

## **Here Comes Everything: The Promise of Object-Oriented Ontology**

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Generations have trod, have trod, have trod;  
And all is seared with trade; bleared, smeared with toil;  
And wears man's smudge and shares man's smell: the soil  
Is bare now, nor can foot feel, being shod.

And for all this, nature is never spent;  
There lives the dearest freshness deep down things.

(Gerard Manley Hopkins, "God's Grandeur," 5-10)<sup>1</sup>

The experience of nothingness comes neither from concepts nor  
from grammatical negation in sentences.

(Graham Harman, *Heidegger Explained*, 176)<sup>2</sup>

The ecological crisis stimulated two flavors of reaction: regular (normative ecophilosophy) and cool (the effervescent philosophical movement known "speculative realism"). The regular flavor conjures up the good old days when things meant what they said and said what they meant. Initial forays into literary ecocriticism were Trojan horses for a replay of 1970s and 1980s theory wars. For theory, read Derrida. The cool flavor fizzes with future-- the bliss of new thinking, more at home with the shock of ecological reality. The regular flavor is somewhat theistic, while the cool flavor is somewhat nihilistic. The regular flavor establishes Nature as an object of reverent admiration; the cool flavor asserts the deep mystery of a Non-Nature. I've argued elsewhere that the concept Nature is self-defeating in ecological

philosophy, art and politics.<sup>3</sup> This applies to any reified substrate whatsoever, any "Non-Nature." In this essay I argue that to say "There is no Nature" is different from saying "There is a Non-Nature." What we should think asserts neither Nature nor Non-Nature, single, solid and "over yonder." What we should think is far from the cool nihilism of non-Nature, and far from some "realism of the remainder," a la Derrida or Žižek. Its name is object-oriented ontology (OOO, its preferred acronym), pioneered by Graham Harman in four remarkable books: *Tool-Being*, *Guerilla Metaphysics*, *Prince of Networks* and *The Quadruple Object*. To these we may now add Levi Bryant's forthcoming *The Democracy of Objects* and Ian Bogost's *Alien Phenomenology*.<sup>4</sup> OOO belongs to recent attempts to rethink realism in the wake of distinctly anti-realist philosophies that have held sway for some decades. In so doing it shares obvious affinities with ecocriticism and ecophilosophy propounded by such writers as Lawrence Buell, Scott Slovic, Greg Garrard and Jonathan Bate. For example, Quentin Meillassoux devised the term "correlationism" in his groundbreaking speculative realist work *After Finitude*. Correlationism refers to the belief that things can only exist in relation to (human) minds or language.<sup>5</sup> Correlationism is anthropocentrism in philosophical form, so ecological criticism should be very interested in it. I shall argue however that OOO decisively departs from standard ecological criticism, by enabling a ruthless rejection of the concept of Nature, in part because Nature is correlationist. In rejecting Nature, OOO connects with my recent work in ecological thinking. OOO goes further than this, rejecting essentialist Matter (I capitalize both Nature and Matter to de-nature them). OOO differs both from ecocriticism and from other forms of speculative realism (SR), because it subscribes neither to Nature nor to Non-Nature. OOO thus offers a middle path—not a compromise, but a genuine way out of the recent philosophical impasse of essentialism versus nihilism.

### Revenge of the Hyperobjects

How are OOO's arguments relevant to thinking ecology? OOO is a form of realism that asserts that real things exist--these things are objects, not just amorphous "Matter," objects of all shapes and sizes, from football teams to Fermi-Dirac condensates or, if you prefer something more ecological, nuclear waste and birds' nests. To this quite Aristotelian view OOO extends Husserl's and Heidegger's arguments that things have an irreducible dark side: no matter how many times we turn over a coin, we never see the other side as the other side--it will have to flip onto "this" side for us to see it, immediately producing another underside. Harman simply extends this irreducible darkness from subject-object relationships to object-object relationships. Objects encounter each other as operationally closed systems that can only (mis)translate one another (here I draw on Levi Bryant's adaptation of Luhmann). Causation is thus vicarious in some sense, never direct.<sup>6</sup> An object is profoundly "withdrawn"--we can never see the whole of it, and nothing else can either. Moreover, OOO is a relatively "flat ontology," which means that hallucinations and the idea of purple are also objects, though perhaps of a different kind than toilets and ozone. We've become so used to hearing "object" in relation to "subject" that it takes some time to acclimatize to a view in which there are only objects, one of which is ourselves. And in an age where flows and processes are PC and "object" conjures up something dull and static, it's difficult to convey the breakthrough quality of OOO.

A breakthrough it is, nevertheless. The notion of the "withdrawal" of objects extends my term *strange stranger* (ET 38-50, 59-97) to non-living entities. *Strange stranger* names an uncanny, radically unpredictable quality of life forms. Life forms recede into strangeness the more we think about

them, and whenever they encounter one another--the strangeness is irreducible. Ecological philosophy that does not attend to this strangeness is not thinking coexistence deeply enough. Like Harman, I intuited that the uncanny essence of humans that Heidegger contemplates extends to nonhumans.<sup>7</sup> Specifically *human* being is just one way of being in a mesh of strange strangeness--uncanny, open-ended, vast: existence is (ecological) coexistence. The life-non-life boundary is far from thin and rigid. Why should strangeness not apply to non-life? The connection is implicit in thinking the ecological connectedness of life forms. Strange strangeness is evoked in Hopkins's "freshness deep down things." Hopkins inventively extends the adverbial sense of "down" in phrases such as "down the road" or "down the well."

The more we know about a strange stranger, the more she (he, it) withdraws. Objects withdraw such that other objects never adequately capture but only (inadequately) "translate" them.<sup>8</sup> This doesn't simply mean that there is more to a glass of water than my drinking it. It means that even if I could exhaust every single aspect of the glass of water (melting, smashing, evaporating, shooting the silicon atoms around a particle accelerator, writing a story about it, pretending it's a glass of liquid gold, ignoring it), *it would still withdraw*. Even if every other object in the entire Universe were to exhaust every single aspect of the glass, it would still withdraw. This is what "irreducible" means. To think the strange stranger as an (independent, solid, predictable) object in advance of an encounter is to have domesticated it (or her, or him) in advance. Bizarrely, increased access (technically possible or not, hypothetical or not) does not decrease strangeness.

Unlike some thinkers who discovered OOO in spite of deconstruction, I backed into OOO through deconstruction. SR tends to mistake deconstruction for nominalism, subjectivism and Meillassoux's correlationism.

Ecophenomenology joins OOO in opposing deconstruction, though ecophenomenology is truly the odd one out. SR ingeniously asserts a reality independent of minds that even rationalism and skepticism can ascertain.<sup>9</sup> Ecophenomenology, by contrast, is prone to perform the machismo of Doctor Johnson kicking the stone in refutation of Berkeley's idealism: "I refute it THUS."<sup>10</sup> Referencing the sound of a boot hitting a mineral compound is not an argument. Perhaps the sound alone *is* a kind of argument. We are getting used to how oil spills and strange weather really do "speak" to us--OOO is timely in giving us concepts with which to address the feedback we are receiving from Earth (more on this object-oriented rhetoric soon). But my aggressive, correlationist assertion that this is *my* refutation (myself, here, located above this stone, at the other end of this boot) is not an argument: it's a compelling aesthetic image. Why this regressive rhetoric of a "real world" that exists because I can kick it? The answer is simple but surprising: ecological awareness itself.

