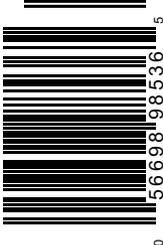


An aerial photograph of a large dam and reservoir. The dam is a prominent, curved structure in the lower-left quadrant. The reservoir is a large, blue body of water in the center. The surrounding landscape is a complex mosaic of brown, tan, and blue tones, with intricate patterns that suggest a combination of natural terrain and human-made structures or agricultural fields. The overall composition is highly detailed and textured.

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THE ORC AND THE PENGUIN

DOMINIC PETTMAN

Hidden away among the interminable extras accompanying the extended DVD edition of Peter Jackson's *The Two Towers*, we find an intriguing "Easter egg" in the form of a behind-the-scenes anecdote. A lead animator tells of an unexpected moment when he and his army of CGI rendering experts began to choreograph one of the elaborate battle scenes for which the movie franchise became famous. Given the amount of digital "extras" involved—in this case, tens of thousands of orcs—it was impossible to script every individual combatant. The state-of-the-art Massive™ software used by Jackson's hi-tech atelier resolved this issue by creating an algorithm that enabled the orcs to fight their own individual battles: each digital creature behaved according to a set of pre-coded possibilities, and yet the animators themselves could not anticipate what any single actor would do at any given moment in the melee. As such, each orc appeared to exist in a zone somewhere between the predetermined and the aleatory: that is, between compulsion and free will. The animator's amusing tale, however, centered on an early test run in which a handful of orcs simply refused to fight, as if channeling some conscientious objection to bloodshed previously latent in their coded wire-frame bones. Indeed, the orcs' pacifist stance was apparently infectious, as dozens of their fellow soldiers similarly declined to engage a group of aggressive elves and fled against the logic of the storyline.

We find a similar story in Werner Herzog's documentary *Encounters at the End of the World*, which details the eccentric inhabitants of the permanent scientific base in Antarctica. Herzog narrates this tale in real time, as his camera discovers a penguin who, for whatever reason, refuses to follow his biological programming:

These penguins are all heading to the open water to the right. But one of them caught our eye, the one in the center. He would neither go towards the feeding grounds at the edge of the ice, nor return to the colony. Shortly afterwards, we saw him heading straight towards the mountains, some seventy kilometers away. Dr. Ainley explained that even if he caught him and brought him back to the colony, he would immediately head right back for the mountains. But why? One of these disoriented, or deranged, penguins showed up at the New Harbor diving camp, already some eighty kilometers away from where it should be. The rules for

the humans are: do not disturb or hold up the penguin, stand still and let him go on his way. And here, he's heading off into the interior of the vast continent. With five thousand kilometers ahead of him, he's heading towards certain death.

Both scenarios present us with nonhuman entities who "go rogue" to pursue an unexpected option, thereby raising a number of provocative questions. To what degree does this behavior exhibit manifest cases of free will or agency that we, in our humanist arrogance, prefer to ascribe only to ourselves? Or are these anomalies merely the statistical glitch one finds in any operating system? (Perfect consistency, after all, has no place in a Darwinian world, either real or virtual.) Is it folly to ask why these creatures followed a different drummer? Or is the question of motivation valid for nonhumans? Do the orc and the penguin have something to teach us about "diagonal existences" that "choose" to go off-program (and thus write a new program as they go)? Perhaps we are dealing here with two instances out of an almost infinite number of scenarios that prompt us to reconsider "life itself" from a new angle, one which consciously attempts to break from two-and-a-half thousand years of Western thinking on this omnipresent, yet supremely vague, *figura*.

As various contemporary theorists have noted, current definitions of life—what Percy Bysshe Shelley called "this astonishing thing"—are notoriously formless and evasive, perhaps mirroring their subject matter. While scientists have come to enjoy a monopoly on explaining most aspects of the physical world, even biologists begin to speak like obfuscating philosophers or theologians on the key issues of the origins and essential properties of life. The more we try to pin down the very condition of such inquiries, the more we become trapped in a tautology: "Life lives, therefore it is living." In the digital age, the situation is complicated further, as artificial and synthetic forms of life become not only part of the lexicon but also of the environment.

