell. . . . The hen makes the shell in her inside, but it is pure pottery. . . . A “machine” is only a “device.”⁴⁵

The shifting machinic analogies of the egg and the egg-cup enable Butler to demonstrate the impacts of parallel evolutions. The egg-cup evolves to hold the egg in the same way that the egg has evolved to hold the chicken. Butler’s narrator then extends this to a series of careful observations of complex relationships between nature and culture in the environment that surrounds the city of Erewhon (that immediately parallel those Butler himself experienced in New Zealand). Again he turns quickly from mechanical examples to so-called “natural ones”: “Surely if a machine is able to reproduce another machine systematically, we must say that it has a reproductive system. . . . Does any one say that the red clover has no reproductive system because the

41. Butler, “Darwin among the Machines,” 184.

42. *Ibid.*

43. *Ibid.*

44. *Ibid.*

45. Butler, *Erewhon*, 199.

humble bee (and the humble bee only) must aid and abet it before it can reproduce? No one. The humble bee is a part of the reproductive system of the clover.”⁴⁶ Read out of its contemporary context, it seems that Butler is suggesting a dramatic shift in how an ecosystem works. However, he is drawing on both Bergson and Darwin at this point. The mechanical analogies employed by Darwin allow Butler to slip from a deterministic reading of animal evolution to one in which reproduction is shared across species. In Bergson’s terms, this is a becoming across animal and plant species that enables a sympathetic way of knowing.⁴⁷

Bergson was not happy with the apparent convergence of Butler’s ideas with his own. In a letter to his nephew Floris Delattre, Bergson works hard to distance his concept of *élan vital* from the “life-force” of Butler. Characterizing Butler as derivative and neo-Lamarckian (perhaps because of Butler’s public tiff with Darwin) Bergson writes, “It is easy to see that Butler only uses images, comparisons, etc. to supplement or even simply to decorate the expression of his thought: he could, strictly speaking, do without it.”⁴⁸ Bergson contrasts this with his own writing where, he claims, the images are “indispensable” because concepts that sit in-between existing philosophical explanations (such as mechanism and finality) demand it. This in-between space of thought is where he locates *élan*: “The image of an *élan* is nothing other than this indication [of being in the middle]. By itself it has no value. But it will acquire value if the reader is willing to place himself with me at this point, so that we can observe from this position what can be perceived of life and also what is not perceived.”⁴⁹

The critical difference between Butler and Bergson becomes most apparent here. Butler’s vital machine is not Bergson’s organism that “behaves more and more like a machine for action, which reconstructs itself entirely for every new act, as if it were made of India rubber and could at any moment, change the shape of all its parts.”⁵⁰ Bergson suggests that if mechanical and organic are differences in degree rather than kind, it is not possible to maintain a mechanistic model of the world that is opposed to an organic knowing one. In Butler’s hands the concept is taken one step further: the organism is not *like* a machine; it is a machine.⁵¹ The machinic relationships that both thinkers highlight are not opposed to the organic; the machinic is a way to approach *élan* not as some kind of master category but as a way to explain the coevolution of species and environment.

46. *Ibid.*, 201.

47. Deleuze and Guattari pick up the idea in their description of the machinic assemblage and translate Butler’s bees and clover into the wasp and orchid of a warmer climate. Deleuze and Guattari, *Anti-Oedipus*, 285; Deleuze and Guattari, *Thousand Plateaus*, 10; see also Grosz, “Deleuze’s Bergson,” 214–34.

48. Bergson, “Letter to Floris Delattre,” 369.

49. *Ibid.*, 370.

50. Bergson, *Creative Evolution*, 252.

51. Bergson, “Letter to Floris Delattre,” 371. The second part of Bergson’s letter highlights how Butler seemed to be engaging with Lamarck’s positivist and mechanistic understandings of evolution, not contributing any new thought of his own. The discussion of Butler is tangential for Bergson, yet it enables him to once again articulate his own position as discrete from that of the “vitalists.”

