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INTELLIGENT DESIGN: ITS NATURE, LIMITATIONS, AND FUTURE

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There are many different ways of thinking about Intelligent Design (ID). The paradigm has scientific, philosophical, and theological facets. ID might be seen as a matrix of arguments: some about the contingency of nature's organization, some from specific aspects of the natural world, such as the bacterial flagellum, and some that take on the analytic power of mathematical deduction. The focus of this article will be this latter form of ID. Specifically, this paper will address the scientific nature of Intelligent Design, its natural limitations as a science, how these limitations affect its interaction with neo-Darwinism, and how its challenges to neo-Darwinism in the future can be made more consistent with its scientific nature and more directly related to particular aspects of the neo-Darwinian paradigm. This article will argue that ID science can overcome its current limitations by first changing the biological theory of origins with which it deals and then co-opting this new theory to suit design conclusions.[1]

Intelligent Design: A Science with Limitations

In his most recent work, *The Design of Life*, William Dembski, along with Jonathan Wells, has said that "to determine whether intuitions are leading us astray or aright, scientists attempt to flesh out intuitions with precise formal analyses.[2] It will seem obvious to anyone familiar with Dembski's work that he has made Intelligent Design into a rigorous mathematical argument or "formal analysis." Prior to this quantification, arguments to design rested upon analogies, intuitions, and philosophical reasoning that are too easily dismissed by the scientific community. The community of evolutionary biologists already believes that it has an answer as to how immensely complex organisms could have been produced gradually over time, and, therefore, their intuitions regarding design detection in nature have been hopelessly dulled. Because of these dulled sensibilities, Dembski's analytic approach offers the best way to convince a skeptical scientific community, namely, rigorous mathematical deduction.

The notions that Dembski employs like information, probability, complexity, and specification are all to be understood as rooted in the mathematical sciences. Given that the complexity-specification criterion is the most apparent form of ID, as science it follows that any natural limitations will flow from this

[1]For a more in depth analysis of ID and neo-Darwinism as presented in this article, see J. Thomas Bridges, *A New Hypothesis: A Concise Refutation of Dogmatic Darwinism* (Charlotte, NC: Solomon's Razor Publishing, 2009).

[2]William A. Dembski and Jonathan Wells, *The Design of Life: Discovering Signs of Intelligence in Biological Systems* (Dallas: The Foundations for Thought and Ethics, 2008), 181.

quantitative approach.[3] But before embarking on a description of these limitations, it is necessary that one understand a broader distinction between the sciences and philosophy as established by Jacques Maritain in his *Degrees of Knowledge* [see chart below]. According to Maritain one can have pre-scientific knowledge of nature (without systematic understanding), scientific knowledge as strictly empirical, or scientific knowledge as physico-mathematical. Empirical knowledge is a systematic study of nature that does not use mathematical abstractions but rather observations to draw its conclusions. Basic anatomy might be one of these. Then there are natural sciences that are given to creating physico-mathematical models of nature. These models, he says, are "materially physical but formally mathematical."[4] Maritain says that physics and chemistry are more apt to do this than sciences like biology or psychology and that these latter resist physico-mathematical models. Finally, Maritain places pure mathematics as the highest form of abstract knowledge within the field of the sciences. Beyond this there is only one more degree of abstraction, and it draws one into the field of philosophy (either the philosophy of nature or, more broadly, metaphysics). [5]

The distinctions Maritain raises seem reasonably and correct. In applying these distinctions to the ID paradigm, one makes a firm division between science and philosophy so that the two remain distinct and therefore suffer no equivocations. This understanding of the degrees of knowledge at once lends support to the ID claim that its paradigm is under no obligation to speculate about the characteristics of the Designer. To see this one merely needs to notice the far right hand division on the chart between science and philosophy. By working with mathematical indicators of design taken from material systems (e.g., cosmology, astronomy, or biology) the ID proponent limits his arguments to the quantitative aspects of these sciences in order to reveal the vast improbabilities associated with explanations from chance and necessity. By circumscribing the discussion to these specific quantitative aspects, the ID proponent can avoid getting embroiled in broader metaphysical debate. If he were to speculate about the cause(s) of the mathematical indicators themselves, then he is clearly moving into the area of philosophy of nature or metaphysics.[6] To be sure, he does have the freedom to speculate, but it will be distinctly a philosophical speculation; and this speculation does not lessen the *scientific* legitimacy of his original hypothesis. The important point here is that by limiting itself to quantitative aspects of nature, the ID proponent is able to make the most objective, compelling argument for the Design inference. It is, therefore, by strictly adhering to this natural mathematical limitation that ID can make the most progress in the scientific community. Although this application of Maritain's analysis supports and clarifies ID claims, it also causes some difficulties for ID as it relates to the neo-Darwinian paradigm.