The mid-twentieth-century Renaissance man Loren Eiseley—equal parts natural scientist and speculative philosopher—tells of the Victorian attempt to get to the bottom of the mystery of materialized life by literally dredging the bottom of the ocean floor. In 1870, the wiring of the world brought with it a fascination for the primal ooze that clung to the new man-made tentacles connecting the continents. As Eiseley put it, early proponents of Darwin's and Alfred Russel Wallace's theories formed "a belief that widespread on the floor of the abyssal plain lay the 'Urschleim,' a protoplasmic half-living



An orc weighs the pros and cons of pacifism.

matter representing that transition between the living and the nonliving out of which more complex life had, in the course of time, developed. The abyss, in other words, was thought to contain not only the living record of the past, but the ultimate secret of life itself; Creation might still be in process.”¹ He continues:

Haeckel in Germany and Huxley in England were proceeding to show that as one passed below the stage of nucleated single-celled organisms one arrived at a simple stirring of the abyssal slime wherein something that was neither life nor non-life oozed and fed without cellular individuality.

This soft, gelatinous matter had been taken from the ocean bed during dredging operations. Examined and pronounced upon by Professor Huxley, it was given the name of Bathybius haeckelii in honor of his great German colleague. Speaking before the Royal Geographical Society in 1870, Huxley confidently maintained that Bathybius formed a living scum or film on the sea bed extending over thousands of square miles. Moreover, he expanded, it probably formed a continuous sheet of living matter girdling the whole surface of the earth.²

Alas, all the scientific expeditions mounted to locate this Lovecraftian missing link proved fruitless (or slimeless, rather). This “seething, unindividualized ooze whose potentialities included the butterfly and the rose” turned out to be a “a projective dream of scientists striving to build an evolutionary family tree upon existing organisms.”³ Indeed, Eiseley calls this belief “the product of an overconfident materialism, [and] a vainglorious assumption that the secrets of life were about to be revealed.”⁴ In short, it represents “one of the most curious cases of self-delusion ever indulged in by scholars.”⁵

And yet even today we continue to read of such scientific hopes. For instance, in a recent report entitled *The Limits of Organic Life in Planetary Systems*, NASA and the National Academy of Sciences hypothesize the existence of strange slimy “biofilms” which the authors hope will be found on Mars. It thus seems that despite our post-Victorian age of sterile labs and fluorescent lights, we continue to detect (or should that be project?) a strong “weird” pulse to the existence of existents, continually flummoxed by the ineffability of that organic matrix out of which we ourselves mysteriously emerged, and to which we will soon—at least, geologically speaking—return.

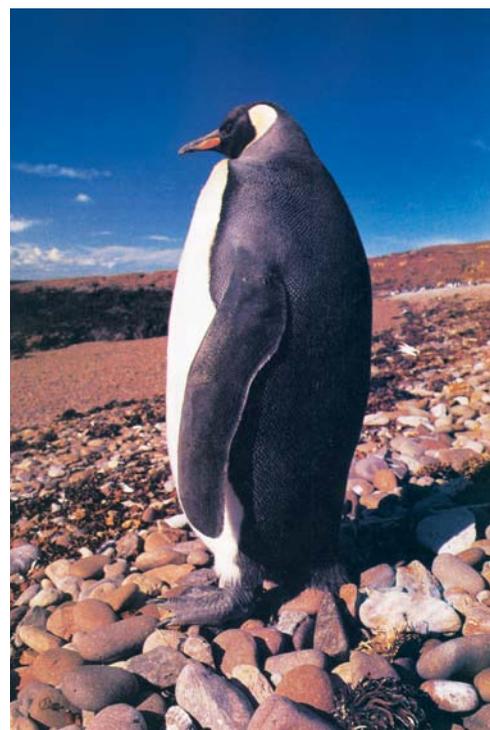
In his recent book *After Life*, critical theorist Eugene Thacker approaches the notion of life not so much as an object still awaiting a full and satisfying account, but as a speculative and uncanny figure that consistently haunts and thwarts our attempts to understand it. As such, he both identifies and foregrounds “a furtive, miasmatic unintelligibility that inhabits any ontology of life.” Thacker would no doubt find instructive both the Victorian search for *Urschleim* and the failure of that search to discover a hinge connecting the vital and the inanimate, since life is for him, in the final analysis, “a continuum of absence,” a continuum predicated on recognizing the inanimate at the core of life itself. Life is thus not only a problem in Western philosophy, but a problem for Western philosophy—especially because of the paradoxical Aristotelian legacy that distinguishes between “life itself” (or what we might call capital-L Life) and mere instances of life (what we simply call “the living”). Indeed, the paradox is as difficult to surmount as it is easy to state: “One cannot think Life without thinking the living; one cannot think Life while at the same time thinking the living.”⁶ The seductive and slimy promise of *Urschleim* was that it could help us isolate Life itself, in its pure state, unsullied by the material avatars who happen to animate “It” at any given moment. But this is always a false promise, since we can never encounter Life itself, without the specific form in which It exists in the world—whether this be animal, plant, fungus, or human. A pure and naked living force is a fancy perpetuated by transcendental philosophers and theologians.