Fowler's Rats

The tangled triangle of agreement and disagreement between Butler, Bergson, and Darwin reflects the way in which multiple authoritative scientific arguments developed in the nineteenth and early twentieth century. Newton's mechanical world no longer presented an overarching answer to the emergence of species, yet Darwin's evidence that species were always imprecise and continually in process through variation, selection, and accidental mutation induced great anxiety. In this context both Butler and Bergson questioned the certainty of absolute distinctions between animal, mineral, and vegetable and opened a space for the emergence of different definitions of life. Within the boundaries of their disagreements with Darwin, it is Bergson who considers something much less literal (and perhaps much more everyday) than Butler. In the discussion of the wasp Bergson presents a definition of vitality where bodies or beings are not understood by bounded innate essence but instead are defined by their extended behaviors, their movements, and the compositions they form.⁵²

Fast forward to today and Butler and Bergson's shared critique of the place of the machine and definitions of life seem to suggest new (or maybe forgotten) ways to address the interrelationship of species and the challenge of how humans might respond to the current crisis of mass species extinction. Butler's imagined world had a profound impact on scientific and philosophical understandings of evolution and extinction. As the call again goes out for artists and writers to critically imagine the future impacts of climate change on species extinctions, it is worth looking at the kinds of worlds art and fiction have already created. Extinction has also shifted as a concept; moving rapidly from a localized event into a catastrophic space where the simultaneous lived relation between things at the scale of the Earth system is under threat. The artworks discussed in this essay are one way we can begin to develop a response to the threat of extinction that not only challenges the boundaries between species but also asks us to consider our own relationships with all (living) things. The artworks discussed so far have offered models for interspecies and machinic relations. The final work turns explicitly to the contexts of extinction by creating an environment inside the gallery that includes humans as both subject and viewer.

Australian artist Hayden Fowler imagines the aftermath of mass species extinction as a new world where technology, humans, lab rats, and nature are bound together in full view of a startled audience. Fowler's *Anthropocene* (2011) is a six-meter-round, floating island containing a small family of geodesic caves, a fetid pond, grass, and rocks (fig. 6). The whole environment is built on a platform that is lifted a meter off the gallery floor, so that from afar it appears to be a recently arrived (life) capsule replete with exposed plumbing and ventilation. Built into the "rock" platform is a cooking plate. During the opening hours of the gallery Fowler and a small colony of lab rats occupy the island. The space is under twenty-four-hour video surveillance, and anyone

52. Deleuze, *Bergsonism*, 23.



Figure 6. Hayden Fowler, *Anthropocene* (2011). Mixed-media installation, 5 × 6.5 × 6.5 m. Exhibited at “Awfully Wonderful: Science Fiction in Contemporary Art,” curated by Lizzie Muller and Bec Dean, Performance Space at Carriageworks, Sydney, Australia, April 15 – May 14, 2011. Photographed by Joy Lai; reproduced with permission of the artist.

who doesn't want to approach too closely can view the inside of the cave on a CCTV monitor directly plugged into the side of the island and set a modest distance away. The monitor is a spindly machine animal balanced precariously on grey legs. On screen we witness Fowler as he sleeps snuggled up with the rats, his equals. Human and rats seem to have adapted well to the post-technological catastrophe they inhabit. The grass growing on the island is musty but not desolate, and there seems to be a water source nearby (fig. 7). The white plaster of the cave has the feel that soon it will grow moss and blend into the island environment. Wearing a loose, belted white skin covering that mimics the rats' own fur, Fowler regularly emerges from the cave to heat cans of food on the cooking plate (fig. 8). Fowler does not communicate across the distances between his world and that of the gallery; his silence and isolation are in stark contrast to the comings and goings of the gallery space. It is an assemblage of one world within another. The gallery as a machine has transformed from being an entity (like the eggshell above) into a world that can be inhabited across time. *Anthropocene* is not just an encounter formed from things, or objects; this is an assemblage of animals, minerals, and vegetables. Like any good science fiction, *Anthropocene* is a sympathetic ecology that includes all kinds of living matter (fig. 8).

