



## Object-Oriented Ontology and Its Critics

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# Objects, Relations, Potential and Change

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**Abstract:** This article attempts to develop further the conception of dynamics in Object-Oriented Ontology (OOO): its model of how objects develop and change. Objects are affected by relations between them, and have the potential both to produce and undergo effects, as realised in interaction with other objects. To elaborate on the change of objects in OOO, an idea is adopted from transcendental ontology. A key Hegelian question in this article is how the realisation of existing potential can produce new potential (Schelling: potentialisation, going from the actual to the possible). Stated differently: how can objects change to the point of breaking their identity and generating a new object? One needs to consider that objects are nested at different levels, and that the degree of how radical change may be depends on the perspective of any given level. To address this issue, the article employs the notion of a *script*: a structure of nodes, each with its own subscripts. The analysis is applied and developed further through a comparative analysis of change in evolution, economics, a theory of discovery, and linguistics. The dual intention of this is to see if OOO can help us understand those phenomena, and to see in turn if those phenomena can inform the further development of OOO.

**Keywords:** Object-Oriented Ontology, transcendental ontology, transformation, evolution, economics, discovery, meaning

## 1 Introduction

This article builds on what has been developed in OOO as propounded by Graham Harman and Tristan Garcia, among others.<sup>1</sup> Objects can be material, non-living, living, or abstract. Objects exist regardless of any perception or understanding by any subject. They have a beginning and an end, an inside with a composition of elements, an outside of relations with other objects, and cannot be reduced to any of these. Features of objects are ‘withdrawn’ (Harman): one cannot know all their features, not only for epistemological reasons (we have no ‘access’ to them) but also for ontological reasons (they are not there to be known). Objects are nested in different levels of objects within objects. Objects have relations with some but not all other objects. They are affected but not fully determined by such relations, and in interaction they retain their identity. Objects have a potential or capacity to ‘act,’ have effects, create differences (Bhaskar, DeLanda, Bryant).<sup>2</sup> That is the point of departure for this article, whose focus is on change, on how potential is realised; in particular, we will consider whether and how, and to what extent, the realisation of potential can lead to the rise of a new potential. This question arises already with Hegel and Schelling, as in the latter’s idea of ‘potentialisation,’ meaning a transition from the actual to the potential in transformative change.<sup>3</sup>

The ideas of change are applied and further developed by application to change in the areas of evolution, economics, and linguistics. These areas are chosen because they entail transformative change of

<sup>1</sup> Harman, *Object-Oriented Ontology*; Garcia, *Form and Object*.

<sup>2</sup> Bhaskar, *A Realist Theory of Science*; DeLanda, *Assemblage Theory*; Bryant, *The Democracy of Objects*.

<sup>3</sup> Gabriel, *Transcendental Ontology*, 71.

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life, products, and ideas (as in the case of evolution) and innovation, discovery, and meaning (as in poetry). Also, they are areas in which the author has some experience in the areas of economics.<sup>4</sup> This orientation towards learning by way of application goes back to American Pragmatism (notably Dewey), but can be traced back further to Schelling's idea that ideas arise from reality without being reducible to it.<sup>5</sup>

## 2 Relations

Harman claims that objects are not fully determined by their outside relations.<sup>6</sup> In this way he objects to the Actor Network Theory (ANT) of Bruno Latour, with its claim that objects are constituted by their actions in relations with other objects in networks. This, Harman claims, neglects the ongoing identity of objects, regardless of their actions and relations. New actions or relations actually yield new objects. Also, objects do not have relations with all other objects; relations are selective and constrained in their effects. It is part of the aim of this article to investigate further what those constraints are.

An object in a network –say, a person lodged in economic and social networks– has access through the networks to resources it needs to maintain its existence, resources provided by objects in the networks. Not all objects provide what is required. The person can survive with a range of different menus, obtained differently in different networks, but she is restricted as to what she can absorb.

A well-known characteristic of life, even the very definition of it, is that a living organism (human, animal, plant, microbe...) resists the natural law of closed systems, in which they lose their coherence and structure through increasing entropy, eventually decaying into an undifferentiated mass. To stay alive, the organism needs to go against this law of increasing entropy, and to that end it needs to be open to its environment, with 'things going in and things coming out' (Garcia). It must maintain homeostasis in its metabolism, keeping certain variables within distinct boundaries, such as humidity, acidity, salinity, sugar, oxygen, CO<sub>2</sub>, or calcium. Even an inanimate object –say, a stone– cannot remain what it is without a certain safe range of temperatures outside of which it will disintegrate; depending on the weather, in the long run it will erode into sand.

Levi R. Bryant notes that in thinking about relations between objects one should consider the nesting, the composition of an object from its parts, its *mereology*.<sup>7</sup> There is 'upward causation,' where the elements together produce properties of the whole that the parts do not have (*emergence*, as discussed by Harman), and 'downward causation,' where the whole imposes restrictions on the parts in order to be and remain what it is.<sup>8</sup>

A stone is composed of molecules, which are composed of atoms, which are composed of nuclei of neutrons and protons plus clouds of electrons, as well as underlying forces and fields that are difficult to understand. Beyond a certain temperature the molecules will disintegrate. Solids can change state and become fluid, and fluids can turn into gases.

for the purposes of mereology I use the notion of a *script*, as a model to reconstruct the nesting process. A script is a network of connected nodes that each has a repertoire of 'subscripts' yielding options for actions that fit into the node. Nodes generate the script (upward causation), and are constrained to maintain the integrity of the script (downward causation). The connections between nodes are directed, and may be bi-directional, in interaction. They may indicate temporal succession, causation, logical implication or induction, sharing of resources, or connections between words in a sentence (by grammar or syntax). The claim is not that objects are scripts, but that a script can model the structure of objects, and to some extent their dynamics. The script is not an ontological but a notional category, or a 'sensual object' in Harman's parlance.

The classic example is the restaurant script, with successive nodes of entry, seating, ordering, eating, paying and leaving. The restaurant itself is a node in the superscript of the location of the restaurant, which

<sup>4</sup> Nootboom, "From Evolution to Language and Learning"; Nootboom, "Learning and Innovation."

<sup>5</sup> Schelling, *Philosophical Enquiries Into the Nature of Human Freedom and Matters Connected Therewith*.

<sup>6</sup> Harman, *Object-Oriented Ontology*, 108.

<sup>7</sup> Bryant, *The Democracy of Objects*, 208.

<sup>8</sup> See also DeLanda, *Assemblage Theory*, 74.

includes parking facilities, the supply chain, and institutional conditions such as opening times. Inside a node, there is a variety of potential ways (a repertoire) of performing the activity in the node, each with its own subscript. In entering the restaurant one may be accompanied, or not, by a host. For seating, one may or may not need a prior reservation. Eating can be done with knife-fork-spoon or chopsticks. Along with the waiter there may or may not be a *sommelier*. Payment can be made by cash, card, or both.