Seeking some orientation in this perplexing void, NASA defines life simply as “a self-sustained chemical system capable of Darwinian evolution.”⁷ We might take issue, however, with this description, given the capacity for evolution now observed in entities, such as computer viruses, that inhabit non-chemical environments. NASA might object that these are mere *simulations* of life, against the conviction of Nils Aall Barricelli and the subsequent proponents of Artificial Intelligence, and of theorists such as Marshall McLuhan, who claimed that “the important thing is to realize that electric information systems are live environments in the full organic sense,”⁸ or Donna Haraway, who famously observed that “our machines are disturbingly lively, and we ourselves frighteningly inert.”⁹

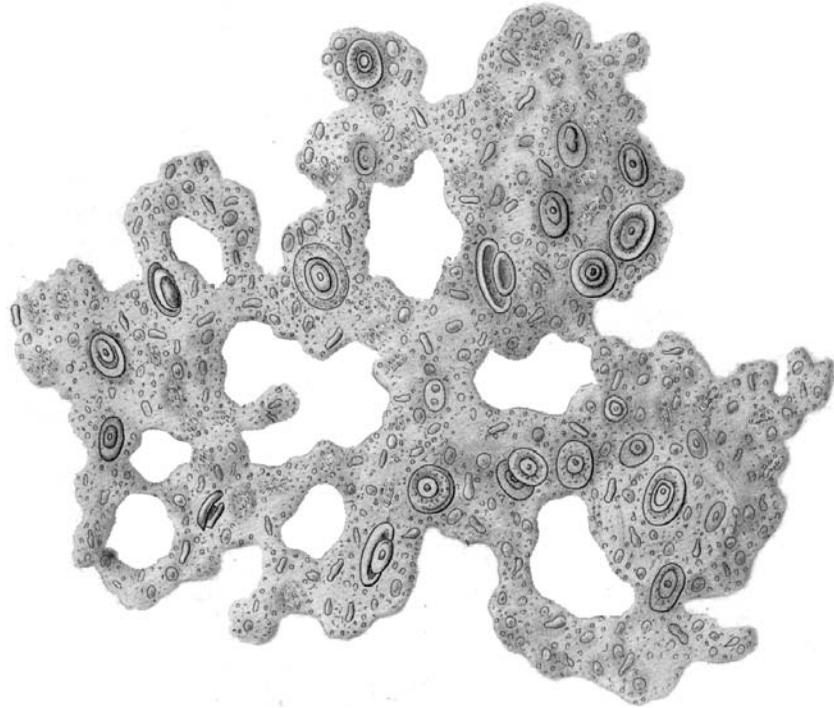
Which brings us back to our old friends, the orc and the penguin. How do the ancient and esoteric debates about the nature of vitality help us account for their mutual “decisions” to *live differently* than their kin? Are such (ontological) anomalies suggestive of a new type of emergence or existence which comports itself “after