We're beginning to realize how shocking an ecological view really is. In this era there is too much information, yet "We [lack] the creative faculty to imagine that which we know" (Percy Shelley).<sup>11</sup> One thing to drop in "imagining what we know" is the "object" construed as a totally accessible structure.

The BP oil spill of 2010 provides yet more evidence that ecological reality contains *hyperobjects*: objects massively distributed in time and space that make us redefine what an object is (*ET* 130-35).<sup>12</sup> Consider plutonium: it has a half-life of 24 100 years. No one meaningfully connected to me (will they even be human?) will be alive then. No matter how broad they are in scope, all self-interest based theories of ethics break down at these scales.<sup>13</sup> We must both formulate (in Bruno Latour's words, "compose") new ways of thinking about objects, and revise our ideas about the subjects that think about them.<sup>14</sup> Contemplate global warming, a hyperobject that you can't

directly see or touch--it's withdrawn. It affects all weather on Earth yet it's not reducible to particular manifestations such as sunshine or rain. Instruments such as computers processing terabytes per second can see global warming--not human eyes. What is truly disturbing is that wet stuff falling on my head is now a mere accident of some unseen substance. Nature has disappeared; no--we are realizing we never had it in the first place. The world is real--but not because you can kick it. Giving up a fantasy is far harder than giving up a reality.

This essay has two parts. Each deals with half of the correlationist dyad ("subject," "object"); and with two modes of essentialism that OOO challenges--Nature and Matter. First I explore some rhetorical modes of OOO. Rhetoric is not simply ear candy for humans: indeed, a thorough reading of Plato, Aristotle and Longinus suggests that rhetoric is a technique for contacting the strange stranger, as I shall all too briefly demonstrate. In the process of attending to rhetoric, we shall discover that OOO can formulate a startling theory of subjectivity. If OOO construes everything as objects, some may believe that it would have a hard time talking about subjects--indeed, Slavoj Žižek has already criticized SR in general along these lines.<sup>15</sup> This subjectivity is profoundly ecological and it departs from normative Western ideas of the subject as transcendence. Thus we see off Nature and its correlate, the (human) subject.

Next I investigate Matter. In the first part we see how ecological phenomena don't add up to Nature. Then we turn to what ecological things are made of. How far "deep down things" does OOO go? I argue that OOO enjoins us to drop Matter just as we must drop Nature, and that this means that it can save the appearance of the most coherent and testable physical theory we have, namely quantum theory. This is not to argue that OOO forces quantum theory on us or indeed that science is master of philosophy. Indeed, it would be better to say it the other way around: the most coherent form of physical

reality works because it's object-oriented. In this way, the second part of the essay builds a firm foundation for future ecological criticism: realist but not materialist, ecological but not Natural.

### **OOO Sublime: Ecology without Nature**

One of the best reasons to admire OOO is its stunning rhetoric. Ecocriticism has claimed affinities with OOO against evil "literature departments" that criminally "impose[e] meaning on thing[s]." <sup>16</sup> Such claims accord with ecocritical hostility to "postmodern theory" in the name of Nature (Leston in Bogost, "Object-Oriented Rhetoric"). The mode has a long Euro-American pedigree.<sup>17</sup> But is ecocriticism correct to establish this link with OOO? As we proceed, we shall discover some startling differences. Is there a rhetorical mode that suits OOO better than ecocriticism? And what does it have to do with ecology?

One very specific trope elucidates the affinities and fissures between environmentalist and OOO rhetoric. In Harman's foundational paper "Object-Oriented Philosophy," a coruscating passage strongly resembles *ecomimesis*, a trope of immediacy and vivid aesthetic experience surrounding the act of writing, thinking or speaking (*EwN*, 29-78). Harman uses *ecomimesis* elsewhere (for example *GM* 9-10), and environmentalist writing and ecophenomenology frequently employ *ecomimesis*.<sup>18</sup> Standard *ecomimesis* implicitly or explicitly employs the phrase "As I write": "As I write this, snow is falling outside my window"; "As I write this, the BP oil spill is washing up on the beaches opposite my window." The trope opposes writing, in particular the act of inscribing the sentence in which it occurs, to environmental phenomena occurring "outside" the scene of writing. *Ecomimesis* performs "See? I'm no bookish penman, I know and care about real things." Unfortunately, you need

writing to convey just how against writing you are. Ecomimesis, then, is a correlationist trope: it makes a meal of the fit between (human) mind and the world in which it is embedded. We shall see, however, that Harman's passage is actually *antiecocomimesis*. It amplifies imagination rather than trying to upstage it, and it revels in dislocation, not location.

Harman's ecomimesis isn't "As I write" but "As they argue"--the distancing "they" displaces us, providing no cozy "I" from which to look out onto Nature. In this case it's not the writer who is guilty of the sin of writing, but "them": philosophers hamstrung by the "linguistic turn," in which "Philosophy has gradually renounced its claim to have anything to do with the world itself." Such philosophy has "confine[d] itself to a [generalized] discussion of the condition of the condition of the condition of possibility of ever referring to [actual objects]." Harman writes:

Meanwhile, beneath this ceaseless argument, reality is churning. Even as the philosophy of language and its supposedly reactionary opponents both declare victory, the arena of the world is jam-packed with diverse objects, their forces unleashed and mostly unloved. Red billiard ball smacks green billiard ball. Snowflakes glitter in the light that cruelly annihilates them; damaged submarines rust along the ocean floor. As flour emerges from mills and blocks of limestone are compressed by earthquakes, gigantic mushrooms spread in the Michigan forest. While human philosophers bludgeon each other over the very possibility of "access" to the world, sharks bludgeon tuna fish, and icebergs smash into coastlines.

All of these entities roam across the cosmos, inflicting blessings and punishments on everything they touch, perishing without a trace or spreading their powers further--as if a



million animals had broken free from a zoo in some Tibetan cosmology . . . Will philosophy continue to lump together monkeys, tornadoes, diamonds, and oil under the single heading of that-which-lies-outside?<sup>19</sup>

Is this the sound of a thousand boots kicking a rock pile? Does reality shame "linguistic turn" self-absorption (Harman names Derrida early in the paper) with a gigantic, massively distributed raspberry? The image of reality "churning beneath" the "argument" imagines a seething ocean that continues in spite of the self-absorption above it. Yet Harman's imagery differs from ecophenomenological ecomimesis that confirms the localized position of a subject with privileged access to phenomena: here I am, writing this, sitting opposite this herd of wildebeest. Notice the apocalyptic grotesque in "as if a million animals had broken free from a zoo in some Tibetan cosmology." Harman wants you to see things you can't see. Harman's imagery resembles Raphael's description of alien worlds in *Paradise Lost*, disconfirming Adam as center of his Universe (*ET* 20-5). Harman's rhetoric produces an *object-oriented sublime* that breaks decisively with the Kantian taboo on noncorrelationist scientific speculation: "when we call the starry sky *sublime*, we must not base our judgment upon any concepts of worlds that are inhabited by rational beings . . . but . . . on how we see it, as a broad, vast vault encompassing everything . . ." (emphasis mine).<sup>20</sup>