For an actual restaurant not everything is or can be specified as an element of a script, and much remains tacit or taken for granted. In other words, some features of the restaurant are ‘withdrawn,’ in the sense discussed by OOO.<sup>9</sup> This withdrawnness is not just epistemological, in the sense of someone not *knowing* its features: it is ontological, in that not all features are there to be specified. A host of incompletely determinate, tacitly adopted, unreflected, open-ended presuppositions or ‘background assumptions’ are involved. F.W.J. Schelling referred to this irreducible or indivisible remainder as a *nie aufgehobener Rest*.<sup>10</sup> One is not supposed to throw food around in a restaurant or stuff it into one’s pocket, but these rules are not specified and are perhaps not inescapable (one might try to act this way and see what happens). In some cases doggy bags are provided (as in the United States) while in others (such as European restaurants) they are not. As a result, the script is open-ended: new features may be added, such as having to put one’s phone in silent mode, or being able to pay with a smart phone.

As a result, the parts or nodes have a certain unspecified and unspecifiable, open-ended scope for autonomy, unaffected by the overall script. Yet they are not allowed to jeopardize the functioning of the restaurant as a whole. Customers are not allowed into the kitchen to cook their own meals. There could be, however, the innovation of a restaurant where customers are allowed into the kitchen to learn how to cook.

### 3 Change

What is it that drives, allows or facilitates the actions of objects? Manuel DeLanda claims that objects are inherently dynamic: “Processes of genesis and maintenance are what ensure that the individuals are not mere bundles of properties.”<sup>11</sup> Also according to DeLanda, an object has actual properties that yield the potential (capacity) to produce features, in cases of interaction with other objects, in the sense that it can both affect them and be affected by them.<sup>12</sup> By implication, events are distinguished from objects, as the actions that objects perform in their relations. This contrasts with Harman’s view of events as objects.<sup>13</sup>

Harman uses the example of a collision between two airplanes.<sup>14</sup> First there are two objects (the two planes), then the collision and crash, and finally the debris on the ground. Let’s take the criterion for an object to be a more or less durable coherence of elements of which it is composed, alongside its external relations with other objects. In the crash itself one sees little coherence (let alone durability) of parts, but rather the opposite: a disintegration of parts and a change of their identities. The planes no longer have the capacity to fly, and the passengers perish. Yet fundamentally Harman is right. Even in the collision there is some durability of things, however brief, without which the event could not occur. Yet our intuition tells us that the collision is an event, not an object. What to do with this riddle?

Garcia rightly claims that continuity of objects is a matter of scale, in space (macroscopic or microscopic) and time (long or short).<sup>15</sup> He uses the example of a piece of slate, which in the long run is also subject to the decay or erosion of particles. And when we dive deeply enough into its molecular structure, we encounter seemingly isolated atoms hanging in space. Since objects may change their features within certain boundaries while maintaining their identity, to project a film of their changes (such as viewing our own lives unfolding at high speed) they would indeed look like events. At low speed, by contrast, an object

<sup>9</sup> Harman, *Object-Oriented Ontology*, 7.

<sup>10</sup> Gabriel, *Transcendental Ontology*, 135.

<sup>11</sup> Manuel DeLanda & Graham Harman, *The Rise of Realism*, 53.

<sup>12</sup> DeLanda, *Assemblage Theory*, 180.

<sup>13</sup> Harman, *Object-Oriented Ontology*, 52.

<sup>14</sup> *Ibid.*, 167.

<sup>15</sup> Garcia, *Form and Object*, 35-36.

may seem static. Thus, if we present a film of an object at high speed we will only see emergence, change and decay, while if we show it at low speed we will mostly see stasis. As concerns a stone, over the brief time of a human lifespan we see no change; as concerns a streaming river it is the opposite— we do not see the constancy of the water molecules. Stones, thoughts and stories are all objects, but in the ordinary temporal order of human life we do not see stones as being in motion, while thoughts may seem to flit in all directions all the time.

In sum, the distinction between objects and events depends on the time frame. Within human experience it seems odd not to distinguish events from objects. On the spatio-temporal scale of daily human experience, some objects (material objects) have a spatial and temporal continuity different, and greater, than that of abstractions. On that level of human experience, in terms of temporal and spatial continuity material objects do in fact differ from idea or concepts. With their less visible and slower rate of change, material objects have a special place in human cognition. They represent how we tacitly conceive of existence as a fixed substance, the very paradigm of existence.

This article sides with DeLanda in holding that, as concerns the spatio-temporal scale of human experience, events result from the activity of objects, from the interaction between them, in which they create and undergo effects.<sup>16</sup> The ability of an object to have effects is enabled and constrained by the object's potential. The ability of an object to undergo effects, and what the effects are, also depend on internal potential structure: in particular, its 'absorptive capacity'.

The idea of potential and its realisation goes back much further, to Aristotle's notion of *entelechy*. An acorn develops into an oak tree. A butterfly miraculously emerges from a caterpillar. This realization is not autonomous and inexorable but contingent: one that depends on conditions, on the relations with the 'outside' of the object, such as humidity, wind and temperature. Potential is a 'virtual' property, as Deleuze called it, in the sense that at any time potential is not fully exhausted, given that its realization is dependent on conditions that are open to endless possibilities.<sup>17</sup> This is consistent with Harman's claim that the features of an object can never fully be specified, since the realisations of its potential are open-ended.

Now, there are several possibilities here. One is that the range of possible manifestations is pre-established as a repertoire of possible qualities, from which one is selected according to the context. DeLanda speaks of tendencies, understood as repetitive and limited in variation. Another possibility is the capacity to *produce* new qualities depending on the context. This is more flexible and adaptive than a tendency. As DeLanda noted, this requires that the capacity to affect is coupled to the capacity to be affected. Harman objected to this model potentialities and capacities because they would yield an excess of possible manifestations, a 'slum of possibles' as Harman called it, quoting Quine.<sup>18</sup> DeLanda accepts capacities only if one has a way of clearing the slum by separating significant from insignificant manifestations.<sup>19</sup> This seems odd. What is significant appears to depend on purpose and context, and thus one would quickly repopulate the slum with possible significances.