life” (itself an ambiguous temporality: either following in the wake of life, or in pursuit of it)? In a world of talking cars, smart phones, and intelligent objects, NASA’s definition appears increasingly quaint and off base. After all, it has been over 150 years since Marx noted that the table made by a carpenter grows a wooden brain and wants to dance on its head when transformed into a commodity. The empirical question, “Is the table (or computer virus) *really* alive?” issues from the limited perspective Thacker urges us to avoid: that of biological reductionism. But we must equally avoid smuggling in a secular version of onto-theology, in which non-sentient or nonorganic creatures are simply bequeathed “souls” by virtue of mimetic or pre-programmed movement. The question thus becomes: Do orcs and penguins share a certain genre of existence, despite dwelling in domains perceived to be distinct (i.e., the digital and the organic, the virtual and the actual)? Must we continue to place a non-permeable barrier between the online and offline worlds, as if they exist in different metaphysical realms? For if objects and puppets can have “secret lives,” as some contemporary theorists insist, can’t electronic or silicone creatures as well?

Such questions have a new relevance given the recent emergence of the truly game-changing science of “synthetic biology.” This radical new practice,



A penguin considers a diagonal existence.



first announced in the mainstream press in 2010, was spearheaded by Dr. Craig Venter, who created the first synthetic life-form: a bacteria cell affectionately called Synthia (real name, *Mycoplasma laboratorium*), in the tradition of Dolly the cloned sheep. By synthesizing the genetic code of this cell, Venter was able to use a Gene Compiler to directly print DNA, which can then be inserted into other (hollowed-out) cells, and literally booted into animated existence with a spark. This remarkable new technique further blurs the increasingly precarious distinction between the digital and the biological domain, and creates what Dr. Adam Rutherford called “the only life form on Earth whose parent is a computer” in an episode of the BBC’s *Horizon* series. “We’ve found a way to take life and radically redesign it. We’ve put ourselves in this extraordinary position where nature itself can be disassembled into spare parts, and now we can put these back together just as we please. Incredible as it sounds, life itself has become a programmable machine.”¹⁰ In less than three short years, we have reached a point where even hobbyists, schoolkids, and amateurs can download the DNA code of what we might call “open source entities,” essentially printing them out in dormant form and then inserting this print-out, made of existing organic material, into an organism in order to re-engineer its essential, natural architecture. These “bio-bricks”—modular sets of computer/DNA code—can be used to create “bio-circuits” that instruct an

organism what to do or how to grow (the famous example being injecting the genetic sequence for jellyfish phosphorescence into other creatures). Thus, “biological machines”—like the goats specially created to lactate spider silk in their milk, or the yeast engineered to exhale diesel fuel—are not examples plucked from science fiction futures but from the farms and labs of the present.

Technology is now being developed to directly port cybernetic command-and-control principles into living creatures, and thus extend the instrumentalist will that so disturbed even a Nazi sympathizer like Heidegger. No longer are we just enframed, but ingrained. Tomorrow’s commands will no longer be delivered via inefficient routes such as the ear, the eye, and the will, but written into the circuitry of our circulatory systems, inscribed in our very marrow. Dolphins won’t be merely trained to sweep for mines, but will be *programmed* to, like organic drones. Can soldiers be too far behind? Even if we acknowledge a large dose of paranoia in such prophecies, the history of well-funded R&D does not bode well for individual agency. If a new technology can be used

Ernst Haeckel’s 1870 drawing of *Bathybius haeckelii*, a material “discovered” and named after the German naturalist in the late 1860s by British biologist Thomas Huxley. The men theorized that *Bathybius* was the protoplasmic basis of *Urschleim*—a primordial material covering the sea-floor that Haeckel had proposed as a link between organic and inorganic life—but by the late 1870s, when the substance was found to be the product of a common chemical reaction, Huxley was forced to publicly recant his views.

for military purposes it will be. The counter-argument will insist that synthetic biology is the key to surviving the impending ecopocalypse, through projects such as engineering new renewable fuels. But “playing God” on such a scale, and with such impatient zeal, is unlikely to reform our heedless experiments in sustainability. “Life finds a way,” they say. But we are in completely unprecedented territory when a tiny, hubristic fraction of “the living” can slice, splice, and recombine “life itself” into novel organisms with no evolutionary history of their own. Talk about alienation!

All the more reason to hope for loopholes within the code which allow such creatures, enlisted in a militaristic or corporate assemblage, to refuse to “get with the program.”

. . .

