Ken Wilber's Problematic Relationship to Science

Frank Visser[1]

Abstract: Ken Wilber has argued for a spiritual view of evolution. To make his case he has defended three knowledge claims: (1) current science fails to explain major transformations in evolution, (2) some scientific views seem to support his view that the cosmos is inherently creative, and (3) his own theory of evolution is "the only theory that can actually explain the mysteries of evolution." The validity of these three claims is questioned by the argument that a more believable integration of evolutionary theory within integral theory is called for. This requires both an openness to criticism and more solid expertise in this specific field of science. Thus far, both of these features have been lacking within both Wilber's writings and the integral community.

Keywords: Eros, evolution, evolutionary science, extended synthesis, integral theory, modern synthesis.

Introduction

Throughout his many works, Ken Wilber has shown an ambiguous attitude towards science, and especially evolutionary science. Even though the concept of evolution has been central to his entire work spanning four decades, his engagement with evolutionary theory has been minimal. He has often argued science can't explain some forms of complexity. He has suggested his ideas are like those of some famous scientists, seeming to suggest they implicitly support his ideas. At the same time, he has explicitly denied that these scientists would accept his specific idea of evolution as Spirit-in-action, metaphorically pictured as Eros-in-the-Kosmos. And finally, he has claimed to have "the only theory that can actually explain the mysteries of evolution" (Wilber, 2017, p. 14), even though his mystical notion about Eros doesn't qualify as a scientific theory. In sum, the interface of integral theory with evolutionary science needs much more thoughtful consideration than it has received until now.

In 2010 I presented the paper "The 'Spirit of Evolution' Reconsidered" at the Integral Theory Conference, where it received an honorary mention in the category of constructive criticism. It reviewed in chronological order the most salient written and online statements Wilber has made about evolution and evolutionary theory (Visser, 2010). Over the years I have offered the more critical reviews in dozens of essays on Integral World (Visser, 2008). Here, I propose a more systematic and analytical treatment of the areas where Wilber and evolutionary science meet – or don't meet.

[1] **Frank Visser** (b. 1958) is a long-time student of the work of Ken Wilber and author of *Ken Wilber: Thought as Passion* (SUNY Press, 2003). He is webmaster of Integral World (www.integralworld.net), an online independent forum for a critical discussion of the integral philosophy of Ken Wilber. Originally a psychologist of religion who graduated on mysticism, he turned to book publishing and website maintenance for a living. He has presented papers at several integral conferences in the US and Europe and lives in Amsterdam.
f.visser3@upcmail.nl

Wilber has given four reasons for taking a spiritual perspective on evolution. In his recent *The Religion of Tomorrow* he argued, among other things:

> Rational reasons to believe in this miraculous spiritual dimension to Reality include the following: (a) the "creative advance into novelty" that is demonstrated by evolution itself and is inexplicable by mere "chance mutation" (the evolution from strings to quarks to subatomic particles to atoms to small molecules to massively interconnected molecules to asexual cells and early organisms – just for starters – is an awful lot of evolution in a universe that is supposed to be "running down" but can easily be seen as yet more evidence of creative Eros or Spirit-in-action, "a self-organizing self-transcendent drive," as Erich Jantsch put it). (Wilber, 2017, p. 498)

The other three areas involve the interconnectedness of things and events, the presence of consciousness and the evidence from meditation. This quote reveals a number of problematic claims. First, the grand sequence from sub-atomic particles to complex biological organisms is taken as *prima facie* evidence for a Spirit behind everything. Second, doubt is cast on the commonly accepted view in science that the second law of thermodynamics, according to which the universe is "running down" holds sway, apparently in contradiction to the increase of complexity Wilber refers to. And third, this cosmic process is explained, quoting complexity scientist Jantsch, by a generic "drive" towards self-organization and self-transcendence.

In my view, the growth towards complexity can be explained more fruitfully by closely paying attention to what science has to say about each of these transformations. Chance is only one of the many factors involved. Further, this growth towards complexity does not violate the second law but is paradoxically powered by it through the energy flows it continuously generates. And finally, postulating a generic drive towards complexity (or behind biological evolution) leads to more questions than it answers. Why, for example, would that drive work well on Earth but not on the Moon or Pluto, if Eros is a cosmic phenomenon? And why, for that matter, did it take billions of years before even on Earth complex life arose? Science provides more believable explanations for these processes.

We can contrast a religious with a scientific view of reality like this. In the religious view, taken by Wilber, one feels overwhelmed by the complexity of nature and invokes a metaphysical principle (Spirit) to explain it all. Before exploring reality, one already knows the final answer. Science comes down from that "view from 40.000 feet" and breaks up this problem in more manageable chunks. It does not pretend to have final answers but makes daily progress in solving these piecemeal problems. Invoking Spirit to solve problems of science is a non-starter, a question-begging strategy, the "God of the gaps." When one argues for Spirit, it is important to find areas where science supposedly fails, as much as areas where science can be included. Even a creationist will accept that minor variations are possible during evolution. It is major transformations that are usually seen as problematic within the current status of science. This is Wilber's stance as well (Wilber, 1995, p. 10, 492).

On many occasions Wilber has expressed doubts about the ability of science to solve the mysteries of evolution – so that it needs to be complemented by a spiritual perspective. Here's an example from a recent Integral Life video (Wilber & De Vos, 2019):

> One of the most *boring* criticisms I have received over the years is that my theory doesn't fit the modern theory of evolution. And that's right! The modern theory of evolution is *catastrophically* incomplete!