Yet the slum only arises if one postulates that all possible manifestations have to be there (and where, exactly?) from the start. Possible manifestations are not predetermined but *produced* in some context, in the interaction between objects, and the range of possible interactions and their effects is open-ended, open to new interactions, and the appearance of new objects and forms of relations. Suppose that someone is about to take a walk, an activity that involves using one's muscles. How it works out depends on the weather, the quality of one's shoes, where one happens to be going, and one's success in not being run over by a tram. Perhaps the newspaper this morning announced a musical performance on a square, and one decided to attend. One does not go to fetch the walk from some repository of pre-existing walks, but produces it on the spot. As DeLanda claims: "it is the open-ended nature of the world, not so much a fundamental withdrawal, that makes dreams of final truth vanish."<sup>20</sup> Yet in fact, both are pertinent: fundamental withdrawal as well

<sup>16</sup> DeLanda & Harman, *The Rise of Realism*, 67-68.

<sup>17</sup> Bryant, *The Democracy of Objects*, 96; see also DeLanda & Harman, *The Rise of Realism*, 89.

<sup>18</sup> DeLanda & Harman, *The Rise of Realism*, 68.

<sup>19</sup> *Ibid.*, 89

<sup>20</sup> *Ibid.*, 101

as open-endedness. The case of the restaurant illustrates this by showing that there are both unspecified and unspecifiable, indeterminate features, as well as openness to new ones.

But even while potential is open-ended, it is constrained, and this constitutes at least part of the identity of an object. Can identity be *identified* with potential? Could it be called the essence of an object? An answer to this question will come later, or at least an attempt in that direction. Potential is limited by the structure and properties of the object's components and those of the objects it interacts with, as well as the laws of nature, logic, and mathematics, not to mention judicial laws and other institutional conditions.

One of DeLanda's proposals is to think of capacity in terms of possible trajectories in the state space of the object.<sup>21</sup> The dimensions of that space are features the object can have; there is some process or logic that determines trajectories. DeLanda used the example of water. It has the capacity to be a fluid –which can have different structures– or a piece of ice or even a gas (in the form of steam), depending on outside temperature and atmospheric pressure. Yet it cannot turn into gold.

The genome is a good example of a capacity, with genes generating amino acids, yielding cells, building organs, and thereby 'expressing' themselves through interacting with each other and with their local metabolic environment, as well as with conditions external to the organism. We return to mereology. If objects are nested, so is change, and the degree of radicality of change is relative to the perspective or level from which one looks. From the perspective of a script (of a restaurant, for example) any change of subscripts in nodes is minor or subordinate (such as changes in methods of payment). By contrast, while a change of the set of nodes themselves and their ordering involves major change in the script's identity (such as transition to a self-service restaurant). However, any change of a subscript in a node, or an addition of one, is a major change from the perspective of that node. The introduction of payment by card requires the requisite apparatus and internet connection.

The transformation of a service restaurant to self-service is a radical change to the point of transformation, with the order of the nodes changing to the following: entry, food selection, paying, seating, eating and leaving. This has consequences for the content of the nodes, for their repertoires of possible subscripts. The act of eating now includes carrying a tray of selected foods.

## 4 The Emergence of Identity

OOO opposes the idea that effects of relations on objects are universal (with all objects having an effect on each other) and determinative (fully determining the identity of an object) because that would jeopardize the existence, the continued coherence of elements that constitutes its identity.

The question now is: how does new identity emerge? When does change 'break' any identity and produce a new one? We have already seen an example: the transition from a full-service to a self-service restaurant. Such a change is frame-breaking, insofar as it does not maintain essential structure (if the term "essential" is appropriate here). How did this occur? By transferring the principle of self-service from supermarkets to restaurants. It is a classic case of innovation by way of 'novel combinations,' connecting previously unconnected things. Subsequently, the principle of self-service moved on further, to hotels.

Here, a fundamental question arises. Aristotelian entelechy entails the realisation of a given potential. Can it be that with the realisation of potential, a new potential is created? That question appears to be central to the thought of Hegel. Thus, for the further development of OOO, some elements might well be adopted from transcendental ontology.<sup>22</sup> Such an effort is the core of the present article.

Can it be that in the realisation of potential, a new potential arises? Žižek taught us that Hegel should be read in this way. Hegel's self-realisation of the 'Absolute Spirit' in world history should not be read as an inexorable march towards a pre-established end point or *telos* of perfection, but on the contrary, as a repeated and unpredictable breaking through the established order: through its failure, again and again,

<sup>21</sup> DeLanda, *Assemblage Theory*, 169.

<sup>22</sup> Žižek, *The Parallax View*; Gabriel, *Transcendental Ontology*.



in the course of history.<sup>23</sup> Schelling used the notion of ‘potentialisation,’ a transition from the actual to the possible. Hegel, for his part, spoke of a *dialectic* of *Aufhebung*, i.e. elimination of an old synthesis in the process of lifting it to a new one. Is there more to be said about this process? This question is taken up in the following section.

In *Aufhebung* lies the principle of the creativity of failure; it is through the failure of something that we get to know it better. This point also appeared in Harman’s discussion of Heidegger’s tool-analysis: we take the hammer for granted, unawares, as long as it works, but when it breaks we pay explicit attention to it and its repair or replacement.<sup>24</sup>

Testing allows reality to shout ‘No!’<sup>25</sup> Earlier, Fichte had made use the notion of *Anstoß*: reality shocks and nudges thought.<sup>26</sup> There is a whole world of experience and practice behind this. One sees this also in science, which is –or should be– oriented toward finding out where a theory fails, in order to get from there to an improvement or replacement. To realize oneself, to learn and to transcend one’s ideas, to have a chance of being freed from preconceptions, one should profit from the opposition of others with different views.<sup>27</sup>

Different kinds of objects exert and undergo different kinds of effects; they change in different ways, through different sorts of processes. For living organisms, evolution is the salient process. The change of ideas or discovery follows a different process, though it is in some ways similar to evolution. The change of meaning in words is different again, though it bears some similarity to the change of ideas. What they have in common is the phenomenon of transformation, of the emergence of new forms from the old. Below, all three of these cases are discussed. All of them can benefit from insights from OOO, and contribute to a further analysis of change as an addition to OOO.

## 5 Evolution

How would one look at evolution from the perspective of OOO?<sup>28</sup> Is OOO effective in this context? In evolution the salient objects are organisms, with their internal metabolic structure and their external relations of seeking and taking in food, excreting waste, reproducing, seeking and serving as prey, and competing for survival with other objects. A species constitutes a superobject. It arises from the survival and reproduction of organisms, depending on the ‘selection environment.’ DNA would constitute the potential, or core part of it in animals. For green plants it would be the ability to conduct photosynthesis, producing cells from the intake of sunlight and CO<sub>2</sub>. But what could OOO learn from evolution? Harman already mentions the principle of symbiosis, where different objects complement each other through mutually supplementing materials or mutual protection. Let us see what more OOO could adopt, given that economics and various cultural disciplines have profited from taking evolutionary theory as a model.