Confronted with this space of island-becoming-refuge, viewers are offered a theater full of the kind of behaviors we may need to adopt in order to respond to future

Figure 7. Hayden Fowler, *Anthropocene* (2011). Mixed-media installation, 5 × 6.5 × 6.5 m. Exhibited at “Awfully Wonderful: Science Fiction in Contemporary Art,” curated by Lizzie Muller and Bec Dean, Performance Space at Carriageworks, Sydney, Australia, April 15 – May 14, 2011. Photographed by Joy Lai; reproduced with permission of the artist.



species extinctions. It is not clear if at one time this environment was part of a city, a new urban habitat, or something else not made by humans at all. Despite its depleted state, this corner of a future world is currently living. It is neither romantic nor nostalgic, but it is breathing, alive. It is disturbed and remade by the lost bodies of a new kind of cohabitation. Fowler and his island rats are survivors, but without bees to pollinate the grass and rain to fill the pond, their small green eco-sanctuary may soon fester. Already some children have thrown sticks at the island inhabitants. Fowler shows that animals can indeed adapt to new machinic environments, but that the environments themselves also need to adapt.⁵³ *Anthropocene* is an ethical pointer toward a future

53. Ballard, “Natural Selection amid the Ruins,” n.p.



Figure 8. Hayden Fowler, *Anthropocene* (2011). Mixed-media installation, 5 × 6.5 × 6.5 m. Exhibited at “Awfully Wonderful: Science Fiction in Contemporary Art,” curated by Lizzie Muller and Bec Dean, Performance Space at Carriageworks, Sydney, Australia, April 15 – May 14, 2011. Photographed by Joy Lai; reproduced with permission of the artist.

culture where it is not enough to think of evolution and extinction in terms of relationships between animals and environments.⁵⁴

The art gallery is a refuge both for and from this model Anthropocene world. As Huyghe said above, within the spaces of the art gallery the artwork meets the viewer, another matter, and they move sympathetically toward one another. Fowler recasts the human and nature through an environment that is itself a living machine. As witnesses to this sympathetic assemblage we are confronted by an image of the last moments of a species without the energy to rejuvenate. The interspecies relationships present in the gallery then also weave the viewer’s body onto the island. Sympathy shifts; we understand the body of the artwork from within because it is a body not unlike our own. In Butler’s words, Fowler is the affectionate machine-tickling aphid marooned on an island alongside other species better equipped to survive than himself.

Machinic Sympathy

On the South Island of New Zealand, where Butler had experienced his own abandonment, industrialization occurred simultaneously with colonization. Both machines and

54. Haraway, “Ecce Homo, Ain’t (Ar’n’t) I a Woman, and Inappropriate/D Others,” 87.

nature transformed together. In order to tame the land for agricultural production, huge fires were lit, and along with the humans a new colonizing force of rats, stoats, cats, weasels, ferrets, and possums consumed any of the birdlife that could escape the flames. By the time Butler left, New Zealand had lost over 50 percent of its native animal population.⁵⁵ This unnatural selection presented a counter to the three prongs of Darwin's theories of evolution. As Butler witnessed this transformation, he must have realized that the evolution of the machine was not something that would remain in the realm of fiction but was already startlingly apparent in contemporary spheres.

In the works by Huyghe, Lislegaard, and Fowler discussed above, sympathy maps the movement from one machinic body to another. At the same time we realize the potential of the art gallery as a time machine that helps us understand extinction. In the examples given here, contemporary art comes together as a sympathetic machinic body organized differently. These artworks enter into assemblages (including afterlives imagined by curators and artists or taken away by individual audience members), and across the floors of the gallery the materiality of the wasp and caterpillar, the bee and the orchid, the rat and the canned food are constantly reinvented.

In *Untilled* Huyghe's bees occupy and manipulate their environment while human viewers watch and marvel at their creative abilities. A dog called Human traces and retraces paths between visitors in a gallery; its image doubled on a video screen where it inhabits both the past and the present. Rather than ask where the moving body of the dog Human will appear in Huyghe's installation, Bergson suggests we pay attention to the sympathetic flux of encounter.⁵⁶ In Lislegaard's *Time Machine* a fox that is clearly not a fox but a magical mirage tells tales imagined by a human from another time, before the digital matter of the fox had been dreamed of. Like Butler's traveler in *Erewhon* the fox still manages to communicate its knowledge of the future past to anyone who takes the time to stop and listen. Fowler's *Anthropocene* presents us with a community of rats who fight with a sole human companion for the last scraps of fresh food as their island floats into the unknown tomorrow of the art gallery. The rat and human bodies in Fowler's *Anthropocene* occupy a different flux, one that, like the dissolving caterpillar, it is only possible to imagine through the tools of new ecological sympathy.