A strong statement such as this leaves me to wonder, if, to make this field of evolutionary science "more complete," we are supposed to add Spirit to our worldview, or if we rather should really investigate what current evolutionary theory entails. A similarly strong statement about the incompleteness of science was made in a blog post by Wilber in which he responded to criticism about this understanding of evolution (Wilber, 2006b):

> Do I think Mayr or Dawkins or Lewontin or Kauffman believe in telos or Eros that is Spiritual in any way? Absolutely not. Virtually all mainstream theorists embrace *scientific materialism*.

This, again, makes me wonder, if Wilber's view of evolution is in fact not supported by science at all. Yet on occasion, as I will show, he claims support from famous scientists. However, in general one cannot claim support from thinkers that do not share one's particular views. Personally, I would worry when the view of evolution I hold is not supported by science, but Wilber apparently thinks otherwise. He indicates his reliance on other ways of knowing, based on his own mystical readings or meditative experiences (generally phrased by him as the "Eye of Spirit").

But in general, when one invokes an extra-scientific principle to explain the complexities of nature, one surely has the burden of proof to show that this explanation really clarifies things. As is the case with the God of the creationists, this is fundamentally impossible. Wilber's spiritual-mystical views on evolution suffer from the same fundamental drawbacks, in my opinion.

To see more clearly where Wilber and science meet, or part ways, we need to see what Wilber's view of evolution actually consists of. Then we need to see if evolutionary science speaks with a single voice about evolution or many different (and sometimes conflicting) voices. And finally, we need to see if there is common ground between these two areas.

Ken Wilber's View of Evolution

Where to begin? Why not at the beginning? In his first book, *The Spectrum of Consciousness*, Wilber (1977) pictured the cosmic process (following Coomaraswamy) as divided in two phases: evolution, or the movement from Spirit to *maya* (matter), and involution, or the opposite and subsequent movement from *maya* to Spirit. In later works he reversed these terms (following Sri Aurobindo), with involution being the prior movement from Spirit to maya and evolution being the opposite and subsequent movement from *maya* to Spirit. (Wilber, 1993, p. xviii-xix) However, the basic abstract scheme remains the same: All natural processes come from Spirit and return to it, whichever name we give to its phases.

Spirit therefore plays a crucial role in evolution as Wilber understands it. This is clear from another early work, *Eye to Eye,* in which he states: "The strict theory of natural selection suffers from not acknowledging the role played by Spirit in evolution" (1983, p. 205). Further, the

subtitle of *Sex, Ecology, Spirituality* (1995), his major academic work, is "The Spirit of Evolution," and in *A Brief History of Everything* (1996), a more popular version of this main work, Part One was specifically called "Spirit-in-Action." One can even say he believes in a certain view of evolution because he believes in the doctrine of involution.

This active view of Spirit differentiated the neo-perennial philosophy from its predecessor the Perennial Philosophy, according to Wilber. Where Spirit was traditionally depicted as the passive Ground of Being, without any clear notion of evolution, in this more recent formulation Spirit is seen as both passive and active at the same time: passive-transcendent as World Ground and active-immanent as World Process. This Neo-Perennialist view was rather recent, "no more than a few hundred years old" and its precise origin is "almost impossible to pinpoint exactly." It started with Hegel and Schelling, was taken up by Spencer and "applied to biology" by Darwin, before reappearing in Sri Aurobindo and Teilhard de Chardin, in Wilber's reading of the history of evolutionary thought (1997, p. 62-63).

In Wilber's reading of the evolutionary literature, Charles Darwin didn't do much more than "dutifully and drudgingly" (Wilber's words) accumulate evidence for a view of evolution that was already "in the air" (Wilber, 1995, p. 491). What Wilber failed to realize, is that Darwin fundamentally *broke* with the prevailing notions about evolution, in a way that was shocking to many of his contemporaries, even to those who accepted the theory of natural selection. Darwin replaced the concept of transformation or transmutation, as evolution was called in those days, by the theory of variation and selection (Visser, 2019d). And where Wilber (1995, p. 491) concludes in *Sex, Ecology, Spirituality* that Darwin's lasting contribution was to obscure "for over a century" a spiritual view of evolution (driven by Eros or Spirit), for science his contribution was taken to be an enormous clarification of the evolutionary process (Visser 2019d). Wilber's concept of evolution is fundamentally at odds with that of science. It is here that Wilber's scholarship is most wanting and in need of a substantial correction.

Wilber's highly esoteric-idealistic view of evolution gets brief mention in the historical overviews of the idea of evolution. For example, Bowler (2009, p. 209), in his *Evolution: The History of An Idea,* does mention Goethe, Hegel, Fichte and Schelling in a brief paragraph on Idealism and Romanticism, and their reaction to Enlightenment materialism, in which they wanted to see "spirit as an active force imposing its will on nature to create order and purpose." But nothing like the elaborate esoteric doctrines of involution and evolution can be found in the Western philosophical literature.

A more likely source therefore, is the Western-esoteric Theosophical tradition, which started in 1875 with H.P. Blavatsky and whose magnum opus *The Secret Doctrine* (1888) contained not only elaborate details about involution and evolution, but also dozens of references to Darwin. According to Indian scholar Meera Nanda (2010, p. 284) all these Eastern-esoteric philosophers are "Blavatsky's Children" (Visser, 2019c). She writes: "The entire repertoire of intellectual arguments used to dress up traditional Hindu cosmology in the scientistic costume of progressive evolutionism was created and popularized originally by Madame Blavatsky and her fellow Theosophists" (Nanda, (2010, p. 284). Theosophy revitalized Indian philosophy, but introduced ideas of its own, one of which were the elaborate cycles of involution and evolution. Meera emphasizes specifically that these Hindu doctrines are incompatible with Western science.