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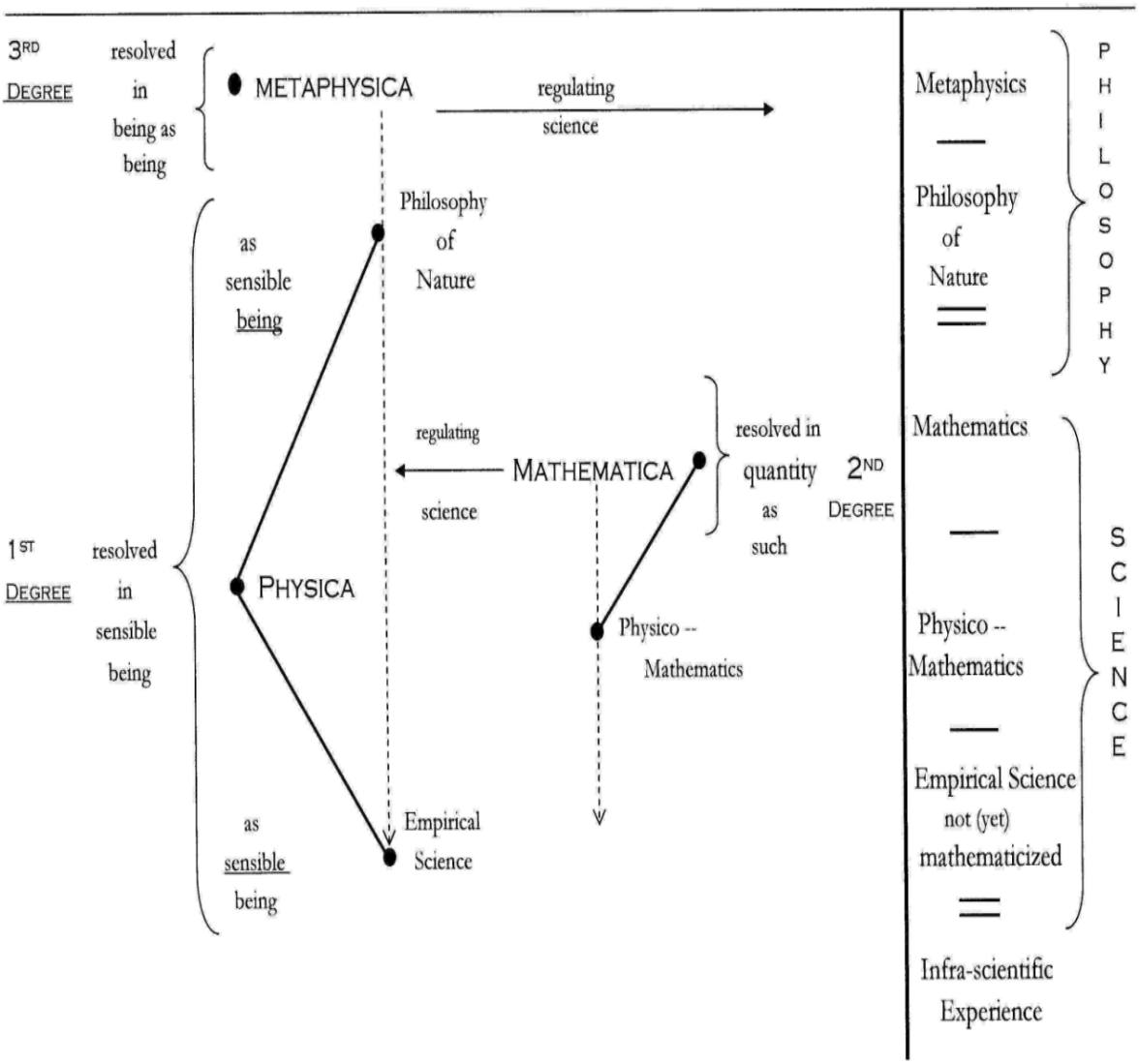
[3]Dembski argues that contingent events, like the production of biological information, must have been produced by intelligent causation since the odds of them coming about by chance exceed the Upper Probability Bound (UPB = 1.0×10^{-150}) and there is no necessary reason that they should be produced by natural laws alone. He uses the term "explanatory filter" to capture the idea of sifting natural phenomena into categories of chance, necessity, and contingency, and contingent events produced by intelligent causation.