Harman's object-oriented sublime uses a form of ekphrasis, ultra vivid description. In the *Iliad* the final battle freezes for many lines while the narrator admires depictions of non-martial life on Achilles' shield. It gets us stoned (petrified), transporting us out of a narrative to linger on a frozen image, like "Bullet Time" in *The Matrix*.<sup>21</sup> Longinus praised ekphrasis for evoking the sublime.<sup>22</sup> Burkean and Kantian sublimity are both about reactions in the subject. Burke locates this reaction in the power of the

object, while Kant locates it in the freedom of the subject. But these are just two sides of the same correlationist coin. Longinus, in contrast, is talking about intimacy with an alien presence: the sublime is what evokes this proximity of the alien. The ekphrastic object makes us see ourselves as objects traversed-translated by others. Longinian ekphrasis is not about the reaction of the (human) subject, but about rhetorical modes as affective-contemplative techniques for summoning the alien. "Transport" is the main motif, beaming down the object from its alien world; "elevation" (Greek: *hypsos*)--"getting high," lifting us out of anthropocentrism; and "phantasia" (ekphrasis). Of course "getting high" is a state but is it subjective? It unnervingly reveals the "subject" to be an (assemblage of) object(s) that can be acted on physically. Longinian sublimity is an object-oriented sublime that touches, translates, withdraws from the strange stranger--that is a strange stranger.

The object-oriented sublime transports the strange stranger into the reader's midst. Harman's prose seems less happy with what appears to be the contrary motion, the inwardness of auto-affection ("this ceaseless argument"). Or is it? Is auto-affection confined to the correlationist realm so that OOO can better proclaim a contrastive hetero-affection, attending to the otherness of things? Ecocriticism attacks deconstructive wise guys frolicking in a hermeneutic circle jerk when they should be having proper sex with the outside (other, heteros) world. Ecocritic Karl Kroeber says postmodern theorists should receive a good soaking in a mid-western thunderstorm.<sup>23</sup> That'll learn 'em.

Up! up! my friend, and clear your looks;  
 Why all this toil and trouble?  
 Up! up! my friend, and quit your books;  
 Or surely you'll grow double:

. . .

Books! 'tis a dull and endless strife,  
 Come, hear the woodland linnet,  
 How sweet his music; on my life,  
 There's more of wisdom in it. (Wordsworth, The Tables Turned,  
 1-12)<sup>24</sup>

"Or surely you'll grow double"--auto-affection makes you cross-eyed.

Ecocriticism exaggerates this idea. But is it necessary for OOO?

As you read, a white bear leisurely  
 pees, dyeing the snow  
 saffron,

and as you read, many gods  
 lie among lianas: eyes of obsidian  
 are watching the generations of leaves,

and as you read  
 the sea is turning its dark pages,  
 turning  
 its dark pages. (Denise Levertov, "To the Reader")<sup>25</sup>

Levertov holds that what OOO calls "translation" (encounters between objects) is an auto-affection that resembles reading and writing: as if, while we read Levertov's poem, the sea is reading itself, in a mysterious self-pleasuring narcissism, which is a relation to a certain otherness in or as the self

("its dark pages")--strange strangeness. Since ecomimesis doesn't want to appear auto-affective, since it wants to demarcate auto- from hetero-affection, its response must seem non-linguistic. Yet the more ecomimesis you have, the more language you use. According to a certain machismo, less is more--Nature discourse is often masculine in this sense. While ecomimesis expects "continental" philosophy to die under the boot of an outside world that is self-evident to human eyes, Harman's language enjoys itself, turns its dark pages, auto-affects even as it evokes what human eyes can't see. 000 rhetoric is the inverse of ecocritical rhetoric. Lennon's boot, not Johnson's, comes to mind: "The man in the crowd with the multicolored mirrors on his hobnail boots."<sup>26</sup> There is an alternative way to read Wordsworth's seeming distaste for auto-affection. It's not that reading is (bad) auto-affection; it's that reading is only one type of auto-affection. Why limit auto-affection to subject-subject interactions? There is no one narcissism (Derrida).<sup>27</sup> Harman's antiecomimesis differs sharply from ecocriticism. The sheer variety of auto-affective states, a "feminine" not-all multiplicity of objects, gently collapses the intensity of boot hitting stone.<sup>28</sup> This femininity cuts against the grain of Nature discourse, which, as I've argued elsewhere, is masculine and heteronormative.<sup>29</sup>

Talking about talking, thinking about thinking, "confine[ing yourself] to a discussion of the condition of the condition of the condition of possibility of ever referring to [actual objects]," spell trouble. Yet isn't such talk just another object manifesting its necessary operational closure? Object-object relations (closed systems affecting other closed systems) are shadowy, queer. 000's beef can't be with auto-affection per se, but with how one particular kind of auto-affection sees itself as the only show in town. By contrast, to be troubled by auto-affection in the manner of environmentalism is ironically to inhabit a mode of reflexive (auto-affective) subjectivity: the Romantic beautiful soul, the correlationist mode

par excellence.<sup>30</sup> The beautiful soul sees evil as a mire of corruption. *Evil is precisely this gaze that sees evil as exterior to itself.* Yet we only transcend this evil gaze by becoming responsible for it--the only exit from the beautiful soul is tunneling further into it, auto-affectively. Beautiful soul syndrome is the aesthetic mood that Kierkegaard equates with evil in his own beautifully soulful way.<sup>31</sup> I'm not going to follow Kierkegaard's personae in kicking the aesthetic.<sup>32</sup> That would be the same as kicking a stone to prove you weren't in some idealist dream. The aesthetic, as we shall see, is the secret door through which OOO discovers a theory of what is called "subject."

Romanticism doesn't have to be about big beautiful souls meditating on big mountains. Harman's Keatsian resistance to the egotistical sublime suggests affinities with object orientation within a counter-discourse of Romanticism--witness Marjorie Levinson's profound studies of Keats's negative capability, Coleridge's fascination with Spinoza and Aeolian harps, Shelley's "everlasting universe of things" (*Mont Blanc* 1).<sup>33</sup> These examples resemble Harman's jumbly Latourian "carnival of things" (*GM*, 253-6). "Latour Litanies"--random lists of objects--are the hallmark trope of OOO.<sup>34</sup> Latour Litanies evoke OOO's flat ontology without hierarchies, without Nature. Latour Litanies differs from ecophilosophical lists that metonymically evoke Nature (*EwN*, 14-15, 45, 55-6, 97). Latour Litanies are metonymic, but unlike ecophilosophical lists, they are open about their rhetorical status. They hamper the arrival of a (positive, independent) Nature or Non-Nature: the shadow side of objects remains obscure, flickering. Unlike ecophenomenology, when OOO talks about objects encountering one another without people, it really means it.