> What immediately stands out about these theories is how deeply and fundamentally they contradict Darwin. While Darwinian theory explains [the] evolution of species by descent from a common ancestor by genetic modification, Hindu teachings assume spirit or consciousness to be the primary force of evolution. Does it not follow, therefore, that one can't believe in the Hindu view of evolution, and in the same breath claim to be in accord with [the] scientific – i.e., Darwinian – understanding of evolution? (Nanda, 2010, p. 282)

This points to a fundamental theoretical difference Wilber tends to gloss over in his dealings with evolution. Integrating the Darwinian view of evolution has consequences for any spiritual view of evolution.

Of course, some contemporary thinkers have tried to forge an integration between these two opposing views, usually called theistic evolution, in the sense that evolution is God's way of creation, or that God fine-tuned the original conditions under which evolution could subsequently take off (Lazlo, quoted in Visser, 2014a). I have called this "the God of the Knobs" (Visser, 2019b). But I find these forms of synthesis or integration hardly convincing. They are parasitic on the scientific view because they never specify the added value of introducing Spirit. And what empirical data are proof for God's existence? This is the major weakness of Wilber's view of evolution: if there is such a pervasive cosmic force operative in evolution, as he claims, how could that possibly work in practice and be detected?

To repeat, traditional doctrines of evolution were "transformational" (or "transmutational" as it was expressed in the nineteenth century) to use Ernst Mayr's (2001) terminology, whereas Darwin's proposed a "variational" model of evolution. In the traditional view, species morphed into other species by a mysterious process of transformation or transmutation, whereas Darwin abolished such a notion in favor of variation, selection, and inheritance. Wilber is fond of using the terms "transcend-and-include" when dealing with evolutionary processes, which are supposed to be driven by Eros, a Whiteheadian "creative advance into novelty" or an "extraordinary power." In a video on evolution Wilber (2014) claimed:

> This seems to be the general overall thrust of evolution – and one of the things that is certain about it – is that it won't give up. It simply is there, with an extraordinary power, in the entire cosmos.

Scientists don't think in these generic and generalized terms about evolution at all. They want to precisely understand under what conditions complexity may or may not emerge.

There are only two basic options here, in my opinion. Either there is such a pervasive "drive" towards complexity in the cosmos, or there is not. If there *is*, one has to explain why, if we take our solar system as an example of a self-contained energetic unit, life seems to be so rare – as far as we can tell. Life on earth seems to be the exception to the rule, instead of the rule itself. But if there is *no* such cosmic and pervasive drive towards complexity, the task is to explain why there is life *at all* in our solar system. Science understandably points to the specific conditions that exist on Earth – the so-called "Goldilocks conditions" of the habitable zone in which our planet exists (Christian, 2018). The fact that life may exist outside of our solar system, and may even be

abundant, does not change that observation. Invoking metaphysical principles should really be our last resort – if at all.

Incidentally, this does not mean that the scientific theory of evolution doesn't accept the notion of progress, as is often assumed mostly because of Stephen Jay Gould's influential anti-progress arguments (Gould, 2002). However, both Ernst Mayr (2001) and Richard Dawkins (2003) have argued, persuasively, that natural selection was *bound* to lead to progress, under certain conditions, and in the restricted sense as being better adapted to the environment. What is not accepted by science is a general progressive movement in all departments of nature, least of all driven by an inherent force or pressure, let alone one of a spiritual or divine nature, as Wilber proposes. This latter conviction remains, in the words of Dawkins (2017, p. 124), a mystical doctrine which is "not really a theory at all, and I shall not bother to discuss it. It is obviously mystical and does not explain anything that it doesn't assume to start with." I agree with this assessment of the theoretical emptiness of these mystical notions. Wilber's notion of a Spirit-driven evolution (which can hardly be called a "theory") suffers from the same defect.

Does Wilber in fact *have* a proper theory of evolution? In his main work Sex, *Ecology, Spirituality* Wilber (1995, p. 35-78) has fleshed out his "Twenty Tenets," which he defined as "the 'laws' or 'patterns' or 'tendencies' or 'habits'" that "all known holons seem to have in common," (p. 34). Remarkably, in this long section those thinkers that get included are philosophers, psychologists, social scientists or complexity scientists, such as Whitehead, Derrida, Foucault, Freud, Marx, chaos theorists – but most notably absent are those who should be consulted first when it comes to evolution: evolutionary theorists. In fact, these Tenets are highly abstract descriptions, not causal explanations. As one example, tenet 3 reads "Holons emerge," which is to say that atoms give rise to molecules, as molecules give rise to cells, etcetera. That may be true at an abstract-descriptive level but doesn't contribute to our understanding of *how* exactly molecules and cells emerge from simpler holons. These processes are usually well understood by science and are non-mysterious.

In his more popular books or videos, Wilber has used a rather colloquial style of presentation to convey his understanding of evolution. Most of these dealings with modern evolutionary thought have been rather critical about mutation/variation and natural selection theory (Wilber restricts himself usually to neo-Darwinism). He usually questions that science can explain a certain form of complexity (be it human eyes, bird's wings, the immune system, regeneration, morphogenesis or speciation) without in any way engaging the relevant evolutionary research literature. More often than not, this criticism is couched in graphic and sarcastic statements, meant to cast doubt on the scientific, neo-Darwinian understanding of evolution. Here's a typical example taken from a video about Integral Buddhism.