[4]Maritain, 45.

[5]Maritain, 41-72, esp. 70-71.

[6]The only thing the ID scientist need say about the cause, *qua* scientist, is that it displays intelligence and that the effects under consideration cannot be explained in terms of chance, natural law, or any combination of the two.



ID Science and Neo-Darwinism

Before launching into a discussion about the relationship between these two sciences, it will be a benefit to look at the broad categories that make up a theory of biological origins. A theory of biological origins (TBO) might be one that supplies explanations for five areas of biology concerned with the history of life:

I. Origins of Life science (how complex life first originated)
II. Speciation (how life diversified into many species; ancient and modern)
III. The Fossil Record (how to interpret the fossils in the geologic column)
IV. Extensive Similarities (genetic, molecular, and anatomical)
V. Biological Information (how do particular biochemical systems or macromolecules arise with the type of information necessary for their origin and function)

These explanations are really individual suppositions that all hang together with an internal logic that makes their conjoined acceptance a powerful overall explanation for the ancient and modern biological

worlds. With an adequate framework in place, we will be in a position to evaluate how neo-Darwinism hangs together as a TBO and the state of the current ID paradigm.

Neo-Darwinism has several explanations for the origin of complex life (I) from a chemical environment. Inevitably these explanations appeal to some sort of self-organizational principle that allows for the components of life to "emerge" from this environment. Speciation (II), the origination of new species, is seen as a process wherein one species is transformed into another by slight modifications over geologic time. The gradual accumulation of mutations along with creativity of natural selection produces new species from older ones. Among evolutionary biologists the fossil record (III) is dealt with in one of three ways: (1) the majority view is that the fossil record displays the sort of gradualistic speciation Darwin assumed, (2) punctuated-Equilibrium denies this rate of Gradualism, but does accept the above definition of speciation, given variable rates, and (3) cladistics denies that the fossil record provides sound evidence for narrative-based explanations, and prefers to rest its conclusions on molecular/physiological evidence for evolutionary relationships. Extensive similarities or 'homologies' (IV) are the same structures in different species that are assumed to be the result of common ancestry. The vertebrate forelimb is an example. Vastly different species of vertebrates all display this five digit extension and strikingly similar bone structure. Currently the neo-Darwinian community has not adequately answered the question of complex information (V) but makes some general appeals to complexity arising from simpler systems over geologic time. With this overview of how neo-Darwinism fills in the five-part theoretical framework, the focus of this article will now return to Intelligent Design.

In his book *Intelligent Design: The Bridge Between Science and Theology*, William Dembski states, "Mathematicians have not muscled into the biologist's domain. Rather biologists have uncovered certain facts to which mathematics applies."[7] In his most recent work, *The Design of Life*, he remarks that the complexity of the human eye, which contains billions of cells, is too great to be of practical use for ID claims and that even for some irreducibly complex biochemical systems, "complexities quickly mount and become unwieldy."[8] For ID science to press its claims, then, it needs to find data that clearly lends itself to quantification and the types of analyses used in the complexity-specification criterion. This is why ID has focused so much attention on the bacterial flagellum; it is data of the right size and type and therefore helpful for making ID claims. Specifically, what are these claims? When Intelligent Design science appropriates some biological data, it has the ability to reveal the high probability that a structure was designed given the incredibly small probability that it could have come about by some combination of chance and law. The merits of this quantitative approach have already been discussed, but given the framework for a theory of biological origins (TBO), two problems arise for ID that seem intractable.