A liturgical litany is usually penitential and requires the repetition of some formula (such as "Lord hear us"); hence the figurative sense of "litany" as a series of unfortunate events.<sup>35</sup> OOO litanies address the shadow of the object. They are counter-Romantic: compare the endless seeming list of

flowers in the "unfrequented lanes" passage in Charlotte Smith's 1807 *Beachy Head* (346-67). The more objects tumble forth, the more they fall under the spell of an atmosphere, a melancholic mood in which things churn undigested. A strange pall hangs over these bizarre bazaars: a carnival, a Tibetan zoo, the "cobbled ramparts and outdoor cafés" of Latour's Burgundy; "children, raindrops, bullet trains, politicians, and numerals"; "dogs ... waiters ... ruined glass, wire, and cardboard in a garbage dump" (*GM*, 180, *PoN* 11, 14); "floorboards, bolts, ventilators, gravity, and atmospheric oxygen."<sup>36</sup> The weird magnificence of this mood is reminiscent of "last man" narratives that imagine a world free of people:

The buds decked the trees, the flowers adorned the land: the dark branches, swollen with seasonable juices, expanded into leaves, and the variegated foliage of spring, bending and singing in the breeze, rejoiced in the genial warmth of the unclouded empyrean: the brooks flowed murmuring, the sea was waveless, and the promontories that over-hung it were reflected in the placid waters; birds awoke in the woods, while abundant food for man and beast sprung up from the dark ground. (Mary Shelley)<sup>37</sup>

The absence of people resembles the overwhelmingly palpable absence of the barking dog in the Sherlock Holmes story:

Nothing stirred in the drawing-room or in the dining-room or on the staircase. Only through the rusty hinges and swollen sea-moistened woodwork certain airs, detached from the body of the wind (the house was ramshackle after all) crept round corners and ventured indoors. Almost one might imagine them, as they entered the drawing-room questioning and wondering, toying with the flap

of hanging wall-paper, asking, would it hang much longer, when would it fall? (Virginia Woolf, "Time Passes," *To the Lighthouse*)<sup>38</sup>

The quiescence of melancholy's long afternoon shadow haunts the dark side of the carnival of objects. Like a host of characters in some Expressionist circus, Harman's movingly whimsical antiecomimetic jumbles evoke melancholia. Melancholia is precisely a mode of intimacy with strange objects that can't be digested by the subject.

Compare the Romantic Hegel's description of the "unseen" with Harman's antiecomimesis:

The birds' variegated plumage shines unseen, and their song dies away unheard, the *Cereus* which blossoms only for a night withers without having been admired in the wilds of southern forests, and these forests, jungles of the most beautiful and luxuriant vegetation, with the most odorous and aromatic perfumes, perish and decay no less unenjoyed. The work of art has not such a naïve self-centered being, but is essentially a question, an address to the responsive heart, an appeal to affections and to minds.<sup>39</sup>

This world is empirically real, but we're deaf to these Berkeleyan trees falling without ears to hear them. Yet we do hear: an apophasis sublimely renders the very things Hegel claims remain unperceived, a common trope in an age of untrodden ways, unfrequented lanes and paths not taken.<sup>40</sup> Hegel's plaintive, transient "self-centered" unseen world resembles "A = A," or auto-affecting, "feminine," self-negating Buddhism, the religion Hegel called "being within self."<sup>41</sup> "A = A" is the beautiful soul (*Phenomenology* 395, 398-9), pure consciousness without content.<sup>42</sup> Hegel's transient world is an

inside-out version of this interiority. Nothing illuminates OOO more precisely than the fact that its idea of object withdrawal is Hegel's nightmare, the "night of the world."<sup>43</sup> No wonder the good Hegelian Žižek finds SR theories of subjectivity wanting (Žižek). I argue, by contrast, that "the subject" is perfectly theorizable within at least one branch of SR--just that Žižek may find the result disturbing. While Hegel flees from contemplative self-absorption, OOO embraces the feminine withdrawal of objects (Bryant, *Democracy*). This is a truly progressive inversion, because it means that the privilege or curse of (human) subjectivity is a feature of everything--humans are nothing special, and "objects" are far more wondrous than we commonly think.

Like all subsequent "isms," Romanticism is the critical use of aesthetic form: "If we experience in this new way, things will really change." We simply overlooked how to apply this to all objects, not just human mentation. To lapse into Californian, OOO is so about the subject. There is no good reason to be squeamish about this. The more the ekphrasis zaps us, the more we fall back into the gravity well of melancholy. Sentience is out of phase with objects, at least if you have a nervous system. So melancholia is the default mode of subjectivity: an object-like coexistence with other objects and the otherness of objects--touching them, touching the untouchable, dwelling on the dark side one can never know, living in endless twilight shadows. If the reader has experienced grief she or he will recognize this state as an object-like entity that resides somewhere within the body, with an amortization schedule totally separated from other temporalities (in particular, the strict digital clock time of contemporary life). Through the heart of subjectivity rolls an object-like coexistence, none other than ecological coexistence--the ecological thought fully-fledged as *dark ecology* (*EwN* 141-3, 181-97). The inward, withdrawn, operationally closed mood called melancholy is something we shake off at our peril in these



dark ecological times. Melancholy starts to tell us the truth about the withdrawn qualities of objects. OOO thus differs from theistic ecophilosophy that asserts, "There is a Nature." It maintains no absolute distance between subject and object; it limits "subject" to no entity in particular. Žižek's suspicion of SR to do with the "feminine" self-absorption of objects: precisely what he doesn't like about Buddhism. Changing "self-absorption" to "withdrawal" or "operational closure" discloses what's threatening about Buddhism: an object-like entity at the core of what is called subjectivity. Like ecomimesis, Harman's passage affirms a real world beyond mentation. Unlike ecomimesis, this world doesn't surround a subject--it's *a world without reference to a subject*. OOO departs from standard ecophilosophy. OOO rhetoric departs from authoritarian assertions of Nature: reality versus fantasy, extraversion versus introversion. This departure is the genuine novelty of OOO, not remixes of the sound of Johnson's boot.

### **Deep Down Things: Ecology without Matter**

We have dispatched Nature and its correlationist dance partner, the transcendental subject. Now let's turn our attention to what remains. Things, of course. But how far "down things" does OOO really go? Are these things made of some kind of substrate, some kind of unformed matter? Does "withdrawal" mean that objects are impenetrable in some non-figurative, non-human sense? Do objects have a spatial "inside"? Surely they might. But the principle of irreducibility must mean that this inside is radically unavailable. It's not simply a case of the right equipment passing through it, like a knife through butter. Even a knife through butter would not access the butter in all its essential butteriness. The proliferation of things that ecology talks about--from trees to nuclear power--do not compromise a

holistic Nature. Nor yet are they comprised of some intrinsic, essential stuff. To dispatch Matter, we must explore the most rigorous and testable theory of physical Matter we know: quantum theory. This will help us in many ways to think ecology.