> To get one species from another requires several mutations. It's well-known that the vast majority of mutations are lethal, so we would have to have several extremely unlikely mutations all occurring at once in the same animal. But even more unbelievable, the exact same number and type of mutations would have to occur in another animal of the opposite sex, in order for them to procreate and pass on the new mutations. And even more unbelievable yet, these two would have to find each other – what if one is in Siberia and the other in Mexico? The odds of all of those happening is basically zero. (Wilber, 2014)

Science, however, explains speciation by populations being split in two parts, so the problem of its members being in two countries far apart simply does not arise (Coyne & Orr, 2004). How mutations spread within populations is well understood by the modern synthesis. Again, Wilber's understanding of the principles of evolution is inadequate and at variance with science. What does he actually have in mind, that Eros is tweaking genes? That Spirit is the Great Mutator? He does not tell us.

On more than one occasion, Wilber has pointed to the literature of intelligent design, which, he believes has correctly identified the shortcomings of neo-Darwinism, even though he disagrees with their alternative solution (of the Christian God). For example, in a footnote of *Integral Spirituality* he states,

> I am no fan of intelligent design either, which is just Creation Science in drag. But you don't need an intelligent designer to realize that evolution seems to involve some "creative allure," or what Whitehead called "the creative advance into novelty." That drive – Eros by any other name – seems a perfectly realistic conclusion, given the facts of evolution as we know them. Let's just say there is plenty of room for a Kosmos of Eros. (Wilber, 2007a, p. 236n.)

What "facts of evolution" has Wilber taken into consideration, one wonders? Wilber's "integral design," as we can call it (Visser, 2009), suffers in my opinion from the same defects as intelligent design proper: it doesn't have a *positive* theory of evolution of its own. Apart from a generic "drive towards self-organization" no further details are provided. All it can do is cast doubt on science and its supposed shortcomings, but it cannot, by definition, get explicit about the ways of working of the divine Eros or Spirit.

As Shanks (2004) formulated it in his critique of intelligent design "theory": creationism (or intelligent design) cannot answer the crucial questions about the What, Who, How, When and Why of evolution. Wilber may not be a typical creationist (Visser, 2019), but he can with some justification be called a "creativist" (Visser, 2011). In Whiteheadian style, Wilber relates all evolutionary novelty to the "creativity" inherently present in the universe. This primordial creativity cannot be explained any further, other than identifying it as the "action" of the divine Spirit. As we will see, there are other, more believable ways to conceptualize the creativity of the cosmos.

A different way to contextualize Wilber's take on evolution is found in the magazine article "The Real Evolution Debate" (2007), which was published in *What Is Enlightenment?*, a Andrew Cohen related publication which served as medium for Wilber's ideas for many years. In it, no less than twelve approaches to evolution are portrayed, six from a material-scientific and six from a spiritual-religious perspective.

Table 1. Scientific and Spiritual Approaches to Evolution

SCIENTIFIC	SPIRITUAL
1. Neo-Darwinists	7. Intelligent Designers
2. Progressive Darwinists	8. Theistic Evolutionists
3. Collectivists	9. Esoteric Evolutionists
4. Complexity Theorists	10. Process Philosophers
5. Directionalists	11. Conscious Evolutionists
6. Transhumanists	12. Integralists

It is argued by the anonymous author(s) that the evolutionary landscape is much more varied than the usual "Darwin vs. Design" dilemma, which dominates our public discourse. Wilber's integral philosophy, listed as the final and most comprehensive approach, is described as follows,

> "The integralist's goal is not so much a new theory of evolution but a larger perspective that can effectively integrate disparate existing theories, both spiritual and scientific, into a coherent picture of the entire evolutionary process. More than synthesizers, they offer a sort of radically inclusive meta-theory, one that sees truth everywhere – from the gene-centered focus of the Neo-Darwinists to the mathematical insight of the Complexity Theorists to the creativity of the Process Philosophers – but attempts to provide a larger context that allows us to see the relationships between these many evolutionary perspectives… Like the Conscious Evolutionists and the Process Philosophers, the Integralists are reaching for a higher synthesis and a deeper integration between science and spirit." (p. 100).

Be that as it may, in my opinion the two basic options still remain: evolution is seen as either *unguided* (or naturalistic) or it is seen as *guided* (by whatever divine Principle, Process or Person). Wilber's Eros-in-the-Kosmos is such a transcendental Principle, which places him squarely in the religious-spiritual-mystical camp.

This raises the pertinent question: what is the added value of that "larger perspective" and "coherent picture" in terms of understanding evolutionary processes? For example, does a Whiteheadian "creative advance into novelty" qualify as a theory? Or does it provide any new understanding? Is it an improvement on what science has to offer, as Wilber claims? Can a meta-theory actually have any bearing at all on scientific problems? Wilber suggests a positive answer to this question by introducing the notion of Eros when discussing the evolution of eyes and wings, or other biological phenomena, but it is questionable.

Wilber claims to transcend-and-include science in his integral philosophy, but this leads to problems: evolution is either guided or unguided. Tertium non datur. Or put differently in more modern terms: you can't have it both ways. Species are either created or evolved. And if science is included to some extent by an integral philosophy, to what extent is it included? And more importantly: when is it transcended? Wilber does not provide any specifics here.

In summary, by introducing Spirit into the evolutionary equation Wilber doesn't clarify any single empirical evolutionary problem. He does on occasion refer to some areas of science, most

notably complexity and chaos science, that seem to point into the direction of a creative cosmos, but we should keep in mind this in no way implies automatically there is a Spirit behind everything we see in nature. His attempts to cast doubt on the ability of science to explain these natural phenomena have not been very convincing to me, in part because his penchant for caricature and dismissive humor have not helped create an atmosphere for serious reflection.