The first problem that arises for ID, as it attempts to address neo-Darwinism, is that there are several areas of neo-Darwinism, as a TBO, that do not clearly lend themselves to quantification and therefore cannot be approached by Dembski's complexity-specification analysis. Speciation (II), fossil record interpretation (III) and at least large-scale similarities (IV) (e.g., anatomical) are all events that refer either to entire organs, organisms, or species over geologic time. If the complexities of the human eye and even some irreducible biochemical systems "become unwieldy" for the complexity-specification criterion, then how could it possibly address these much larger issues? The answer is that it cannot.[9] Intelligent Design draws its power from quantifiable data, and therefore data that defy quantification will elude its analyses.

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[7]Dembski, 271.

[8]Dembski and Wells, 195.

[9]This criticism assumes the validity of philosopher of science, Thomas Kuhn's work. Kuhn asserts that for a paradigm to undergo revolution, the competing paradigm must give an alternative rendering of the data while also providing coherent explanations of data that is anomalous under the original paradigm. It is clear that Darwinian explanations that entail a strong historical-narrative component can have no alternative counterpart in ID science that ignores historicity as such. ID science can therefore only have a direct relationship with a non-Darwinian paradigm that also rejects the historical narrative approach to ancient and modern species.

Using the term "design" to refer to a mathematically based assessment of the information found in bio-molecules and some vague notion of "design" in the fossil record is a gross equivocation. It is this sort of equivocation lying at the heart of ID explanations that can become (1) confusing for those who would support ID, and (2) a catalyst for criticism for those who want to bar ID science from the debate. [10]

The second problem is that the current ID paradigm is not a fully orbed alternative theory of biological origins. This problem follows from the five-part sketch of origins theories and from the problem just noted. If ID cannot currently appropriate data in order to give a design-based critique of speciation (II), the fossil record (III), or extensive similarities (IV), then it cannot be considered a compelling alternative TBO that rivals Darwinian explanations. To be sure, what ID has done in recent years is actually supply the fifth category. It shows that any origins theory must take account of complexity from an informational perspective (V). Further, Stephen C. Meyer has presented strong evidence that naturalistic scenarios for the Origin of Life are improbable.[11] But developing a good, positive position on biological information (V) and a good, negative argument against naturalistic Origin of Life scenarios (I) does not provide ID enough substance to build a distinctly design-based theory of biological origins. Much of the larger scale evidence may be *compatible* with either Darwinism or Design, but unless ID can create a position that excludes Darwinism, the scientific community will prefer Darwinism.[12]

If these problems are in fact real, then they are only apparently intractable. The solution will entail a radical new hypothesis, but if it is successful then the ID account of biological origins will emerge stronger and more formidable than ever. The first step to the solution is to incite a true biological revolution. To do this one must take note of how the last revolution was engineered.

From Paley to Darwin

Just how revolutionary Darwin's *Origin of Species* was is debatable. Certainly he drew from ideas already circulating at the time and he failed to convince many within the scientific community. There is no doubt, however, that the nineteenth century was dominated by two popular views of biological origins, the first being William Paley's *Natural Theology* and the second being Darwin's *Origin of Species*. Familiarity with Darwin's approach will enable us to recreate the components necessary for sparking a revolution concerning biological origins, at least among the populace if not within the scientific community. In this section, we will very briefly look at the paradigmatic assumptions of William Paley and how Darwin replaces each one after calling its veracity into question. As a side note, historian of science Frank J. Sulloway has presented evidence from Darwin's personal correspondence wherein he states that he had read Paley's work so much he could have "quoted it by heart."[13] It is reasonable, then, to believe that in writing his *Origin of Species*, Darwin is consciously refuting Paleyan premises.

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[10]In a Dec. 2, 2007 post on his website, www.uncommondescent.com, Dembski replies to a criticism by one Mary Midgely. Midgely had argued that ID science cannot take account of biological structures at the level of continuous tissues. Dembski, in his response, clearly states, "ID stakes its claim at the level of molecular biology." Given this understanding of ID science, any claims that go beyond the molecular scale are either illegitimate or at least unsubstantiated.