Contemporary physics concurs with a principle tenet of Lacan and Derrida: there's no "big Other," no device, for instance, that could measure quantum phenomena without participating in these phenomena.<sup>44</sup> All observations are inside the system, or as Derrida puts it, "There is nothing outside the text" (or, in Gayatri Spivak's alternative, which I prefer, "There is no outside-text").<sup>45</sup> Arkady Plotnitsky has traced the affinities between deconstruction and quantum physics.<sup>46</sup> People commonly misconstrue "there is no-outside-text" as nominalism: we can only know things by their names. Far more drastically, the axiom means: (1) Any attempt to establish rigid boundaries between reality and information results in unsustainable paradoxes; (2) Language is radically nonhuman--even when humans use it. It would be a mistake to hold that (1) is correlationism. "There is no outside-text" occurs in a passage in which Derrida is analyzing Rousseau's position on Nature, so it's worth pausing here since this issue is directly relevant to ecocriticism. Derrida tacks close to the text he's analyzing, which is why he appeals to close readers in the first place. He is not making a sweeping generalization about reality. Derrida is only saying, "Given the kind of closed system textuality that Rousseau prescribes, there is no outside-text." That is, Rousseau can't go around making claims about nature, not because there is nothing out there, but because the way he models thinking sets textuality up as a black hole.

It's precisely generalization that is at issue, generalization that Derrida's fans (and critics) think he's making. The sweeping statement is what becomes a black hole. When I'm feeling charitable towards Derrida I imagine he thinks that by imploding generalization he is leaving non-textual

objects intact. Derrida is claiming that texts are objects. They can only have vicarious relations with non-texts. Which is why I argue in *Ecology without Nature* that there are coral reefs and bunnies, but no Nature. Notice the difference between my argument and claiming that Derrida is *OOO* avant la lettre. Nothing could be further from the truth. Derrida abstained from ontology: he considered it tainted by the generalization-disease.

Unfortunately this defaults to various forms of antirealism. Derrida's is a sin of omission. As William Blake wrote, "I must Create a System. or be enslav'd by another Mans [sic]." <sup>47</sup>

*OOO* shares one thing at least with deconstruction--refraining from assertions about some general essence or substance at the back of things that guarantees their existence. The lack of a big other means that *OOO* can't cleave to Nature. It also means that *OOO* can't cleave to Matter if by that we mean something like what Mr. Spock means when he claims to have found "Matter without form." <sup>48</sup> *OOO* is troubling for materialisms that rely on any kind of substrate, whether it consists of discrete atoms or of a continuum. Materialism lopes along hampered by Newtonian-Cartesian atomistic mechanism on the one hand, and the formless goo of Spinoza on the other. If *OOO* objects aren't made of some essential Matter, doesn't this put *OOO* at odds with physics? Might physics actually support *OOO*? Certain uncontroversial facts, demonstrable in highly repeatable experiments, shatter essentialist prejudices concerning Matter as absurd as thinking the Sun goes around the Earth because we see it "rising" and "setting." Such facts shake firewalls between the "classical" world of atomism where things behave like particles in high school science classes--little shiny ping-pong balls--and the quantum world where things don't behave this way (*QT* 270, 420). Quantum phenomena are not simply hard to access or only partially "translated" by minds and other objects. They are irreducibly withdrawn.

OOO is form of realism, not materialism. In this it shares affinities with quantum theory. Antirealism pits quantum theory against its opponents, since quantum theory supposedly shows reality is fuzzy or deeply correlated with perception and so forth. In fact, quantum theory is the only existing theory to establish firmly that things really do exist beyond our mind (or any mind). Quantum theory positively guarantees that real objects exist! Not only that--these objects exist beyond one another. Quantum theory does this by viewing phenomena as quanta, as discrete "units" as described in *Unit Operations* by OOO philosopher Ian Bogost.<sup>49</sup> "Units" strongly resemble OOO "objects."<sup>50</sup> Thinking in terms of units counteracts problematic features of thinking in terms of systems. A kind of systems thinking posed significant problems for nineteenth-century physicists. Only consider the so-called black body radiation problem. Classical thermodynamics is essentially a systems approach that combines the energy of different waves to figure out the total energy of a system. The black box in question is a kind of oven. As the temperature in the oven increases, results given by summing the wave states according to classical theory become absurd, tending to infinity.

By seeing the energy in the black box as discrete quanta ("units"), the correct result is obtained. Max Planck's discovery of this approach gave birth to quantum theory. Now consider perception, for the sake of which antirealism usually cites quantum theory. What does quantum theory show about our mental interactions with things? Perceptual, sensual phenomena such as hardness and brilliance are at bottom quantum mechanical effects. I can't put my hand through this table because it is statistically beyond unlikely that the quanta at the tip of my finger could bust through the resistance wells in the quanta on the table's surface. *That's what solidity is.* It's an averagely correct experience of an aggregate of discrete quanta. This statistical quality, far from being a problem, is the first time humans have been able to formalize supposedly experiential phenomena such as solidity. What some

people find disturbing about quantum theory (once in a gajillion times I can put my finger through the table) is precisely evidence for the reality of things. (This is a version of an argument in Meillassoux, *AF* 82-5).

Quantum theory specifies that quanta withdraw from one another, including the quanta with which we measure them. In other words quanta really are discrete, and one mark of this discreteness is the constant (mis)translation of one quantum by another. Thus when you set up quanta to measure the position of a quantum, its momentum withdraws, and vice versa. Heisenberg's uncertainty principle states that when an "observer"--not a subject per se, but a measuring device involving photons or electrons (or whatever)--makes an observation, at least one aspect of the observed is occluded (*QT* 99-115). Observation is as much part of the Universe of objects as the observable, not some ontologically different state (say of a subject). More generally, what Niels Bohr called complementarity ensures that no quantum has total access to any other quantum. Just as a focusing lens makes one object appear sharper while others appear blurrier, one quantum variable comes into sharp definition at the expense of others (*QT* 158-61). This isn't about how a human knows an object, but how a photon interacts with a photosensitive molecule. Some phenomena are irreducibly undecidable, both wavelike and particle-like. The way an electron encounters the nucleus of an atom involves a dark side. Objects withdraw from each other at a profound physical level. QOO is deeply congruent with the most profound, accurate and testable theory of physical reality available. Again, it would be better to say it the other way around: quantum theory works because it's object-oriented.

Probing the quantum world, then, is a form of auto-affection. Bohr argued that quantum phenomena don't simply concatenate themselves with their measuring devices. They're *identical* to it: the equipment and the phenomena form an indivisible whole (*QT* 139-40, 177). This "quantum coherence" applies

close to absolute zero, where particles become the "same" thing (Bose-Einstein condensates), or in a very hot plasma (Fermi-Dirac condensates). To an electron, an ultracold or ultrahot substance may appear transparent, as if it didn't exist at all (QT 493-4). Macro-scale objects approximate separate-seeming entities that in some deeper sense are the same thing. Nanoscale cogwheels get stuck because when tiny things approach one another, Casimir forces glue them together. The cogs become indistinguishable.<sup>51</sup> They no longer function mechanically, as external to one another.<sup>52</sup> Nothing is radically external to anything else: particles don't clunk onto each other like little metal balls in an executive toy (QT 177). Rough approximations notwithstanding, reality is not a machine (139-40). Quantum theory extends the non-mechanism inherent in relativity theory: "the classical idea of the separability of the world into distinct but interacting parts is no longer valid or relevant."<sup>53</sup> Quantum objects are deeply environmental and nonessentialist (QT iv, 139, 175, 414-15). An electron only exists because of its surrounding environment--ditto for the surrounding environment, and so on in an open-ended network. Quantum theory is performative too: if it walks and quacks like an electron, it is one (118). Quantum performativity strongly resembles evolutionary performativity, commonly called "satisficing": as a duck, you just have to look and quack enough like a duck to pass on your genes.<sup>54</sup>