What Does Science Say About Evolution?

Turning now to science itself, it should immediately be obvious there is not one single scientific theory about evolution – or about anything else within the province of scientific study, for that matter. Instead, there are various schools of thought, which debate intensely about the mechanisms of evolution, and more specifically the relative importance of natural selection. Most, if not all, however, subscribe to the Darwinian thesis that we do not need to invoke spiritual forces to explain the diversity and complexity of nature – nor should we.

Of these evolutionary schools, Wilber usually refers only to "neo-Darwinism," which is a label applied to the so-called modern synthesis, which took form in the early decades of the 20th century. Where Darwin postulated natural selection as the main evolutionary mechanism, though not the only one, he was in the dark about the precise workings of heredity – which made many of his contemporaries doubt the viability of this model. We would call it Evolution 1.0 these days. But when the work of Gregor Mendel was (re)discovered around 1900, and the laws of heredity were formulated, Darwin was finally vindicated (let us call it Evolution 2.0).

This "modern synthesis," a term coined by Julian Huxley (1942) in his book *Evolution: The Modern Synthesis*, became the received evolutionary science. In recent decades, however, multiple *additional* evolutionary mechanisms have been proposed and debated, to the extent that an "extended" or "post-modern synthesis" has emerged (Evolution 3.0). Many of its insights have been documented in a single book as well: *Evolution: The Extended Synthesis* (2010) by Massimo Pigliucci and Gerd B. Müller. Table 2 provides a very rough timeline:

Table 2. Three generations of evolutionary thinking

1850-1900	Charles Darwin	Evolution 1.0
1900-1950	The modern synthesis	Evolution 2.0
1950-2000	The extended synthesis	Evolution 3.0

Entire new fields of investigation have opened up this way, such as: evolutionary development or evo-devo, ecology, epigenetics and phenotypic plasticity (Pigliucci, 2007). And even then, some fields have been left out, according to Dutch biologist Gert Korthof (who owns a large online review website dealing with this Third Evolutionary Synthesis, but also a great variety of critiques of Darwinism at www.wasdarwinwrong.com). He mentions among other things: endosymbiosis, horizontal gene transfer, viral evolution, earth system science, catastrophe theory, the origin of life and astrobiology (Korthof, 2014).

Difference of opinion exists in the field about how important these theoretical additions have been ("Extended Evolutionary Synthesis," n.d.). In my opinion this is just a testimony of the progress of science resulting in a richer image of the processes of evolution. At any rate, this is a lively field of scientific research. It is also sensitive to hype and exaggerated claims, as if Darwinism has been refuted. Just claiming, as Wilber does, that "the modern theory of evolution is *catastrophically* incomplete" is irresponsible without specifying what is included or excluded in the analysis. For sure, it is widely believed these days that the modern synthesis itself was still incomplete and needs to be expanded. Such is the progress of science.

In my opinion, this debate can be structured helpfully by seeing each of these schools of evolutionary thought as addressing one or more levels of the Linnean taxonomic hierarchy (Table 3).

Table 3. Evolutionary researchers address different taxonomic levels.

Taxonomic level	Researcher	Focus of study
Life	Kauffman	Origin of cells, molecules
Domains	Woese	Origin of bacteria, archaea, eukaryotes
Kingdoms	Margulis	Origin of fungi, animals, plants
Classes	Carroll	Origin of wings, eyes, limbs
Species	Darwin	Origin of species

In true integral fashion, this prevents researchers in the various fields to argue past each other. It is also relevant for assessing Wilber's statements on evolution, especially when he claims support from any of them.

As one well-known example of mixing taxonomic levels: where Darwin studied the origin of the various animal and plant *species*, Lynn Margulis (1998) focused on the way the animal and plant *kingdoms* emerged in the first place, through endosymbiosis of single celled organisms and bacteria, an insight she derived from early Russian biologists. In that sense, she went deeper, and further back in time, than Darwin was able to do. Margulis opposed Neo-Darwinist gradualism, not by invoking Spirit, but by empirically discovering *other evolutionary mechanisms.* Later in life she argued that endosymbiosis was also the main mechanism of speciation (Margulis & Sagan, 2002). But even if occasionally the tree of life shows signs of merging instead of splitting, especially in the case of horizontal gene transfer (Sapp, 2009; Quammen, 2018), the overwhelming majority of species emerge through splitting of populations (Coyne & Orr, 2004).

As a second example, and more relevant to my analysis, Stuart Kauffman pioneered the phenomena of self-organization, especially around the origin of cellular life and even molecular structure (Kauffman, 2019). His work is not addressing the question of speciation, which remains Darwin's domain, or symbiosis, which is Margulis's territory. Wilber often refers to Kauffman as an ally in his opposition to neo-Darwinism. For example:

> I am not alone is seeing that chance and natural selection by themselves are not enough to account for the emergence that we see in evolution. Stuart Kauffman and many others have criticized mere chance and natural selection as not adequate to account for this emergence (he sees the necessity of adding self-organization). (Wilber, 2007)

In doing so he overlooks that self-organization is not primarily the mechanism that produces biological adaptations or species; it is the process that spontaneously yields (constituent parts of) cells and molecules. We shouldn't mix taxonomic levels when discussing evolution. Nor should we prematurely take the incompleteness of neo-Darwinism as proof for Spirit.