None of these artworks document machines taking on animated behaviors; rather, they all reflect the emergent machines of Butler and the sympathetic instincts of Bergson. There is a clear movement between the organic and machinic in each work such that boundaries have blurred and assemblages have formed. This is what art objects do; they are time machines that are not mechanical but are machinic in the way that they inhabit the spaces and operations of the art gallery. In these works, inside these art galleries, there is a confrontation with the survival of both the human and the non-human. As Claire Colebrook asks, "How does humanity, witnessing its own end, save

55. Ballard, "Signal Eight Times," 70–94.

56. Bergson, *Creative Evolution*, 342.

itself?”⁵⁷ Bergson identified the answers for the impossible question of survival within sympathy and within the distributions of energy; a “duration beyond that of the self.”⁵⁸ This extended energetic duration suggests a radically old way of thinking extinction outside of the usual modes of either evolutionary or environmental transformation. This is, I think, where Bergson and Butler leave us.

To escape the limits of the organic human, Bergson proposes technologies of art that develop “according to their own trajectories, independent of the organism.”⁵⁹ The artworks discussed in this essay are such technologies. These artworks offer a critical transformation of concepts of extinction away from either evolutionary inevitability or the speeding up of such inevitability by anthropogenic climate change. The aesthetic speed of feeling and rhythm imagined by Bergson is not the same as the great acceleration we are currently living within. Yet, we share a vital and sympathetic force—which Bergson identifies outside of the geological and the cosmic—found within the art objects themselves.

Unlike his fellow colonialists who undertook to record the natural history and sheep-farming potential of the land of the long white cloud, Butler turned to fiction to record his observations of aphids, wasps, bees, and clover. Butler’s machinic vitalism suggests a means for thinking sympathy across the human, animal, and machine: as machine-tickling aphids in the twenty-first century, we look back to the late nineteenth century and find techniques for thinking that may very well help us travel into the future.

Butler may have dreamed of crossing the Southern Alps and finding a new world on the other side of their green and glassy surface, but the reality was that farming in the Upper Rangitata did not suit him. He left the bees and clover and returned home. Back in England he met a curious audience who had moved at great speed in their embrace of new technologies and were now ready for *Erewhon*. As it did for Bergson, instinctual sympathy offered Butler a way of thinking the experience of relations between and across differing bodies and environments. Sympathy continues to offer a strong counter to current mechanistic or deterministic models of the world (and the art objects inside it). Today, by entering the spaces of the art gallery and locating ourselves in the place of others, we discover a new approach to the ecological disaster of species extinction. If the art gallery is both a time-traveling machine that we know sympathetically from the inside and a space that enables complex relationships between objects both living and nonliving, it must offer some ways to understand species extinction. In the art gallery, as in the world, machines do not possess the only clockwork, and animals do not possess the only organic means of reproduction. The coupling of steam engines is no more perverse than the zombifying husbandry skills of the *Ammophila hirsuta*; both are real evolutionary feats that make us reconsider our relations with each other, artworks, and the environments that we inhabit.