Now consider nonlocality. In ecosystems, things are contiguous and symbiotic. In nonlocality, things directly are other things. Alain Aspect, Einstein's student David Bohm, Anton Zeilinger and others have shown that the Einstein-Podolsky-Rosen paradox concerning quantum theory is an empirical fact.<sup>55</sup> Einstein, Rosen and Podolsky argued that if quantum theory were telling us something true about the Universe, then you would be able to entangle particles.<sup>56</sup> You could then send one particle some information (make it spin a certain way), and the other would instantaneously appear to have

received the same information. This works to an arbitrary distance--two yards, two miles, the other side of the galaxy. Zeilinger has demonstrated nonlocal phenomena using entangled particles on either side of Vienna, between two Canary Islands, and between orbiting satellites.<sup>57</sup> To explain nonlocality you could abolish the speed of light, but this troubles physicists. Or you could say that there aren't really two particles, just one auto-affective process. It sounds mad but other options are more so--it involves time travel and telepathy. Nonlocality means something is profoundly wrong with atomism.<sup>58</sup> Moreover, objects have blurred boundaries at scales considerably larger than we used to think. Photosynthesizing molecules in chloroplasts, the symbiotic bacteria that make plants green, put photons into coherence. When it enters the molecule a photon occupies many positions at once.<sup>59</sup> In some deep sense there's no (single, firm, separate) photon as such. In early 2010 physicists established quantum coherence in an object visible to the naked eye: a tiny fork vibrating and not vibrating simultaneously.<sup>60</sup> If biology discovers how entangled life forms are, quantum entanglement opens a more profound interconnectedness.

How can ontology think nonlocality? The Copenhagen Interpretation of quantum theory spearheaded by Bohr holds that though quantum theory is a powerfully accurate heuristic tool, peering underneath it is absurd because quantum phenomena are "irreducibly inaccessible to us" (Plotnitsky, *Reading Bohr* 35). Bohr argued that our measurement is "indivisible" with what is measured (35). The refusal to get ontological is already ontological: Newtonian atomism, with its granular view of Matter, is left substantially alone. Matters were less settled at Copenhagen than the victors' spin portrayed.<sup>61</sup> Bohm, Basil Hiley, Zeilinger, Antony Valentini and others proceed along lines established by De Broglie: an "ontological interpretation" that takes Bohr's "indivisibility" to pertain to objects beyond (human) cognition.<sup>62</sup> Bohm postulated an "implicate order" in which particles are

manifestations of some deeper process, like waves on the ocean (*IO* 246-77). Just as ocean waves subside, particles fold back into the implicate order. "Particles" are abstractions of a Leibnizian reality in which everything is enfolded in everything else. The ontological interpretation is bad for holism as well as atomism. Holism requires some kind of top-level object consisting of parts that are separate from the whole and hence replaceable (21): another modulation of mechanism, holist protestations notwithstanding. According to the Bohmian view, you aren't part of a larger whole. Everything is enfolded in everything as "flowing movement" (14). Unlike the Copenhagen Interpretation, the ontological interpretation is noncorrelationist: particles withdraw from one another, not because humans are observing them in certain ways, but because the implicate order is withdrawn from itself. A hyperobject if ever there was one: an auto-affective ocean turning its dark pages. This whole might be strictly unanalyzable: the implicate order has an irreducible dark side because it's made of "objects wrapped in objects wrapped in objects" (*GM* 83). Here I'm not arguing that OOO must be Bohmian. I'm arguing that a viable interpretation of quantum theory is itself object-oriented. There is a kind of organicism here, a nonessentialist organicism that mitigates against the fashion for mechanistic explanations in biology (neo-Darwinism) and the humanities (some forms of posthumanism and Deleuzianism).

Implication and explication suggest Matter being enfolded and unfolded from something deeper. Even if it were the case that OOO should defer to physics, in the terms set by physics itself objects aren't made "of" any one thing in particular. Just as there is no top level, there may be no bottom level that is not an (substantial, formed) object. Electrons come and go, change into other particles, radiate energy. An electron is real. Yet in the act of becoming or un-becoming an electron, it's a statistical performance: "quantum theory requires us to give up the idea that the electron, or any



other object has, by itself, any intrinsic properties at all. Instead, each object should be regarded as something containing only incompletely defined potentialities that are developed when an object interacts with an appropriate system" (*QT* 139). This approaches Harman's image of the withdrawn-ness of objects as a "subterranean creature" (*TB* 129-33 (133)). Thus the "something deeper" from which the electron unfolds is also withdrawn. If they lack such a hidden essence, objects must be spatially external to one another like machine parts. This legitimates instrumentalization, which reduces objects to other objects. If objects literally relate externally (if the hidden "interior" is spatiotemporal), then little distinguishes OOO from mechanism. If objects are strangely strange all the way down, OOO can't be a form of mechanism. We can't predict the future state of reality even in principle, because we can't anticipate the position of every particle. Not only because this would take too long (it would) or break the speed of light; not only because of complementarity (*QT* 158-61), but for a more fundamental reason, very much not to do with epistemology or correlationism: there are no particles as such, no Matter as such, only discretely quantized objects. If this is the case at the most fine grained level we currently know, how much more so at higher scales, the scales on which evolution, biology and ecology happen. Ecological thought must be realism, but it doesn't have to be materialism or mechanism.

To this extent, "object" (as a totally positive entity) is a false immediacy. Positive assertions about objects fail because objects have a shadowy dark side, a mysterious interiority like the *je ne sais quoi* of Kantian beauty. Is this nothing at all? Is there a path from the carnival of things to a bleak nothingness? Nihilism, believing that you have no beliefs, maintains that things emerge from an impenetrable mystery.<sup>63</sup> Nihilism, the cool kids' religion, shuns the inconveniences of intimacy. We have objects-- they have us--under our skin. They are our skin. OOO can't be a form of

nihilism. It's the opposite view (relationism) that tends towards nihilism. Relationism holds that objects are nothing more than the sum of their relations with other objects. This begs the question of what an object is, since the definition implies a potential infinite regress: what are the "other objects"? Why, nothing more than the sum of their relations with other objects--and so on *ad obscurum*. At least OOO takes a shot at saying what objects are: they withdraw. This doesn't mean that they don't relate at all. It simply means that how they appear has a shadowy, illusory, magical, "strangely strange" quality. It also means they can't be reduced to one another. OOO holds that strangeness is impossible if objects are reducible to their relations. Since relationism is hamstrung by its reluctance to posit anything, it tends towards obscurantism. Relationism is stuck in a Euthyphronic dilemma: objects consist of relations between other objects--and what are those objects? An object as such is never defined. So while ecological criticism appears to celebrate interconnectedness, it must in the end pay attention to what precisely is interconnected with what.