In evolution there are three fundamental processes: variation, selection and transmission (of the potential of what survives). In ‘generalised Darwinism,’ genes are ‘replicators’ copied in transmission, in inheritance; organisms are the ‘interactors’ that are selected and carry and transmit the replicators.<sup>29</sup> This generates species, which cannot breed beyond their own boundaries. Perhaps the most remarkable thing about evolution is that it generates new forms without prior ‘intelligent design.’ There is the *ontogenetic* development of an individual organism, in the realisation of the potential of genes, which through interaction with each other and their environment produce elements of the organism (cells, organs, blood,

<sup>23</sup> Žižek, *For They Know Not What They Do*.

<sup>24</sup> Harman, *Tool-Being*.

<sup>25</sup> Bachelard, *La philosophie du ‘non.’*

<sup>26</sup> Johnston, *Žižek’s Ontology*, 16.

<sup>27</sup> Nootboom, *Beyond Humanism*. This book seeks to find a way between Nietzsche’s immanent transcendence of the self within the self and Levinas’ imperative to open up to “the Other.”

<sup>28</sup> Elements of evolutionary theory were also discussed by Harman in *Object-Oriented Ontology* as well as by DeLanda in *Assemblage Theory*.

<sup>29</sup> Hodgson and Knudsen, *Darwin’s Conjecture*.

hormones, etc.) through ‘gene expression.’ This is, I suggest, a particular case of the notion of emergence in OOO. The variety of organisms arises from chromosome crossover, in sexual reproduction. Could this occur more generally in OOO, with new objects arising from a mixing of potentials? There is also the *phylogenetic* development of species, through the selection of ‘interactors’ by the environment and the transmission of genes or ‘replicators.’ That is a second type of emergence. Species locked in an isolated environment develop in directions different from those in other environments: think of the koala bear, platypus (egg-laying, duck-billed, beaver-tailed, otter-footed), and kangaroo in Australia. Shifts in phylogeny can arise by (random) change of genes, in mutation, and changes in the selection environment. The classic example of the latter is the crash of a large meteor on earth that –in blocking the sunlight– eliminated almost all species, such as the highly successful dinosaurs, which eventually opened up the opportunity for new species such as humans. This might suggest that OOO look at changes in any kind of object in terms of evolutionary change, random shifts of potential, and shifts in a given selection environment.

To some extent organisms can build or at least affect their selection environment, which is known as ‘co-evolution’: as with beavers building dams to secure their habitat, an example mentioned by Bryant.<sup>30</sup> They may also engage in symbiosis with other species, exploiting opportunities of complementarity, to the point of sharing or exchanging elements between them, as taken up by Harman in *Immaterialism*. Perhaps it can also contribute to the emergence of novel objects. A colourful example of symbiosis is that of small fish that swarm in and out of a shark’s maw to clean its teeth by picking out remnants of food. Some organisms can adapt to changes in the selection environment, such as chameleons that adapt their colour to where they are. Some organisms migrate to different selection environments that offer better conditions of food or safety, such as microbes moving by whipping a tail.

How genes work yields an illustration and elaboration for OOO of how the emergence of new features from potential can work. Genes sometimes determine features more or less directly, such as eye colour, as experiments with fruit flies show. But in most cases properties emerge from a constellation of genes: as in intelligence, for example. Often, genes do not produce features directly, whether singly or in concert, but instead produce the potential to develop features depending on the environment. Thus it appears that people have an inborn, instinctive capacity to fear monsters, but whether this applies to snakes, spiders, or alligators depends on where people grow up. Babies have an inborn potential to both fear and welcome strange faces, and which of these develops first or most intensely depends on their educational environment.<sup>31</sup> For OOO, this illustrates how the realisation of potential is not deterministic or pre-determined, but depends on the context –which can vary– so that realisation of potential becomes open while remaining constrained. Potential may not directly produce features, but rather the ability to develop features as a function of outside conditions. That further contributes to the idea, proposed by Harman, that features of objects cannot be ‘paraphrased’ or fully enumerated.

There was a time in evolutionary theory when it was thought, following Lamarck, that the genes of a child can be affected or formed by the conduct of its mother during pregnancy: such as playing piano to make the foetus more musical. This idea was eventually rejected, though later accepted again in a modified form. Since genes express themselves in interaction with their environment, the process of affecting or forming that environment can affect what the genes eventually produce. However, this is not an effect on the genes but on the realisation of their potential. For OOO, this illustrates that while the identity of an object in the form of potential remains the same, it can yield new and even unpredictable features depending on the environment of the object.

To summarize, the relevance of all this for the present article on OOO is as follows. Evolution gives an example of how objects (organisms) have a potential (DNA) that is realized in its selection environment in interaction with other objects (prey, predator, symbiont). Important for OOO now is the question as to when and how the identity of an object can change or break, and whether and how that might yield a new object, with a new identity. Can potential still be seen to constitute identity? And can evolution yield ideas about this?

<sup>30</sup> Bryant, *The Democracy of Objects*, 208.

<sup>31</sup> Sheets-Johnstone, *The Roots of Morality*.

In evolution, potential in the form of DNA can be transferred to a new object through reproduction. This raises a puzzle. If potential is seen as an object's essence, is essence then really transferrable to a new object? That seems odd. What may save the idea is that in replication of DNA variation does occur, in mutation and chromosome crossover, so that it assumes a new constellation and hence a shift of essence. However, with identical twins and clones DNA is transferred identically. The point now is that in their existence the twins or clones go their separate ways, with different realisations of the same potential, and therefore are different objects. So then, identity is not just potential but potential plus its realization. That amounts to an important conclusion for OOO.

Also potentially interesting for OOO is the distinction between the development of the individual object through a change of its composition (ontogeny) and its contribution to the wider development of the type or kind to which it belongs (phylogeny). Could this help us with the perennial issue of essence, and the corresponding relation between particulars and universals? This topic will come up in our later section on meaning and its change. How can a new kind of chair yield a shift in the general notion of chairs? Evolution can only build upon what was yielded by previous evolutions. Thus evolution can sometimes become stranded in a dead end, for lack of elements needed for a viable form of life in novel circumstances. What often happens instead is so-called 'exaptation,' where what is yielded in previous evolution is adapted to a different function from its original one. Perhaps the human ability to think is an exaptation of our ability to handle objects, providing a basis for logic to emerge. One of the reasons that reason developed in humanoids, then, would be that with their erect posture they had hands available to manipulate things. Is this notion of exaptation useful for OOO? Does it help to explain how objects can survive by novel use of what had developed previously?