Then there are those scientists who stand closer to creationist or spiritual views of evolution, even though they still don't explicitly invoke divine influences. First there's the so-called "Third Way of Evolution" (at www.thethirdwayofevolution.com), which counts as members James A. Shapiro, Dennis Noble, Eva Jablonka, Gerd B. Müller, Eugene Koonin and many others. They argue that neo-Darwinism (or "ultra-Darwinism") overlooks important aspects of the evolutionary process. They want to steer a mid-course between creationism and neo-Darwinism. Obviously, there is considerable overlap with the extended synthesis.

The creationists proper (or their pseudo-scientific spokespersons of intelligent design) argue more explicitly for a divine hand in nature. Michael Behe's *Darwin's Black Box* (1996) – a title Wilber has recommended to his students as evidence for the supposed failures of Darwinism (Wilber, 2005) – and further works inaugurated this movement, mostly in the US. Scientists have wholesale rejected this approach because it doesn't provide any *positive* evidence for or theory of divine intervention in evolution. It can only cast doubt on the capacity of naturalistic science to explain all of its details, usually by arguing for the "irreducible complexity" of this or that biochemical process. It is telling that Wilber sees intelligent design as an ally against the "flatland" approach of neo-Darwinism, while overlooking the many *scientific* evolutionary schools critical of the modern synthesis.

I would like to highlight an aspect of the notion of design when it comes to biological complexity that is often overlooked. In the case of intelligent design, it is one thing to speculate about a cosmic Spirit which has designed biological organisms or biochemical processes, it is wholly something else to *implement* this design. It is unclear to all parties involved how this could possibly have worked. And this shortcoming applies to Wilber's Eros-theory as well. Even so, as late as Wilber's latest book *The Religion of Tomorrow* he has quoted creationist Hugh Ross (2001) to argue for the improbability of life, or a habitable planet Earth, without a divine Designer/Spirit/Eros (Wilber, 2017. p. 497-498). One may ask: what does Wilber have in mind here, that Eros/Spirit prepares a planet for us to live on?

Then again, it is sometimes suggested that a spiritual view of evolution becomes available only for highly developed researchers, who have entered post-formal stages of cognition of mystical states of consciousness. An unlikely hypothesis, as if all mystics would agree with Wilber's idiosyncratic view on evolution. And if they do not? Not enlightened enough? However, one could equally argue (playfully) that these post-modern developments in evolutionary science are already made possible by higher, post-formal forms of thought.

The first Darwinists stressed the element of competition, between separate and selfish individuals, most notably by using the term "the survival of the fittest" (a term that was coined by Herbert Spencer, not Darwin, and reluctantly used by the latter). Later theorists emphasized that cooperation is much more important (Kropotkin, Margulis, Sloan Wilson). This can be interpreted as a change from agency to communion. A truly "integral" view of evolution stresses the genealogy of all the various forms of life, first as a linear ladder but after Darwin more as a non-linear, bushy tree of life which branches out in all directions. All organisms are put in historical perspective by seeing them as descended from a last universal common ancestor (Dawkins, 2016). And to understand the recent findings of the prevalence of horizontal gene transfer even between different domains (i.e. viruses and humans) requires another mental transformation, crossing traditional boundaries between domains.

Ironically, at no point in this scheme of theoretical advancement have unspecified and unspecifiable spiritual factors been introduced. Even stronger, all these new discoveries have been made by modern empirical methods (microscopy, phylogenetics, etc.). Spiritual approaches have not contributed to our knowledge of evolution at all.

Wilber has covered very little of this evolutionary theoretical landscape in his writings, seemingly implying that one is either a neo-darwinist or a creationist. He seems to feel at home in the latter camp (Lane, 2011, 2017). Even if the field of evolutionary theory is a rich tapestry of schools and opinions, and debates often get considerably heated, most if not all scientists squarely subscribe to the fundamental Darwinian notion that you can get to species without invoking Spirit in any of its guises.

Creationists, including Wilber, often seem to use the healthy controversy within this field of science as, or perhaps only as, an argument for the need to postulate Spirit. In defense of Wilber, some integralists (e.g., Reynolds, 2019) have claimed he is able to see the spiritual dimension of evolution because he uses his Eye of Spirit, whereas science is limited to the Eyes of mind and senses only, leading to a materialistic worldview. This raises the question: what additional insight into biological phenomena is gained by using such a form of extra-scientific knowledge? Reynolds argues that Eros or Spirit is not in any way a creationist God or Deity, but rather behind "everything that arises." This contradicts Wilber's many statements that evolution is "Spirit-in-*action,*" in my opinion. But even if that were the case, its absence or presence wouldn't make any empirical difference. Like beauty, Eros seems to exist only in the eye of the beholder, but not in any objective, empirical sense. Does that make the notion of Eros theory or poetry? (Visser, 2017).

In summary, Wilber has rarely engaged the modern synthesis in a serious manner (and often ridiculed it), has not dealt with the extended synthesis and its many offshoots, has recommended his students to read Michael Behe, the front man of intelligent design, quotes creationists such as Hugh Ross, and at the same time claims to have "the only theory that can actually explain the mysteries of evolution" (Wilber, 2017, p. 14). To date, Wilber's sympathies and affinities do not appear to lie with the realm of evolutionary science.

How or Where Do Ken Wilber and Evolutionary Science Meet?