[11]See Stephen C. Meyer, "The Origin of Biological Information and the Higher Taxonomic Categories," Proceedings of the Biological Society of Washington 117 (2) (2004): 213-239.

[12]In *The Design of Life* this language of compatibility is used, that ID is 'compatible' with Darwinian ideas like common ancestry. I suspect that what most conservative theists want is a position that undermines Darwinian ideas and provides a better alternative, not merely a position that is equally compatible with Darwinian concepts.

[13]Frank, Sulloway, "Why Darwin Rejected Intelligent Design," in *Intelligent Thought: Science Versus the Intelligent Design Movement*, ed John Brokman (New York: Vintage Books, 2006), 109.

Briefly, Paley believes in recent, special creation of immutable species and the necessity of inferring design from anatomical complexity. This is what Darwin calls the "ordinary view." With this in mind the evidence presented in *Origin* takes on a clear structure. Instead of a recent creation event, Darwin adopts Charles Lyell's time frame of hundreds of millions of years.[14] Instead of special creation that says God specifically created each species for its immediate environment, Darwin points out the similarity of the Galapagos islands near South America and Cape de Verde islands near Africa; he notes that the two island groups have species of plants and animals more closely related to those of the nearest mainland than with each other. This sort of geographic distribution of species makes no sense under a special creation model, but it makes perfect sense from the perspective of descent with modification. He also shows that species are in fact mutable and that breeders of both plants and animals have known this for some time.

When it comes to the big question of design, Darwin takes advantage of the strong claims of Paley to offer a weak rebuttal that nevertheless accomplishes his intended goal. More specifically, Paley repeatedly asserts that it is *impossible* that something as complex as, say, the human eye could have come about by natural causes alone.[15] It has tear ducts to keep it moist, a lid to shield it from debris, a focusing lens, an optic nerve; all these components working in concert for the purpose of sight. Darwin, taking advantage of this argument's strong form (hypothetical necessity), shows that it is at least conceivable (possible) that something as complex as the human eye could have come about by natural causes alone.[16] He asks us to suppose that an epithelial cell becomes photosensitive somehow, and this photosensitivity grows and is passed to its descendents in whom it increases and begins to give the most rudimentary form of sight. This simple sight develops gradually over millions of generations and grows in complexity. Such a scenario would explain how, hypothetically, one could have an eye as complex as the eagle's through natural causes alone. Finally, when presented with a potentially fatal objection from the fossil record, Darwin appeals to its incompleteness.

This, then, is the making of a biological revolution. Take your predecessor's paradigmatic assumptions, then refute and replace them one by one, arguing for various degrees of implausibility; and when faced with a potentially fatal objection, appeal to incompleteness. What follows in this article is an attempt to apply these strategies to the now reigning theory of biological origins, neo-Darwinism. I will present two alternative models to neo-Darwinism: the first is from a naturalistic perspective and the second from a design perspective. This approach has the most rhetorical promise because it does not invite broader questions about naturalistic metaphysics in order to unseat Darwinism. Having done so on naturalistic grounds, we will use this new origins theory to develop a new design hypothesis.

From Darwin to the Genomic Potential Hypothesis

For the purposes of this article I have chosen to focus on three main assumptions of the neo-Darwinian paradigm. If these assumptions are proven false, implausible, or not necessarily so, then it opens up the possibility of a non-Darwinian explanation for the relevant data. The assumptions to be critiqued and replaced are the following: (1) Gradualism, (2) Ancestor-Descendent Genealogies from the fossil record, and (3) Ultimate Common Ancestry. These are the assumptions that ground the broader

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[14]Lyell wrote an influential treatise on geology published in the 1830s. His basic idea was that large geological features could be produced by infinitesimal changes accumulating over the span of geologic time. Darwin adopts this principle as a tool for interpreting natural history. See Charles Lyell, *Principles in Geology* (London: Penguin Books, 1997).

[15]William Paley, *Natural Theology* (1854; repr., Whitefish, MT: Kessinger Publishing, n.d.), 35-41.