In evolution, not everything that survives automatically has a useful function in survival: things may survive simply because they do not hinder survival. That seems to apply, for example, to the appendix of our intestine. It perhaps also applies to the silly-looking little arms of certain large dinosaurs that seem too small to reach anything. They may once have had the function of crawling, at an earlier stage of evolution, and it is not clear that they had any function at all in fully developed dinosaurs themselves. Another classic example is that of 'spandrels': features that arise as a by-product of the evolution of some other characteristic, rather than as a direct product of adaptive selection.<sup>32</sup> For OOO this might imply that even if features of objects could be fully enumerated –which for Harman is of course not the case– those features may no longer be relevant.

The next point is that, by definition, species are reproductively isolated from each other. That is a good thing for evolution. If all species could breed with all others, all differentiation would fade out, as would competition for survival and symbiosis. If convergence into a single species did occur, evolution would slow down but would not stop. As species spread across the world into different niches, new species would arise from what is called 'allopatric speciation.' However, they would then need to be locked up in impenetrable niches. This suggests that the fact that not all objects can affect each other, as proposed by Harman, may yield a basis for explaining the emergence of new objects. In principle evolution is a slow process, taking place over many generations, but sometimes it can happen comparatively fast, in what is called 'punctuated equilibrium': a rhythm in which there are long periods with little change but then a relatively fast emergence of new species. This can happen in particular in allopatric speciation, in which new species move into a new environment with different conditions, where they can utilize their latent potential undisturbed by the adverse conditions that ruled in their former habitat. This notion will re-appear in our later discussion of changes of ideas, with the claim that such change requires a shift in the environment or a move to a different one.

In sum, the features of evolution may inform the OOO theory of change, with its notions of symbiosis (also employed by Harman), exaptation, allopatric speciation and punctuated equilibria. What follows are some examples of how evolutionary logic can inform fields other than biology. The logic of evolution has been utilized in both economic and cultural life, in the evolution of products and ideas. In economics,

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<sup>32</sup> The term arose in architecture to describe the triangular space between two adjacent arches and the ceiling, which occurs by geometrical necessity. These came to be utilized as bonus spaces for paintings, whether decorative or symbolic.



invention and entrepreneurship generate variety, selection is performed by markets and institutions (laws, regulations), and transmission of success takes place through the growth of firms, imitation, and training and education. What is interesting from the perspective of policy and politics is the emergence of forms without the prior intelligent design to which people are stubbornly inclined, even in the wake of communism. This happens even in the field of innovation policy, where one directly intuitively feels that planning is inappropriate there, because it is characterized by surprise, by the unexpected. Instead, the focus of policy should be on research, education, and entrepreneurship. Or, to put it in OOO terms: potential, its realisation, and its transfer.

We should also consider the case of perverse markets with entry barriers for novelty. Existing firms have an interest in blocking ‘creative destruction,’ so as to profit a longer time from their established investments. Through lobbying activities they also exercise influence on the institutions that form part of the selection environment. In evolutionary terms: if large firms can shape the selection environment, in co-evolution, evolution stalls. Firms can avoid being selected out by creating or modifying markets and lobbying for their own advantage in laws and regulations (whether concerning the environment, taxes, or anti-monopoly laws), with the threat of taking their employment elsewhere if they do not get their way. Scientists can block the access of rivals to the journals they need to publish in order to obtain prestige, or prevent them from acquiring resources for research; but when locked out, the rivals can still set up their own journal.<sup>33</sup>

The model of evolution for economics is useful, but misleading; on a number of points there are fundamental differences. This applies as well to cultural evolution, such as the development of the meanings of words or expressions, with ‘memes’ (bits of memory) taking the place of genes.<sup>34</sup> For first of all, the production of variety here is still subject to trial and error, but far less randomly than in mutation of genes and crossover of chromosomes. With memes, it is partly based on creativity, learning, insight from failures, inference, and experimentation prior to submission to selection in markets; there is also the fact of ‘artificial selection,’ as in breeding cattle, laboratories, computer simulations, and tests with potential users. And second, as noted, selection in markets is often blocked by entry barriers. Existing large firms also buy up emerging innovative small firms, with the purpose of holding up (or ‘freezing’) the innovation. Third and finally, transmission in such cases takes the form of communication rather than replication, but produces deviant interpretations and misunderstanding that are much more fundamental and pervasive than ‘copying errors’ in the transmission of genes. In fact, transmission becomes part of the production of variation, in shifts and re-interpretations of what is communicated. For a good evolutionary account of economics and culture, one must therefore include theories of knowledge, invention and language. All things considered, evolution may be a misleading model in such cases.

## 6 Evolution of Ideas

For OOO, ideas also are objects. Perhaps one can say that their internal constitution is formed by logic and semantics, in processes of sense making and communication; that is a subject for a later section. But the external relations of ideas are with other ideas. In any given theory, ideas cohere in assumptions or axioms that constitute its potential. In this respect, a theory can be viewed as a kind of hyperobject.<sup>35</sup> Different theories are included in the sort of higher level object that Lakatos called ‘research programmes,’ with a ‘hard core’ of basic assumptions as its potential which is not up for falsification. In order to maintain its identity, this hard core is surrounded with a ‘protective belt’ of subsidiary assumptions.<sup>36</sup> When falsification of a particular theory in a research programme arises, repairs are made to the protective belt, not the core. Can this idea perhaps yield a contribution to OOO, with the idea that the potential of an object is surrounded

<sup>33</sup> An example is the *Journal of Evolutionary Economics*, set up by heterodox economists excluded from the professional mainstream.

<sup>34</sup> Campbell, “Blind Variation and Selective Retention in Creative Thought as in Other Knowledge Processes”; Boyd and Richerson, *Culture and the Evolutionary Process*.

<sup>35</sup> Morton, *Hyperobjects*.

<sup>36</sup> Lakatos, *The Methodology of Scientific Research Programmes*.

by some similar ‘protective belt’ to protect its identity? How far can it go? Can it lead to a transformation by which a new object or new idea arises?

As a model of transformation take the butterfly, which ‘pupates’ from a caterpillar. Is that the manifestation of one object constituted of both butterfly and caterpillar? Here I return to Aristotle’s notion of *entelechy*. In the realisation of the caterpillar’s potential, nothing else could have emerged. An acorn produces an oak tree and cannot produce a butterfly. This leads to what was described earlier as ‘Hegel’s question,’ though it was also put by Schelling. In the realisation of a potential, can a new potential emerge: a new object with a new essence? Here I focus on the evolution of ideas, adopting the analysis from my already published idea of the ‘cycle of discovery,’<sup>37</sup> inspired by the ideas of the genetic epistemologist Jean Piaget that cognition develops from ‘assimilating’ experience into existing ideas (‘frames’) and ‘accommodating’ them, developing new frames when this fails.<sup>38</sup> I note the connection between this concept and Schelling’s notion that ideas arise from agency in reality. It is, I propose, a Hegelian theory of cognition.