Given this situation, we should now ask, has Wilber contributed to our understanding of evolution, either by intelligently commenting on current scientific schools or debates of evolutionary thought or proposing a theoretically viable explanatory model of his own? Given the above analysis, the answer must be no, in both cases. Neither intelligent design nor Integral Design has been able to clarify how biological complexity has emerged under the influence of Spirit. This is and will remain a religious belief which is hard to reconcile with the scientific method. This is Wilber's vision in a nutshell, as expressed in *Integral Spirituality*:

> That drive – Eros by any other name – seems a perfectly realistic conclusion, given the facts of evolution as we know them. Let's just say there is plenty of room for a Kosmos of Eros. (Wilber, 2006a)

By repeating this catechism instead of substantiating it, Wilber is mixing up the factual language of science with the poetic language of religion, without attention to precise terminology ("by any other name"). Rather than offering positive evidence for the existence of Spirit, he is making an *inference*, in the same way that intelligent design uses this argument (Dembski, 2006), about the necessity for such a hypothesis.

Based on his writing thus far, it is difficult to discern the reach of Wilber's understanding of science. He often argues that science relates all phenomena to chance, and since chance by itself is obviously not able to produce biological complexity, "something other than chance" is needed. Here's a typical quote, taken from *A Brief History of Everything* (Wilber, 1996, p. 23):

> In other words, something other than chance is pushing the universe. For traditional scientists, chance was their god. Chance would explain it all. Chance – plus unending time – would produce the universe. But they don't have unending time, and so their god fails them miserably. That god is dead. Chance is not what explains the universe; in fact, chance is what that universe is laboring mightily to overcome. Chance is exactly what the self-transcending drive of the Kosmos overcomes.

Science, however, sees chance as only one factor, lawfulness or necessity or selection being the other. Evolution is decidedly *not* the result of mere random chance, but also of non-random selection (Isaak, 2003).

Without any opportunity for a positive theory of evolution, explaining in detail how Spirit intervenes or how biological complexity is an expression of Spirit, the only alternative left for Wilber is point to developments in science which, if not prove his thesis, at least seem to go *in the right direction*. In this context he usually mentions two scientific giants: theoretical biologist Stuart Kauffman and complexity scientist and Nobel Prize winner Ilya Prigogine.

As stated before, Kauffman's field of research does not touch directly on the processes of speciation or adaptation. Regarding these fields Kauffman is a Darwinist (Kauffman, 2019, p. 87: "Darwin was right"). And since Wilber does not specify what this self-organization (understood by him as a spiritual phenomenon) is able to accomplish in terms of biological

complexity (eyes?, wings?, cells?, multicellularity?) – in stark contrast to Kauffman's attention to detail – he can not present Kauffman as one of his allies. True, Kauffman (2008) has written *Reinventing the Sacred*, but that refers to an explicitly naturalistic sacredness or sacred naturalism. Contrary to Dawkins, he is not in favor of combatting religion, but instead wants to open our eyes to the wonders of nature itself. By elucidating empirical processes of self-organization, Kauffman may not be Wilber's ally at all, but in fact an adversary, given Wilber's explicitly spiritual agenda.

The same is true for Ilya Prigogine, who won a Nobel Prize for his work on dissipative structures, which are able to create "order-out-of-chaos." Wilber (1995) reads into this phenomenon a transformative power of nature or even matter, which suits his spiritual philosophy. But in my opinion this interpretation is questionable. Self-organization definitely exists, and in many forms, but it is not something that can be explained or clarified by a single cause. What Prigogine actually discovered is that *under certain conditions* of energy flows, matter tends to assume a new structure, which processes ("dissipates") this energy in a more efficient way. Order can thus be produced *by exporting disorder*. Likewise, we humans continuously have to take food in order to live and thrive and would otherwise die. A constant energy input is therefore needed to keep living organisms going. This pre-eminent role of energy flows or gradients is consistently overlooked by Wilber in his writings when discussing the emergence of complexity.

For example, in a recent video (Wilber & De Vos, 2019) he argues for a self-organizing drive *intrinsic* to matter:

> That's why Prigogine, Nobel prize winner in 1967 or so... the research he did demonstrated absolutely beyond a shadow of doubt, that even dead and insentient matter, if you push it far from equilibrium, it will escape its turmoil by jumping to a higher level of self-organization. Matter does that inherently! That is built in to it! You don't have to do something special, a funky thing to get it up and running.

This strikes me as a misunderstanding of the nature of Prigogine's discoveries. Matter reorganizes itself under the impact of energy flows or laws such as gravity, not because it "inherently" wants to do that. Indeed, when the role of these energy flows through matter is made explicit – as is done much more adequately in the so-called Big History literature (Visser, 2013, 2014c) – there is no longer any need to invoke Spirit to explain complexity. Again, Prigogine might not be Wilber's ally here, but instead his opponent.

This discussion relates to the wider field of entropy, which also is touched upon by Wilber in various recent online communications. Starting with the science story: The second law of thermodynamics holds that entropy – usually understood as disorder, but dispersion or diffusion is an alternative reading – tends to increase in nature, when no external energy is added to a system. Likewise, our Sun radiates energy in all directions, every single second of our lives, in huge amounts, lost forever in cold space. Only a tiny part of this energy output is captured by life on Earth to be used for the construction and maintenance of its cells. And interestingly, the more complex organisms are more efficient in capturing and dissipating this energy, either directly or

indirectly. Thus, biological complexity emerges not against, but in accordance with this second law.

Wilber (1995) has given a rather different reading of these scientific topics. In his understanding matter itself is able to "wind itself up," as he phrases it, which he even extrapolates to the universe at large. In *A Theory of Everything* (Wilber, 2000, p. x), he states:

> The second law of thermodynamics tells us that in the real world, disorder always increases. Yet simple observation tells us that, in the real world, life creates order everywhere: the universe is winding up, not down. The revolutionary new understanding found in "chaos" and "complexity" theories maintains that the physical universe actually has an inherent tendency to create order...