[16]See Charles Darwin, *Origin of Species* (NY: Barnes and Noble classics, 2004), 156-159.

Darwinian paradigm and motivate the specific interpretations of data gathered from ancient and modern species.

Here Gradualism has to be understood in two distinct but related ways. The first is the sort of natural Gradualism introduced as a theory of geologic formation by Charles Lyell in the 1830s. Whereas William Paley assumed a recent creation of biological species, he also assumed that geologic features were a result of catastrophic events, including Noah's flood. In contrast, Darwin adopted Lyell's geologic history and based his own natural history on the same principle, that is, small, incremental changes over geologic time can lead to large changes. We can first establish a more general rule: One's view of natural history must follow what one believes of geologic history. This is obvious because geologic history provides the context within which ancient species live and die.

The question then becomes this: how do geologists today understand geologic history? The answer is that modern geologists have long since abandoned a Lyellian understanding of geologic history. From Paley's supernatural catastrophism Lyell adopted a view of natural Gradualism; geologists today have adopted the theory of plate tectonics, which allows for occasional catastrophic events. In their book *Rare Earth*, Donald Brownlee and Peter Ward report that the last 500 million years have been tumultuous and punctuated by violent events such as the Alvarez Asteroid Strike that killed off the dinosaurs 65 million years ago.[17] Since one's view of natural history follows from how one understands geologic history, what has the neo-Darwinian paradigm done to revise its theory of natural history in light of modern geological data? Nothing. This is one of two major areas where the Darwinian paradigm maintains an assumption that has long since been discarded by relevant experts.

The second form of Gradualism, regarding natural history, has been called into question since the early 1970s. Stephen Jay Gould and Niles Eldredge went in search for Darwinian Gradualism as graduate students. Since they could find no support from the fossils themselves, they formulated their now famous punctuated-equilibrium theory. This recognizes that the overall pattern of the fossil record is one of punctuation, stasis, and extinction, not Gradualism. The power of their hypothesis was in the discovery of *stasis* as opposed to the assumption of Gradualism.

It is safe to conclude, then, that Darwinian Gradualism is doubly false. First of all it lacks empirical support from the fossil record. Second, and more importantly, one's view of natural history should follow one's view of geologic history, and modern geologists understand that earth's past has been one of violence and upheaval, not a peaceful Gradualism. Indeed, what sense does descent with modification or survival of the fittest make when routinely entire species are destroyed by mass extinction events? This assumption of the neo-Darwinian paradigm is, therefore, both false and obsolete. Next this article will consider the assumption that the fossil record can provide genealogical evidence for evolutionary relationships.

In the book *In Search of Deep Time*, Henry Gee argues that geologic time, Deep Time, effectively dissolves continuous narratives or cause-effect relationships plunged into it. That is, normal historical events are related in a more or less continuous narrative that relates causal events to their effects. Essentially, if one looks at the fossil record genealogically, one is interpreting one ancient species as being the cause (ancestor) of another species (descendant). His point is that the nature of Deep Time itself renders such an account fictitious.[18] We should, therefore, limit our view of natural history to graphic depictions of proximate relationships called cladograms. These cladograms are based upon an assumption of common ancestry and the similarities that can be obtained by studying ancient and modern species. By doing this, the cladist believes he can circumvent the dilemma of Deep Time and establish evolutionary relationships based on empirics alone. The point to make here is that if Deep Time will abide no continuous narratives, then the narrative approaches to natural history must be abandoned in favor of

[17]Donald Brownlee and Peter D. Ward, *Rare Earth* (NY: Copernicus Books, 2000), 160-183.

[18]For a detailed discussion, see Henry Gee, *In Search of Deep Time: Beyond the Fossil Record to a New History of Life* (Ithica, NY: The Free Press, 1999).

non-narrative, ahistorical approaches. These ahistorical approaches will try to provide an explanation of ancient and modern species but will not do so by creating a fictional *narrative* based on false assumptions and insufficient evidence. Cladistics is a program whose scientists recognize the need for this ahistorical approach. Cladistics does seem more conceptually conservative than the orthodox Darwinian account. However, it rests heavily on the assumption of common ancestry. If the similarities witnessed by the cladist are not the result of common ancestry, then the cladograms are as fictional a representation as Darwin's Tree of Life. Therefore, this last Darwinian assumption demands close scrutiny.

