



On the Use of “Illusion”

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Abstract

In this commentary on Denis Noble’s paper, I focus on his use of the term “illusion,” and juxtapose it with other potential terms, in particular several others he has used for similar points in his book, *Dance to the Tune of Life*. His use of “illusion,” if more fully explicated, might be of even broader applicability than in his paper. I ask about potential classes of errors in science and remark about his “principle of biological relativity.”

Keywords Evolution · Biological relativity · Circular causation · Combogenesis

Background

This is a fascinating article. It took me through an important series of points about the cultural evolution of the history, findings, and scales of connected fields from molecular to evolutionary biology. Moreover, it enticed me to make a return look at related similar material in his book, *Dance to the Tune of Life* (Noble, 2016; hereafter *DTL*).

My specific comment, intended as a question, derives from the mild surprise I first felt when as a reader I encountered the unusual use of the strong word, “illusion.” It’s in the title, it’s key to linkages across main points, it’s used more than 50 times in the article.

The term surprised me simply because to my mind the word is so rare in conversations about the workings of science and its progress. Indeed, in *DTL* the word “illusion” is only used several times, all on a single page (page 35; by my count). There Noble discusses the illusion that DNA is the biological center of the universe. It’s like, says he, the way that many people don’t understand there’s no center to the physical universe. In our understanding, DNA as governing center has been “dethroned” as a “uniquely privileged level of causation.” I very much agree with all

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this, and with Noble's excellent metaphor that the genes dance to the tune of the larger life of the cell or organism.

So why has Noble now upped his preference for the term "illusion"? Of course I cannot answer that. But it is worth examining alternative ways that he framed concepts that in his book are analyzed as mistakes and that are similar to the four main misconceptions in his target article. This will allow me to ask about potential classes of errors in science. I will end with remarks about his proposed "principle of biological relativity" as a way to avoid the four illusions.

Main Text

For me what first sprang to mind (and still does) for the word "illusion" is the image of a magician pulling a rabbit from a hat or fielding a card trick in front of perplexed spectators. For me another image for illusion is a mirage of an oasis in the distance when one is dying of thirst in a barren desert, which fortunately has never happened to me.

A magician intentionally creates an illusion. Denis Noble several times is clear that he is not accusing anyone he mentions of an intentional creation of illusion. His "illusions" to me seem more like the desert mirage. But rather than being made by physical forces such as light and air, they have been made by the weaving of findings and human predilections to fashion virtual worlds with our words and theories. Though I accept the operation of these all-too-human dynamics, I am still curious about his use of the term "illusion." That is because Noble carefully considers the use of language, as shown in this article as well as in his book.

For example, in his book, there are other potential terms for similar big mistakes. Noble lists three "tenets of the Modern Synthesis that have now become impossible to sustain" (*DTL*, 235). They are "DNA inheritance only," "gene selection only," and "genome isolated." In the figure caption on that page he calls them "assumptions." To me, tenets that are impossible to sustain could also be called errors of fact. My own point here is that the erroneous tenets and criticisms about them are very closely related to the family of assumptions that in the current paper are called by the far more provocative term, illusions.

Noble also uses "error" and additional alternative terms. He writes, "Science advances through the admission of error" (*DTL*, 234). "In retrospect, Neo-Darwinism can therefore be seen to have oversimplified biology and over-reached itself in its rhetoric" (*DTL*, 236). To my mind, the illusions of the current paper certainly involve errors and over-simplifications. They could be framed as rhetorical over-reaching of findings.

So in his own writings Noble has given us several options for terms about similar topics. I am not claiming one-to-one correspondence between those points referred in his book and this paper. The paper is a new work. And yet I do sense several terms used almost synonymously. And some of the other framings are easier for me to digest. That might be because over-simplifications, unsustainable tenets, assumptions, or errors are terms more familiar and thus comfortable food. Yet I also am aware that those others would not make me sit up and take note, like a jolt from espresso, as when the errors or unsustainable tenets are being called "illusions."

So in the end, I find myself desiring more detailed discussion in the paper about Noble's choice of the term "illusion" and its ambitious deployment. I think that many

readers, especially those of *Biosemiotics*, would find it of interest to know more about why Noble chose the word, especially because of its potential application to other aspects of biology and other fields of scholarship. What I mean here is the following.

Perhaps we should consider a nested hierarchy of terms for the large class of all types of error. From my reading of the target article, "illusion" would clearly refer to a very high level of error that can influence not only scientific work but day-to-day discussion of the nature of reality. But what is that use's relationship to high-level assumptions or some of the other framings mentioned above? I do not have an answer for this. As I said, I don't think I've ever used the word "illusion" in talking about errors in science, either current or historical. I only here posit a potential nested hierarchy of scales of errors and the need for distinct terms at the various levels.

Concluding Remark

Denis Noble is a brilliant systems thinker who continues to pioneer crucially needed syntheses. I want to state that I much like his answer to overcoming the illusions, namely his "principle of biological relativity." I see its utility in the working guidelines that (1) there is no privileged level of causation, and (2) top-down constraints are always crucial in the dance of circular causation of bottom-up and top-down.

The principle of biological relativity fits well into what I have called the "dynamical realm" of biological evolution (Volk, 2017). I use the umbrella term of "combogenesis" to describe twelve fundamental levels from quarks to culture, each developed from combination and integration of things on prior levels. (See Corning, 1998, for a cogent discussion of pros and cons of umbrella terms such as natural selection or synergy). But within the dynamics of biological evolution, fundamental levels must deal with potential conflicts of interest across levels and that means to me no privileged level of causation. Causation is circular, between parts and wholes, and wholes are part of larger wholes.

Thus, in this conclusion, after asking for more detail about the use of the term, permit me to use "illusion" in a new way at least for myself. It is an illusion to ignore the fact of multiple scales of causation and nested scales of influence in the wondrous dance of life.

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