Note again the word "inherent" here. Wilber glosses over the scientific distinction between the second law, which works across the cosmos *globally*, and *local* pockets of complexification, which are possible given the right conditions of energy flows. We clearly cannot just rely on "simple observation" in these matters. Simple observation tells us also that the sun rises… Wilber does not seem to go beyond this superficial analysis. But it is the Sun, not Eros, that in the end fuels the evolution of life on Earth in all its many forms.

In this quote, Wilber creates an artificial contrast between seeing the second law as pervasive, and the new findings of complexity science about the emergence of complexity, but that contrast is non-existent. Rather, it is a *paradox*, which is well understood by Big History authors, such as David Christian, but not by Wilber:

> According to the second law of thermodynamics, the tendency of the Universe is for simplicity. There are no drivers for complexity… And since the universe tends to wind down, constant energy input is needed for complexity. (Christian, 2015)

> How does the universe create complexity given the law of entropy?... with great difficulty. And with every next step, the going gets tougher… We, as complex creatures, desperately need to know this story of how the universe creates complexity, despite the second law." (Christian, 2011)

Again, Wilber's claim that some famous scientists support his position (without explicitly endorsing his spiritual view of things) is spurious. Much more reflection is needed here.

I would like to suggest the following metaphor to clarify the differences in worldview that are at stake here (Visser, 2018). Imagine we are paddling upstream on a river, that, naturally, flows downstream. Wilber concentrates upon our upward movement (i.e. psychological growth) and says: "we make an awful lot of progress on a river that is supposed to flow downstream!" By doing so, he overlooks the enormous amount of energy that is needed to make that happen (i.e. to sustain life). And he feels the curious need to cast doubt on the second law of thermodynamics ("the world is not winding down, it is winding up!"). Without grounding in basic science, he needs to invent his own cosmic dynamic of an Eros-in-the-Kosmos and an "Erotic Universe," as

I have documented in an extra online chapter of *Ken Wilber: Thought as Passion* (Visser, 2014b). Wilber wants to have his rivers run upstream.

Conclusion

Overseeing the questionable strategies Wilber has followed to argue for his Spirit-driven "theory" of evolution, in contrast to science, I see these three as most problematic.

- Claiming failures of science – Wilber has been skeptical about science's capacity to explain certain forms of biological complexity (similar to arguments provided by intelligent design). Examples he has used are: the evolution of eyes and wings, the human immune system, multi-cellularity, morphogenesis, regeneration, etc. In none of these areas has he reported on current scientific research. He has also not been explicit in where he draws the line between what science cannot explain and what it can.

- Claiming support from science – Wilber has suggested similarity between his ideas and those of famous scientists, without adequately accounting for major differences, even though he has at the same time acknowledged that mainstream scientists do not support his spiritual view of evolution. When we look beyond verbal similarities such as "the universe is creative" and search for actual explanatory mechanisms, the fundamental differences between Wilber and these authors does not result in support from science.

- Claiming superiority to science – Wilber has continuously proclaimed the superiority of his own "theory" of evolution without meeting the demands of theory formation in science. What he has to offer is in fact not evolutionary theory but evolutionary theology. A true theory clarifies natural processes and breaks them down into explicit steps, by suggesting possible mechanisms. Wilber's "Eros-theory" is by definition and in principle not able to do just that.

In baseball, the rule is "with three strikes you are out." I do think that when it comes to Wilber's dealings with these fields of science, given these failed strategies, the game is over.

When responding (briefly and unsystematically) to my challenges, he (Wilber & De Vos, 2018) once called me an "extremely conventional evolutionary theorist" (I have actually no idea what he means by this: does it refer to Evolution 1.0, Evolution 2.0, Evolution 3.0?).

> I am always getting criticized by extremely conventional evolutionary theorists, like Frank Visser, because I postulate Eros, an inherent novelty in the cosmos... which by the way is Whiteheads point, the 'creative advance into novelty'. *Eros*... Stuart Kauffman, self-organization is built into the universe. *Eros*... Ilya Prigogine, a Nobel prize winner. 'Order out of chaos'. Even insentient matter, when pushed far from equilibrium, jumps into higher levels of order. *Eros*...

But name-dropping and sloganeering is not the same as doing responsible science or philosophy. In Wilber's universe one is either a flatland scientist in favor of neo-darwinist, flatland reductionism, or a spiritual theorist who sees the Divine as active everywhere in nature.

As I have argued, there is a huge middle ground that is covered by contemporary evolutionary science, which is worthy of further careful exploration. Instead of repeatedly claiming "support" from a handful of famous theorists, who are either long dead or have not been in contact with Wilber, it is more honest to acknowledge the theoretical vacuity and lack of sophistication of the whole notion of "evolution as Spirit-in-Action." A more robust integration of evolutionary theory within Integral Theory is called for.

Finally, some humility is in order when it comes to making far-reaching knowledge claims. Science, and especially evolutionary science, is such a wonderful field of human endeavor, that it does not deserve to be maltreated by "the world's greatest philosopher." Evolutionary theory is a rich and varied landscape that cannot be dealt with in a few sketchy paragraphs. Furthermore, shouldn't the integral movement open up its windows by now to theoretical approaches outside of its own ideological domain? The absence of a healthy culture of debate, the strongly emotional reactions of Wilber to theoretical challenges over the years and the intellectual apathy of the integral community around matters of science do not help us in our search for assessing the truth and validity of Wilber's particular views on evolution.

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