The discussion of ultimate common ancestry necessarily leads one into the realm of the origin of life. In this way one's theory about life's origins will impose itself on one's broader view of biology. The first thing to notice about origin of life research is that it is not properly a biological study. Famous Darwinist, Richard Dawkins, has admitted that proper area of expertise required for this research is chemistry and in this he is a layperson who watches with interest from the sidelines.[19] With this in mind, one is in a position not only to critique this last Darwinian assumption but also to begin building a coherent non-Darwinian theory of biological origins.

In his book *The Genomic Potential Hypothesis: A Chemist's View of the Origins, Evolution, and Unfolding of Life*, Christian Schwabe reveals a startling and obvious Achilles' heal of the ultimate common ancestry assumption. In the mid-nineteenth century Darwin assumed that all life might hail from an ultimate common ancestor in the form of a single-celled organism. From this origin all life gradually diversified into the biological world as we know it. For decades researchers have recognized that the cell is entirely too complex to have arisen spontaneously; in recent years chemists have taken over the question of life's ultimate origins.

Schwabe explains the problem with simple clarity: "The chemistry of life's origin is based upon mass action effects and can never be limited to one outcome! This is the stark, but not necessarily unpleasant, reality that settles the fate of the Darwinian paradigm."[20] Schwabe believes that life is the result of chemical necessity. Whatever we think of this view, the point is this: the neo-Darwinian paradigm readily assumes that life arose from nonliving chemicals but fails to realize that a purely chemical reaction yields outcomes on the molar scale (6.02×10^{23}) not numerically one outcome. Schwabe admits that the number of origins is more likely in the millions than only one. The conclusion is clear; if the original chemical environment was sufficient to produce life, it would have produced a plethora of life not a single common ancestor.

As mentioned earlier this becomes both a criticism of the common ancestry assumption and the basis for a non-Darwinian view of biological origins. Schwabe uses the principles of chemistry to derive a multiple origin model, but how does he flesh out the other four areas of a theory of biological origins mentioned above? For Schwabe, speciation is an event that happens during an "early biogenic phase" that is unrepeatable in the history of life. It is during this phase that basic distinctions between all species are established in localized chemical environments, small "pools" of chemicals. Each species then has a "world-line" that leads to its full expression in the fossil record and then to its modern counterpart or to extinction. This is as complete a denial of the transmutation of species as one could possibly have. There are no transitions in the fossil record because there are no transitions between species. Schwabe's account therefore holds to a realistic view of Sudden Emergence, unlike punctuated-equilibrium where the suddenness is only apparent. Extensive similarities are explained by what Schwabe calls "primordial proximity during biogenesis." To make this point more startling to the neo-Darwinists, we could think of extensive similarities as the result of "genomic convergence." Convergence is the idea that from environments with similar selection pressures, similar features can emerge that are not genealogically related. If this were the case, it could account for the amazing similarities between, say, humans and chimpanzees without reference to some mythological descent with modification. Finally, Schwabe refers to chemical necessity as the origin of biological information.

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[19]Richard Dawkins, *The God Delusion* (NY: Houghton Mifflin Co., 2006), 137.

[20]Christian Schwabe, *The Genomic Potential Hypothesis* (Austin, TX: Landes Bioscience, 2001), 27.

This is a very brief overview of Schwabe's alternative theory of biological origins and how the five areas are explained in a non-Darwinian way. What is the value of such a model? Are we not merely substituting one naturalistic theory for another? There are at least three major benefits for a presentation of Schwabe's account: (1) it proves that Darwinism does not simply follow from the evidence understood naturalistically, (2) it proves that Darwinism as a broad understanding of biological origins is *theoretical* and not a scientific fact, and (3) it brings the notions of speciation and similarity down to the level of molecular biology while providing an ahistorical framework for events in natural history. Under the Genomic Potential Hypothesis, all of natural history collapses to small-scale biological data.