The basic idea of the cycle of discovery is that new ideas arise by applying an old idea in new settings. To use an analogy from evolution, bringing an idea into a new selection environment produces a kind of allopatric speciation. It is confronted with new challenges to survival from phenomena that do not fit its previous uses. Thus, the product or idea has to adapt if it is to survive. For example, when Xerox introduced copying machines in Japan, the machine was too high for office personnel to reach the buttons on top while standing, so they had to climb on boxes. This pointed to an easy way to adapt: either lower machines, or place buttons on the side. But if one is so powerful that one does not need to adapt to local circumstances, an opportunity to innovate may be missed. This is what happened to large American multinationals during the earlier economic development of China. They were so powerful in offering employment, technology and access to international markets that they did not have to adapt to local habits, tastes, organisation, labour conditions, etc. Meanwhile, smaller firms (often European ones) were forced to adapt, leading them to engage in alliances with local Chinese companies, and as a result they became more innovative.<sup>39</sup>

How does change proceed in the new environment? In a first effort to adapt, minor changes will be tried that leave the structure of the script and its nodes intact, by varying the choice of subscripts from existing repertoires, in ‘differentiation.’ When that is insufficient, the next step will be to incorporate, into the existing product/idea, elements from a local product/idea that is successful where one’s own is not. At first this will take the form of adopting new subscripts from nodes of successful local scripts, and then adopting entire nodes but within the existing overall script structure of nodes: a process known as ‘reciprocation.’ Note the similarity here with the evolutionary principle of symbiosis, proposed for use in OOO by Harman. The logic of hybrids is also close to the logic of metaphor: one learns to see something familiar in the new light of something other. An illustration of the adoption of a foreign element is the emergence of kilns for iron, blowing in air to raise the temperature, which was adopted from the smithy. An illustration of symbiosis is Information and Communication Technology (ICT) as a symbiosis of communication and computing.

The amalgamation of old and new elements yields hybrids –a familiar phenomenon in innovation– a combination of old and new elements, forced into an old basic design or logic. A present-day example is the introduction of electric propulsion in gasoline-fuelled cars, yielding problems of inconsistency, overlap or duplication. There is overlap in propulsion, given that in the hybrid car there are ducts for both electricity and gasoline with its exhaust fumes. The heat of combustion may melt the casings of the electrical wires. The electric engine adds weight to the combustion engine. And electric propulsion in its own right is hampered by the weight of batteries, its limited range without recharging, and a general lack of recharging stations.

The stage of hybridization is important for exploring the potential of foreign elements before making the sacrifice of dumping existing basic logic or design. This can be clarified with the notion of scripts,

<sup>37</sup> Nootboom, *Learning and Innovation in Organizations and Economies*.

<sup>38</sup> See Flavell, *The Developmental Psychology of Jean Piaget*. Piaget’s work goes back to the 1930’s-1950’s, and has met with considerable criticism. This led to the replication and extension of his experiments in variant ways, some of them confirming his claims while others contradicted them. Thus his thought became controversial, but overall it retains a place in modern textbooks of developmental psychology; see Leman et al., *Developmental Psychology*. The crux of this book is the notion that cognition develops from action, through assimilation and accommodation, a point that does not seem to be contested.

<sup>39</sup> Child, “Trust in International Strategic Alliances.”

as mentioned earlier. One can experiment with new subscripts in nodes while preserving overall node structure. This stage also allows one to explore where the problems lie in the integration of old and new and what, in the existing structure, limits the full utilization of new potential, and this gives hints as to the direction in which more promising structural change might lie.

This in turn may lead to the next stage, where one makes experiments with greater structural change, known as ‘accommodation,’ using different configurations of old and re-configured or new nodes, either in the script itself or in the superscript in which it is lodged. This may not be easy, and in some cases may not even be possible. The problem of hybrid cars cannot be solved without more electric loading points or longer-life batteries without making the car too large and heavy. A competing technology is hydrogen fuel for cleaner combustion, with the additional advantage that it can be transported in the pipes and trucks that presently serve gas stations. Even the potential of ICT was not fully realised until the miniaturisation of computing in the development of microchips, leading eventually to the smart phone.

There is still a gap in this portion of the theory, to the extent that it does not quite explain how accommodation is to be achieved. It gives conditions, incentives, and hints for how structural change might occur, but does not show how exactly it is to be achieved. That would seem to require a theory of creativity, in which chance or ‘serendipity’ will play a role. There is a connection here with ontology. Adrian Johnston speaks of “an alteration so radical that the criteria for its representation and recognition aren’t available.”<sup>40</sup> In such cases, new criteria may need to be found through trial and error. When a new basic design does emerge, it is initially far from perfect and for a long time may carry residuals from the old logic that hamper efficiency and prevent the full breakthrough of the novelty in question. In the paintings of J.M.W. Turner, one sees the side-by-side existence of new, somewhat lumbering steam boats and elegant old sailing ships. In the transition from wooden bridges to the use of iron, the old constructive principle of ‘swallow tails’ to connect wooden parts was initially maintained, although with iron there is the alternative of welding. In an analysis of artillery practice it was found that upon firing a cannon, soldiers would back up a few steps more than needed to protect themselves from the recoil of the gun. Why? The analysis concluded that this was a left-over from old-time horse-drawn artillery, where upon firing it was necessary to step back to prevent the horses from bolting in fright at the explosion. The breakthrough of a novel design, and its subsequent improvement and refinement, is fast relative to the long process of transferring the old product or idea to a new field, making minor adjustments, creating hybrids, and tinkering with attempts at structural change. This process is reminiscent of punctuated equilibrium in biology.

The question before us now is twofold. First, does the logic of change just described give us an answer to ‘Hegel’s question’? Is it a proper and valid example of how an existing potential in its realization can produce a novel potential? If potential constitutes the essence of an object, does this involve a change of potential, the shift of an object and its identity into a new one? Note that the principle of Hegelian logic that novelty emerges from failure appears here as well: the process is driven by the threat of a failure to survive in the new environment. Unlike a wooden bridge, an iron bridge cannot burn. But it does expand and contract with temperature more than wood does, and on a hot day it may have to be doused with cooling water to maintain the fit in its berth. It does not require cutting down trees, but does require kilns for making the iron, as well as a different sort of training for bridge builders. Furthermore, it also offers a bridge span and a variety of forms that are impossible in wood. In short, it is indeed a different kind of object.