Life forms and non-life forms are unique and strange precisely because they do derive from one another. Yet all kinds of life forms scuttle around, and objects proliferate. What we should drop are the concepts Nature and Non-Nature. Heidegger describes how things are intermodulated: we never hear the wind, only the wind in the door.<sup>64</sup> This applies to trees, leaves, chloroplasts and photons entering chloroplasts--and subjects. It applies to the equipment that measures these interactions and minds thinking about them. Reality isn't just about (human) perception--all phenomena abstract (translate) one another. OOO can go deeper still. Mathematical objects have a withdrawn aspect, since any well-defined and consistent logical system (correct on its own terms) must, as a precondition for consistency, contain at least one theorem that it can't prove (Gödel's Incompleteness Theorem). Notions such as spatial interiority or dimensionality, solidity and even duration are correlationist

constructs--we humans (among others) sense objects as solid. OOO accommodates the radical finitude of all objects, from pulsars and pinking shears to *Principia Mathematica* and poems. Yet this radical finitude includes a strange irreducible openness. The problem (ecological, political, mathematical, ontological) isn't what we call "subject," but "self" and its correlate, Nature--or Non-Nature, or Matter. OOO thus differs from eliminative materialisms and realisms that hold, "There is a Non-Nature." The trouble with standard ecological criticism--even Deep Ecology--is that it's not nearly deep enough. Clinging to the palpable, we end up with faceless Nature, a symptom of how thinking has damaged Earth. OOO allows us to think deep down things.

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#### Notes

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<sup>2</sup> Graham Harman, *Heidegger Explained: From Phenomenon to Thing* (Chicago: Open Court, 2007).

<sup>3</sup> Timothy Morton, *Ecology without Nature* (Cambridge, Mass.: Harvard University Press, 2007), passim (hereafter *EWN*). *The Ecological Thought* (Cambridge, Mass.: Harvard University Press, 2010), 3, 5-8 (hereafter *ET*).

<sup>4</sup> Levi Bryant, *The Democracy of Objects* (Ann Arbor: Open Humanities Press, forthcoming); Ian Bogost, *Alien Phenomenology* (Ann Arbor: Open Humanities Press, forthcoming).

<sup>5</sup> Quentin Meillassoux, *After Finitude: An Essay on the Necessity of Contingency* (Continuum, 2009), 5 (hereafter *AF*).

<sup>6</sup> Graham Harman, "On Vicarious Causation," *Collapse 2* (2007), 171-205.

<sup>7</sup> Martin Heidegger, *Introduction to Metaphysics*, tr. Gregory Fried and Richard Polt (New Haven: Yale University Press, 2000), 156-76.

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<sup>8</sup> Graham Harman, *Guerilla Metaphysics: Phenomenology and the Carpentry of Things* (Chicago: Open Court, 2005), 56-8, 177, 187, 214, 245 (hereafter *GM*); *Prince of Networks: Bruno Latour and Metaphysics* (Melbourne: Re.Press, 2009), 15-16, 18-19, 27-8, 35, 75-7, 111-12, 124-6, 135, 137-8, 144-9, 206-7, 210, 215-16 (hereafter *PoN*).

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<sup>10</sup> James Boswell, *Boswell's Life of Johnson* (Oxford: Oxford University Press, 1965), 333.

<sup>11</sup> Percy Shelley, *A Defense of Poetry*, in *Shelley's Poetry and Prose*, ed. Donald H. Riemann and Neil Fraistat (New York: Norton, 2002), 530.

<sup>12</sup> Timothy Morton, "Hyperobjects and the End of Common Sense," [contemporarycondition.blogspot.com/2010/03/hyperobjects-and-end-of-common-sense.html](http://contemporarycondition.blogspot.com/2010/03/hyperobjects-and-end-of-common-sense.html), accessed July 4, 2010.

<sup>13</sup> Derek Parfait, *Reasons and Persons* (Oxford: Oxford University Press, 1984), 355-7, 361, 371-7.

<sup>14</sup> Bruno Latour, "An Attempt at Writing a 'Compositions' Manifesto," *New Literary History* (forthcoming).

<sup>15</sup> Slavoj Žižek, "Interview with Ben Woodard," *The Speculative Turn: Continental Materialism and Realism* (Melbourne: re.press, forthcoming).

<sup>16</sup> Byron Hawk, "Rhetorics of Assemblage versus Audience, or How to Emerge with Things," *Rhetoric Society of America* (May, 2010); Robert Leston, "Rhetorics of the Inhuman versus Interpretation, or How to Become Imperceptible with Things," *Rhetoric Society of America* (May, 2010); see Ian Bogost, "Object-Oriented Rhetoric: Thoughts on the RSA Panel Papers," [bogost.com/blog/object-oriented\\_rhetoric.shtml](http://bogost.com/blog/object-oriented_rhetoric.shtml); Jim Brown, "RSA: Toward an Object-Oriented Rhetoric," [rsa.cwrl.utexas.edu/node/3850](http://rsa.cwrl.utexas.edu/node/3850), accessed June 14, 2010.

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<sup>17</sup> Timothy Morton, "The Plantation of Wrath," in Timothy Morton and Nigel Smith, eds., *Radicalism in British Literary Culture, 1650-1830* (Cambridge: Cambridge University Press, 2002), 64-85; Tristram Stuart, *The Bloodless Revolution: A Cultural History of Vegetarianism from 1600 to Modern Times* (New York: Norton, 2008).

<sup>18</sup> David Abram, *The Spell of the Sensuous: Perception and Language in a More-Than-Human World* (New York: Pantheon, 1996), 266; Val Plumwood, *Environmental Culture: The Ecological Crisis of Reason* (London and New York: Routledge, 2002), 230-1.

<sup>19</sup> Graham Harman, "Object-Oriented Philosophy," [beyng.com/OOP.html](http://beyng.com/OOP.html) (originally given at Brunel University, 2001), accessed June 13, 2010; forthcoming in Graham Harman, ed., *Towards Speculative Realism: Essays and Lectures* (Ripley: Zer0 Books, 2010).

<sup>20</sup> Immanuel Kant, *Critique of Judgment*, tr. Werner S. Pluhar (Indianapolis: Hackett, 1987), 130.

<sup>21</sup> Wachowski Brothers, dirs., *The Matrix* (Warner Brothers, Village Roadshow Pictures, 1999).

<sup>22</sup> Longinus, *On the Sublime*, in *Classical Literary Criticism* (London: Penguin, 2004), 113-65 (133-5, 140).

<sup>23</sup> Karl Kroeber, *Ecological Literary Criticism: Romantic Imagining and the Biology of Mind* (New York: Columbia University Press, 1994), 42.

<sup>24</sup> William Wordsworth, *The Major Works: Including the Prelude*, ed. Stephen Gill (Oxford: Oxford University Press, 2008).

<sup>25</sup> Denise Levertov, *Poems 1960-1967* (New York: New Directions, 1983).  
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<sup>26</sup> The Beatles, "Happiness is a Warm Gun," *The Beatles* (Apple, 1968).

<sup>27</sup> Jacques Derrida, "There Is No One Narcissism," *Points: Interviews, 1974-1994* (Stanford: Stanford University Press, 1995), 196-215.