The disembodied voice of David Attenborough informs me that male penguins diligently collect stones for their nests. A wily minority, however, simply wait for a conscientious neighbor to go in search of more, before stealing some of his for his own. Why is one behaving according to one program, and the other another? Without moralizing one as “good” and the other as “bad”—admittedly a powerful temptation—we can ask ourselves if one option is more advantageous than the other, in Darwinian terms. Indeed, is “adaption” something distributed among the individual members of a species—even an electronic species—so that different versions of similar “operating systems” are always at work in different degrees of agency and animation, broadly understood? And how do these different potentialities all mesh together, given how isomorphic and intermingled life is on this planet? Where the anomaly in the penguin world is to walk away from the sea toward the ice mountains, the anomaly for a salmon is to refuse to swim upstream (just as an orc may refuse to fight). The answer to “Why *this* behavior, by *this* creature, at *this* moment?” can be only partially answered by any given philosophy or scientific theory. Neither is it satisfactory to superimpose several on top of each other—Aristotle, Darwin, Jakob von Uexküll, Gilbert Simondon, E. O. Wilson, etc.—as if we could understand the phenomenon better through multiple lenses at once.

What if the rogue orc and the rogue penguin are not “glitches in the matrix” but a refusal to submit blindly to its coercive architecture? What if they are modest harbingers of a novel way to navigate the matrix? Moreover, what if their wayward trajectories describe the kind of *clinamen* (or swerve) that Lucretius sees at work in all vital-material systems—the indeterminacy

necessary to produce the “new factor”¹¹ that inspires matter to spring to life and respond afresh to the world (what Manuel DeLanda calls “crucial eccentricities”)? Conversely, what if *everything* is a glitch in the matrix, and indeed the matrix (i.e., matter) is only the diachronic sum total of consistent or chaotic glitches, which may go off-program at any moment? My sense is that every time an entity or object surprises us, we should follow it if possible, if only in principle. For these are the temporal branching points in which possible futures and parallel worlds are revealed to us; in which “life” may be revealed as more than mere survival, but the vertiginous space of inspiration, ethics, poetics, and/or radical refusal to live in a certain prescribed manner. (A Nietzschean “No!” perhaps?)

I thus confess to my own fantasy, whereby the orc and the penguin somehow cross paths, perhaps sharing a fish sandwich, and communicating through exaggerated gestures about the unseasonably warm weather, before continuing on their own way. Or perhaps they decide to travel together for a while, keeping mute company through the sparse wilderness, sharing water from a greasy Gatorade bottle they found embedded in a melting glacier. Of course, this would entail a smooth passageway between the digital and the terrestrial realm: the absurd conceit of VR goggles for penguins, or (the only slightly less contrived) robots that allow avatars to roam alongside us in our own three-dimensional environments. Neither of which, alas, will actually happen. At least not in the universe I am currently writing in.

Nevertheless, there is some comfort in knowing—as the philosopher Jean-Christophe Bailly points out—that if “living is indeed what arrives ... it never arrives alone.”¹²

1 Loren Eiseley, *The Immense Journey* (New York: Vintage, 1959), p. 33.

2 *Ibid.*, p. 35.

3 *Ibid.*, pp. 36–37.

4 *Ibid.*, p. 35.

5 *Ibid.*

6 Eugene Thacker, *After Life* (Chicago: University of Chicago Press, 2010), p. 21.

7 R. R. Daniel, ed., *Concepts in Space Science* (Hyderabad: Universities Press (India), 2002), p. 353.

8 Marshall McLuhan, *War and Peace in the Global Village* (San Francisco: Harvard, 1997), p. 36.

9 Donna Haraway, “The Cyborg Manifesto,” in Noah Wardrip-Fruin and Nick Montfort, eds., *The New Media Reader* (Cambridge, MA: The MIT Press, 2003), p. 518.

10 See the BBC’s *Horizon* program “Playing God,” directed by Matthew Dyas, 2012. Available at <goo.gl/TepQr>.

11 Lucretius, *On the Nature of Things*, trans. W. E. Leonard (New York: E. P. Dutton & Co., 1921), p. 61.

12 Jean-Christophe Bailly, “The Slightest Breath (On Living),” trans. Matthew H. Anderson, *The New Centennial Review*, vol. 10, no. 3 (Winter 2010), p. 5.