Second, for OOO purposes, is it helpful to think of the change of objects in terms of such shifts of environment? To repeat, these shifts entail the need to adapt by incorporating elements from local objects, then encountering inconsistencies between old and new elements, raising the need for a more fundamental change of the basic ‘logic’ of internal composition. Could this then be seen as a break of identity or essence, and a source of the emergence of a novel object? Just as in the case of evolution, this is a programmatic proposal that cannot fully be developed here.

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<sup>40</sup> Johnston, *Žižek’s Ontology*, 100.

## 7 Meaning

From a OOO standpoint, words, linguistic expressions, and their meanings are all objects.<sup>41</sup> Words are contained in sentences, which can be called superobjects by comparison. The sentence, in turn, may be part of a larger discourse. What is the internal structure of a word? Of meaning? The internal structure of a sentence would rest on its grammar and syntax. What is the potential of a word, of a meaning? Words and meanings are related, typically in the context of sentences. What are the distinctive features of words and meanings compared to other objects? When if ever do they break their identity, and how does this occur? Would an analysis of this process make a contribution to OOO? Would features of language have analogues elsewhere in the theory?

We ask, first, what is the difference between words and material objects? A material object remains the same, from a human temporal perspective, while moving in time and space. When you move a chair from one room to another it remains the same. But when you move a word from one sentence to another, its meaning changes because that depends on the sentence in which it occurs. It would be as if the chair were to change colour or lose a leg when moved into a different room. In a sentence about dinner, the word ‘chair’ has a different meaning from what it does in a sentence about babies. In communication, meaning does not remain the same but is adapted to fit the absorptive capacity of the receiver. The old idea of meaning was that it is reference. This leads to the issue of knowledge and truth as a correspondence of ideas with reality, which we will not discuss further here. However that may be, it is dubious to claim that words, or linguistic expressions more generally, actually do refer in that sense. Reference, I propose, is intentional rather than ontological: people *aim* to refer to reality, leaving aside whether, or in what sense and to what extent, they actually do so. Words of course are not always only meant to refer. ‘Speech acts’ may be used performatively, such as to express emotion, utter oaths, or get people to do something or refrain from doing it.

Alongside reference, or *what* is given, Gottlob Frege added the term ‘sense’ to denote *how* a given object manifests itself (*die Art des Gegebenseins*, or way in which things are given).<sup>42</sup> In analytic philosophy there has been a debate over the sameness of meaning, using the principle (attributed to Leibniz) that two expressions have the same meaning if they can substitute for each other in a proposition *salva veritate*, or preserving the truth of the proposition. Famously, this does not work in ‘intentional and modal contexts’ (as discussed, notably, by Quine. An example of an intentional context is belief: “Jack believes that Aristotle was a teacher of Alexander the Great.” This cannot be substituted for with “Jack believes that a pupil of Plato’s was a teacher of Alexander the Great,” even though in fact Aristotle was a pupil of Plato, because Jack may not know this. Hence, there is sameness of reference but not sameness of sense. An example of a modal context is necessity: the number of seas (seven) is equal to the number of sins, but that is not necessarily so. So, sameness of reference is no guarantee for the sameness of meaning in all contexts. Concerning necessity, a solution was proposed in ‘possible world semantics’: two expressions have the same meaning if they have the same reference in all possible worlds. But identification across possible worlds is problematic, and it turns out to require a return to essence as what connects an identity across worlds in ‘trans world heir lines.’<sup>43</sup>

Attempts were made to preserve the reduction of meaning to the logically clear and determinate notion of reference, in order to avoid the more fuzzy, subjective, psychological notion of meaning as sense, or how an object is identified as something. In the present article, by contrast, the aim is to preserve sense: not only because logic requires it, but because it is a source of variety and change of meaning. Here, the meaning of sense is shifted from “how an object manifests itself” to “how people make the identification,” or “how they see something as ...” It is a property not of the object, but of the subject, which means that it is cognitive rather than ontological. The classic example is that of Venus, which can be seen as both ‘the evening star’ and ‘the morning star.’ People observe Venus either as one or the other. Sense develops from ‘associations’ that people have built up through the course of their lives: such as whether they saw the ‘star’ in the morning or in the evening. Experience can shift *how* things are identified, and *as what* they are identified, thereby

<sup>41</sup> Some of the following was also discussed by Gabriel in his *Transcendental Ontology*.

<sup>42</sup> Thiel, *Sinn und Bedeutung in der Logik Gottlob Freges*.

<sup>43</sup> Hintikka, *The Intentions of Intentionality and Other New Models for Modalities*.

also shifting reference. In Fregean semantics, the reference of a proposition was its truth value. Sense, then, is how one establishes truth. Our space is too limited here to enter into the debate on truth, its meaning, and its forms. But sense is personal, developed from experiences along one's path of life. For example, one may associate a connotation with the word "chair" based on a memory of granddad's chair: reclining, with curved armrests of polished mahogany, and upholstery of blue-grey velour fastened with buttons.

When sense is widely shared between people, it becomes public. Here, inspiration can be taken from de Saussure's distinction between *parole* (the idiosyncratic, diachronic spoken word) and *langue* (the synchronic, intersubjective order of meaning).<sup>44</sup> As Wittgenstein said, there is no private language.<sup>45</sup> One needs communication with others for a check that sense fits reference and is consistent rather than flying off in all directions, as happens in psychosis and in dreams. If someone lives on an uninhabited island and calls the stone he hits his toe on "dinger," and on the next hit calls it "donger," there is no one to correct this inconsistency. If someone asserts something then they presumably believe it, or they would not assert it, just as we cannot doubt a pain in the moment of having it. For the sake of coherence *parole* needs *langue*, but it can also inject change into it. Stated in the terms of OOO: sense and *parole* as objects are internal to a person (subjective) while reference and *langue* are external (intersubjective). The sentence in which a word is located is a hyperobject, and these sentences are part of a jargon or language, or "language game" as Wittgenstein would put it. Can the relations between them yield a new or general model of "mereology" (Bryant), of how objects and superobjects may be related?