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- <sup>28</sup> Levi Bryant, "Lacan's Graphs of Sexuation and OOO," larvalsubjects.wordpress.com/2010/06/28/lacans-graphs-of-sexuation-and-ooo/, accessed July 11, 2010.
- <sup>29</sup> Timothy Morton, "Queer Ecology," *PMLA* 125.2 (March 2010), 1-19.
- <sup>30</sup> Georg Wilhelm Friedrich Hegel, *Hegel's Phenomenology of Spirit*, tr. A.V. Miller, analysis and foreword by J.N. Findlay (Oxford: Oxford University Press, 1977), 383-409.
- <sup>31</sup> Søren Kierkegaard, *Either/Or: A Fragment of Life*, tr. and intro. Alastair Hanna (London: Penguin, 1992), 243-376.
- <sup>32</sup> Theodor Adorno, *Kierkegaard: Construction of the Aesthetic*, tr. and ed. Robert Hullot-Kentor (Minneapolis: University of Minnesota Press, 1999), 10, 40-6, 123-4.
- <sup>33</sup> Marjorie Levinson, "A Motion and a Spirit: Romancing Spinoza," *Studies in Romanticism* 46.2 (Winter, 2007), 367-408; "Pre- and Post-Dialectical Materialisms: Modeling Praxis without Subjects and Objects," *Cultural Critique* (Fall 1995), 111-20.
- <sup>34</sup> Ian Bogost has written software to generate these "Latour Litanies" by pulling random lists of objects from Wikipedia. "Latour Litanies: Generate Your Own Latour Litanies," bogost.com/blog/latour\_litanizer.shtml; Levi Bryant, "Latour Litanies," larvalsubjects.wordpress.com/2010/04/26/latour-litanizer/, accessed June 18, 2010.
- <sup>35</sup> *Oxford English Dictionary*, "litany," n. 1, 2 (dictionary.oed.com, accessed June 18, 2010).
- <sup>36</sup> Graham Harman, *Tool-Being: Heidegger and the Metaphysics of Objects* (Chicago: Open Court, 2002), 18 (hereafter *TB*).
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<sup>38</sup> Virginia Woolf, *To the Lighthouse*, ed. David Bradshaw (Oxford: Oxford University Press, 2006), 103-4.

<sup>39</sup> Georg Wilhelm Freidrich Hegel, *Introductory Lectures on Aesthetics*, tr. Bernard Bosanquet, intro. and commentary Michael Inwood (Harmondsworth: Penguin, 1993), 78.

<sup>40</sup> Phrases from Wordsworth ("She dwelt among untrodden ways"), Charlotte Smith (*Beach Head* 349) and Robert Frost respectively.

<sup>41</sup> Georg Wilhelm Friedrich Hegel, *Lectures on the Philosophy of Religion*, ed. Peter C. Hodgson, tr. R. F. Brown, P. C. Hodgson, and J. M. Stewart, with H. S. Harris (Berkeley: University of California Press, 1988), 253-4, 265 n. 183, 185, 266 n. 188, 504-5; *The Philosophy of History*, tr. J. Sibree, prefaces by Charles Hegel and J. Sibree; new intro. by C. J. Friedrich (New York : Dover, 1956), 171; *Hegel's Logic*, tr. William Wallace, foreword by J. N. Findlay (Oxford: Oxford University Press, 1975), 125, 127-8.

<sup>42</sup> See David Simpson, "Romanticism, Criticism and Theory," in Stuart Curran, ed., *The Cambridge Companion to British Romanticism* (Cambridge: Cambridge University Press, 1993), 10.

<sup>43</sup> Georg Wilhelm Friedrich Hegel, "Jenaer Realphilosophie," *Frühe politische System*, ed. Gerhard Göhler (Frankfurt: Ullstein, 1974), 201-89 (204).

<sup>44</sup> David Bohm, *Quantum Theory* (New York: Dover, 1989), 113-14. Hereafter referred to as *QT*.

<sup>45</sup> Jacques Derrida, *Of Grammatology* tr. Gayatri Chakravorty Spivak (Baltimore and London: the Johns Hopkins University Press, 1987), 158.

<sup>46</sup> Arkady Plotnitsky, *Complementarity: Anti-Epistemology after Bohr and Derrida* (Durham: Duke University Press, 1994); *Reading Bohr: Physics and Philosophy* (Dorrecht: Springer, 2006).

<sup>47</sup> William Blake, *Jerusalem*, in *The Complete Poetry and Prose of William Blake*, ed. David V. Erdman (New York: Doubleday, 1988), plate 10.

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<sup>48</sup> *Star Trek*, "Return to Tomorrow," first broadcast February 9, 1968.

<sup>49</sup> Ian Bogost, *Unit Operations: An Approach to Videogame Criticism* (Cambridge, Mass.: MIT Press, 2008).

<sup>50</sup> See Bryant, <http://larvalsubjects.wordpress.com/?s=Bogost>.

<sup>51</sup> Alejandro W. Rodriguez et al., "Theoretical Ingredients of a Casimir Analog Computer," *Proceedings of the National Academies of Sciences* (March 24, 2010), [www.pnas.org/cgi/doi/10.1073/pnas.1003894107](http://www.pnas.org/cgi/doi/10.1073/pnas.1003894107).

<sup>52</sup> David Bohm, *Wholeness and the Implicate Order* (London: Routledge, 2008), 219. Hereafter referred to as *IO*.

<sup>53</sup> David Bohm, *The Special Theory of Relativity* (London: Routledge, 2006), 155 (hereafter *R*).

<sup>54</sup> Richard Dawkins, *The Extended Phenotype: The Long Reach of the Gene* (Oxford and New York: Oxford University Press, 1999), 156; Joan Roughgarden *Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People* (Berkeley: University of California Press, 2004), 26-7.

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<sup>56</sup> Albert Einstein, Nathan Rosen and Boris Podolsky, "Can Quantum-Mechanical Description of Reality be Complete?" *Phys. Rev.* 47 (1935), 777-80.

<sup>57</sup> Anton Zeilinger et al., "Distributing Entanglement and Single Photons through an Intra-City, Free-Space Quantum Channel," *Optics Express* 13 (2005), 202-9; "Experimental Verification of the Feasibility of a Quantum Channel



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<sup>58</sup> John Bell, "On the Einstein Podolsky Rosen Paradox," *Physics* 1 (1964), 195-200.

<sup>59</sup> Elisabetta Collin et al., "Coherently Wired Light-Harvesting in Photosynthetic Marine Algae at Ambient Temperature," *Nature* 463 (4 February 2010), 644-7.

<sup>60</sup> Aaron D. O'Connell et al., "Quantum Ground State and Single Phonon Control of a Mechanical Ground Resonator," *Nature* 464 (March 17, 2010), 697-703.

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<sup>62</sup> David Bohm and Basil Hiley, *The Undivided Universe: An Ontological Interpretation of Quantum Theory* (London: Routledge, 1995).

<sup>63</sup> Chögyam Trungpa, *Cutting Through Spiritual Materialism* (Boston: Shambhala, 1973), 192-3.

<sup>64</sup> Martin Heidegger, "The Origin of the Work of Art," *Poetry, Language, Thought*, tr. Albert Hofstadter (New York: Harper and Row, 1971), 15-87 (26).