57. Colebrook, “Art of the Future,” 83.

58. *Ibid.*

59. *Ibid.*

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References

- Ballard, Susan. “Natural Selection amid the Ruins” [catalog essay]. In *Hayden Fowler: New World Order*. Ilam Campus Gallery, University of Canterbury, NZ, September 2013.
- . “Signal Eight Times: Nature, Catastrophic Extinction Events and Contemporary Art.” *Reading Room: A Journal of Art and Culture*, 7 Risk (August 2015): 70–94.
- Bennett, Jane. “The Force of Things: Steps toward an Ecology of Matter.” *Political Theory* 32, no. 3 (2004): 347–72.
- . “A Vitalist Stopover on the Way to a New Materialism.” In *New Materialisms: Ontology, Agency, and Politics*, edited by Diana Coole and Samantha Frost, 47–69. Durham, NC: Duke University Press, 2010.
- Bergson, Henri. *Creative Evolution*. 1911. Translated by Arthur Mitchell. Mineola, NY: Dover, 1998.
- . “Letter to Floris Delattre 24 December 1935.” In *Key Writings by Henri Bergson*, edited by Keith Ansell Pearson and J. Mullarkey, 369–71, 388n57. New York: Continuum, 2002.
- Burnham, Jack. *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century*. New York: Braziller, 1968.
- Butler, Samuel. “Darwin among the Machines.” 1863. In *A First Year in Canterbury Settlement and Other Early Essays*. *Shrewsbury Edition of the Works of Samuel Butler*, edited by H. F. Jones and A. T. Bartholomew, 179–80. London: Cape, 1923.
- . *Erewhon*. 1872. London: Penguin, 1970.
- Colebrook, Claire. “The Art of the Future.” In *Bergson, Politics, and Religion*, edited by Alexandre Lefebvre and Melanie White, 75–98. Durham, NC: Duke University Press, 2012.
- . “The Joys of Atavism.” In *Understanding Bergson, Understanding Modernism*, edited by Paul Ardoin, S. E. Gontarski, and Laci Mattison, 281–97. London: Bloomsbury, 2013.
- Crimp, Douglas. “On the Museum’s Ruins.” *October* 13 (1980): 41–57.
- Darwin, Charles. *The Descent of Man, and Selection in Relation to Sex*, vol. 1. London: Murray, 1871.
- Deleuze, Gilles. *Bergsonism*. Translated by Hugh Tomlinson and Barbara Habberjam. New York: Zone, 1991.
- . *Difference and Repetition*. Translated by Paul Patton. London: Continuum, 1994.
- Deleuze, Gilles, and Felix Guattari. *Anti-Oedipus*. Vol. 1 of *Capitalism and Schizophrenia*. Translated by Mark Seem and Robert Hurley. Minneapolis: University of Minnesota Press, 1983.
- . *A Thousand Plateaus: Capitalism and Schizophrenia*. London: Athlone, 1996.
- Demos, T. J. *Decolonising Nature: Contemporary Art and the Politics of Ecology*. Berlin: Sternberg, 2016.
- Grosz, Elizabeth. “Deleuze’s Bergson: Duration, the Virtual and a Politics of the Future.” In *Deleuze and Feminist Theory*, edited by Ian Buchanan and Claire Colebrook, 214–34. Edinburgh: Edinburgh University Press, 2000.
- Guerrac, Suzanne. *Thinking in Time: An Introduction to Henri Bergson*. New York: Cornell University Press, 2006.

- Haraway, Donna. "Ecce Homo, Ain't (Ar'n't) I a Woman, and Inappropriate/D Others: The Human in a Post-humanist Landscape." In *Feminists Theorise the Political*, edited by Judith Butler and Joan Scott, 86–100. New York: Routledge, 1992.
- . *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, 1991.
- Heise, Ursula. *Imagining Extinction: The Cultural Meanings of Endangered Species*. Chicago: University of Chicago Press, 2016.
- Huyghe, Pierre. *Pierre Huyghe*. Galerie Sud-Centre Pompidou, Paris, October 23, 2013–January 12, 2014.
- Kerslake, Caroline. "Insects and Incest: From Bergson and Jung to Deleuze." *Multitudes* 25 (2006). multitudes.samizdat.net/Insects-and-Incest-From-Bergson.
- Kindlmann, Pavel, A. F. G. Dixon, and J. P. Michaud, eds. *Aphid Biodiversity under Environmental Change: Patterns and Processes*. Berlin: Springer Science and Business Media, 2010.
- Massumi, Brian. *What Animals Teach Us about Politics*. Durham, NC: Duke University Press, 2014.
- Mazlish, Brian. "Butler's Brainstorm." In *Refiguring Cyberculture: An Intellectual History*, edited by Darren Tofts, A. Jonson, and A. Cavallaro, 228–39. Cambridge, MA: Power Publications and MIT Press, 2002.
- O'Doherty, Brian. *Inside the White Cube: The Ideology of the Gallery Space*. Berkeley: University of California Press, 1976.
- Parikka, Jussi. *Insect Media: An Archaeology of Animals and Technology*. Minneapolis: University of Minnesota Press, 2010.
- Rudwick, Martin. *Georges Cuvier, Fossil Bones, and Geological Catastrophes: New Translations and Interpretations of the Primary Texts*. Chicago: University of Chicago Press, 2008.
- Schipper, Esther. "Pierre Huyghe dossier." Esther Schipper Gallery, Berlin, 2013.
- Spuybroek, Lars. *The Sympathy of Things: Ruskin and the Ecology of Design*. Amsterdam: V2, 2011.
- Watts, R. "The Samuel Butler Project." St. John's College, Cambridge, 2011–13. www.joh.cam.ac.uk/samuel-butler-project.
- Wells, H. G. *The Time Machine*. 1895. New York: Berkley Books, 1969.