What is the relation between word and sentence? Frege proposed that the meaning of a sentence is a function (in the mathematical sense) of the meanings of words in the sentence, in 'upward causation.' But the reverse applies as well: the meaning of a word depends on the sentence in which it is, as well as the context of action in which the sentence appears, in 'downward causation.' When someone hears "He sat on his chair at the desk," that pretty much –if not totally– settles what kind of chair it is. As Wittgenstein said, if you want to know the meaning of a word, see how it is used. Sentences determine or settle word meaning in two ways. They settle the intended reference of a propositional sentence, picking out specific senses of words in the sentence from their multitudes of sense, which helps to establish the reference of the sentence. Gabriel puts it as follows: "Sense is a medium of difference whereas reference is meant to limit the sheer proliferation of sense without a referent."<sup>46</sup> *Parole*, or personal usage, is progressive. It can yield new personal sense, with only a small chance that it will be adopted by public sense, *langue*, which is conservative. Perhaps the collapse of a host of possible senses of a word into a specific one in a sentence, can be seen by analogy with how a cloud of probabilities for different possible positions of elementary particles –such as electrons around the nucleus of an atom– collapses into a determinate position when colliding with another particle or object. Here the analogue to such a collision would be that a word gets connected with other words, "bumps into them" in the sentence.

How, then, can meaning change? Here is an illustration of the change of sense. Some time ago in a newspaper there was a picture of a man sitting on a cow in his living room. It was a stuffed cow, with a dent in its back serving as the seat. The caption of the picture said: "See him sitting in his cow." This is an idiosyncratic addition to the sense of a cow. After reading this, whenever one passes a field of cows, one may wonder how it would be to have one of them as a seat, though this sense is unlikely to become part of the public, shared sense of a cow. A 'milk cow,' by contrast, has become part of the sense of objects like investments or employees, who are seen to be 'milked.'

The sense of a thing, as a repertoire of features associated with it in memory, is not to be seen as a repository of fixed things waiting to be selected for the purpose of establishing reference. They are not only triggered by the context at hand, but are also already affected by it. Memory is not retrieval, but reconstruction on the occasion of experience in a new context. In this way sense is a potential, with new realizations depending on context. Does sense-making potential now form the identity of (idiosyncratic) meaning? When and how would that identity change? Would it help to apply the 'cycle of discovery' in the

<sup>44</sup> De Saussure, *Cours de linguistique générale*.

<sup>45</sup> Wittgenstein, *Philosophical Investigations*.

<sup>46</sup> Gabriel, *Transcendental Ontology*, xiv.



change of knowledge as discussed above? That would mean that a fundamental change of sense could arise by shifting the word to a new context, finding that it fails there in inadequate reference, trying to adapt it by introducing sense from words that work in the new context, and experimenting with hybrids in preparation for a more fundamental or 'structural' change. What would that signify here?

Does the model of the script apply? Take the sentence as a script and the word as a node, with connections between the nodes made according to logic, grammar and syntax. In downward causation, the sentence (script) limits what potential meanings of the word (node) are 'admissible,' what meanings can 'work.' But that does not necessarily leave such admissible sense unaffected: the sentence and its action context may 'tweak' the sense. The story about someone sitting at a desk may show that the chair has no backrest. That is unusual, but it can make sense, and may then be added to the repertoire of the sense of the word "chair" Even the stuffed cow may make sense.

An available model of meaning change has been offered by the 'hermeneutic circle,' for which Roman Jakobson employed the notions of the 'syntagmatic' and 'paradigmatic' axes.<sup>47</sup> There is a connection here with the classic difference between Plato's view of particulars (meanings in sentences, in the present context) as being reflections of fixed universal concepts that constitute 'real reality,' and Aristotle's view of reality as consisting only of particulars from which universals arise. Here, the Aristotelian side is taken: general concepts may change from their specific use in specific sentences and settings. *Parole* can shift *langue*. In the hermeneutic circle, concepts from the paradigmatic axis are selected to come together in a sentence on the syntagmatic axis, and there clouds of sense collapse in specific meanings. Surprising combinations of sense in the sentence, then, may shift what is in the clouds on the paradigmatic axis.

The question still remains as to when and how an identity-breaking change of sense occurs. Perhaps this happens when a word adopts a variety of senses that do not cohere well, and then a new coherent set is developed, allowing it to fit in sentences where it could not have made sense before. A new content of a node (word meaning) may open up new scripts (sentences) in which it fits. The stuffed cow as a chair, if adopted widely, may then allow the word "chair" to appear in a new script of producing chairs from stuffed cows, in a spin-off from the ordinary butchery business, as a new branch of the furniture business. But what about the difference between languages? Are different words for more or less the same concept different manifestations of the same meaning, or do they have different linguistic identities? No doubt, most such words – say, the English "chair" and the French *chaise* – have an overlap of sense. However, for some concepts there are two words in one language and only one in another. In English there are "faith" and "belief" while in Dutch there is only one word. For some words it is difficult to find a proper translation, such as the German Hegelian term *Aufhebung*. Sentences obtain their coherence or structure from different grammars and syntax. I think they should therefore be seen as different objects.

What about essential meaning? If essence for OOO is indeed the potential of an object to manifest itself, within boundaries and depending on contexts, plus its manifestations as exhibited so far, how would that apply to meaning? Is there an essential chair? There are 'prototypes,' or cases taken as 'typical,' with other manifestations taken as more or less similar. It seems that for the Dutch the prototype of a bird is the sparrow, while for the British it is the robin. Could this be helpful for OOO? Poetry can shift sense by means of metaphor (where an object is seen in terms of another type of object) and in metonymy (where it is seen in terms of a related object). Fishing for compliments is a metaphor, fishing for pearls is metonymy, since fishing for fish and for pearls share a similar relation to the sea whereas compliments do not. Shifts can also occur also by means of rhyme or assonance, which connects words by sound rather than meaning, yielding a surprising connection that may affect sense.<sup>48</sup> Concerning general public concepts, or universals, whether taken as essences or as prototypes, widely used in similar ways by different people and in different contexts, these are subject to new senses arising from language use: as in a shift or tweak of the universal to such an extent that its essence seems dubious. Should the notion of essence be dropped, perhaps? Could "prototype" serve to replace it?

<sup>47</sup> Jakobson, *Language in Literature*. The syntagmatic 'axis' is better seen not as a line but as a collection of sentences, and the 'paradigmatic axis' (a bit of a misnomer given the confusion about 'paradigms') as concepts with their repertoires of sense.

<sup>48</sup> Fry, *The Ode Less Travelled*.

What, if any, is the importance of all this for OOO? It raises the following programmatic questions. Can objects other than meanings also change in something like metaphoric or metonymic shifts, incorporating features from other objects? Note the similarity of these shifts to the adaptation of an object by the adoption of features from another object, as discussed earlier with the transformation of ideas as well as with symbiosis in evolution. How different would the cases be? Does it help to see the phenomenology of an object, its effects on other objects (such as the meanings of words that meet in a sentence) as varying across settings (such as sentences)? Would it be fruitful to consider how this variation (here on the syntagmatic axis) can affect the identity of the originating object (here on the paradigmatic axis)? In other words, how might an object extend or shift its potential as a function of the variety of its effects? These are deep questions that may merit further thought.

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