Schwabe's model is a single step in a new direction of possible thinking regarding biological origins. It is a theory that in the future could be confirmed or falsified given a better understanding of genomics and the chemistry of life. Schwabe is not arguing that his view is a scientific fact, merely that it makes more sense than the Darwinian account. Keep in mind that Darwin opened up room for his view by arguing its possibility in light of strong Paleyan claims. Today it is the Darwinists who take a dogmatic stance on natural history. The *possibility* of Schwabe's account is enough to show that neo-Darwinism is a theory that offers a possible explanation of the facts but does not necessarily follow from the evidence. Also, Schwabe's account is a culmination of trends in theoretical biology that started in the early 1970s with punctuated-equilibrium. His model recognizes a truly punctuated fossil record, and like the Cladists, he moves toward an ahistorical model of origins that safely avoids the dilemma of Deep Time. By removing the false assumption of common ancestry, Schwabe brings all these intuitions together to form a novel approach to biological origins; one that hangs together with a strong internal consistency.

Finally, in the beginning of this paper it was argued that Intelligent Design science is a rigorously mathematical approach and that where data cannot be quantified, it cannot be appropriated by ID. Large scale biological phenomena such as the Darwinian understanding of speciation, extensive similarities, and fossil interpretation cannot be addressed by Dembski's complexity-specification criterion. Under the auspices of Genomic Potential, however, speciation and similarities are understood to be molecular events, and the fossil record is understood ahistorically. It follows that the Genomic Potential Hypothesis lends itself to an ID-based interpretation in ways that neo-Darwinism does not. This brings us to the final point.

From Genomic Potential to Genomic Design

It was argued earlier that of the five areas of explanation necessary for a fully orbed theory of biological origins, ID provides a good positive argument in the area of information and a good negative argument regarding origin of life research, but it does not provide alternative explanations in the areas of Speciation (II), the Fossil Record (III), or Extensive Similarities (IV). To compete in the scientific community, ID must supply distinct positions in each of the five areas that are compatible with Design and exclude Darwinism. Doing this will set the Design paradigm apart from neo-Darwinism in explanatory scope. My contention is that the Genomic Potential Hypothesis can be co-opted to serve ID's ends. It was noted earlier that Schwabe believes that life emerges from chemical necessity, but as Dembski and Wells note in their book, the *Design of Life*, chemical principles are compatible with biological information but do not explain its origin; the origin of complex life is not a question of chemistry alone it is one of information.[21] The nature of biological information, therefore, becomes the distinctive difference between Genomic Potential and what we may call the Genomic Design Hypothesis.

This distinction, to be sure, radically alters the notions found in the Genomic Potential Hypothesis. The multiple origins that have arisen from a chemical environment must have been *guided* outcomes from chemistry and did not arise by chance, necessity, or their possible combinations. The fossil record should be understood as sudden emergence, but the ID proponent is able to infer that this emergence was part of a greater intention and not merely the products of happenstance. Instead of genomic convergence as an explanation of extensive similarities, the ID proponent may refer to genomic *construction* during the early

[21]Dembski and Wells, 252.

biogenic phase, clearly implying the influence of an intelligent cause. And finally, as always the ID proponent is on sure footing in maintaining that Design can be inferred from the nature of biological information. The Genomic Design Hypothesis becomes a design-based alternative to the naturalistic account given above that retains all of the strengths of Genomic Potential, but unlike Genomic Potential, it maintains that intelligence is necessary for the advent of complex-specified biological information.

Conclusion

It has been argued in this paper that ID's nature as a science is essentially mathematical, and without this mathematical essence one must revert to qualitative arguments, analogy, and intuition that have proven largely ineffective in convincing a hostile scientific community. But this quantitative approach brings with it natural limitations, namely, data that is non-quantifiable cannot be appropriated using ID analyses. There are aspects of the neo-Darwinian paradigm that cannot be quantified and therefore cannot be addressed by ID mathematical analyses. Further, ID has not currently provided positive positions in several major areas in order to compete with neo-Darwinism as a fully orbed theory of biological origins.

To find clues to inciting a true biological revolution, we looked at how Darwin structured his rebuttal of Paley's position. It was shown that he refuted and replaced Paleyian assumptions with his own. Further, his model provided a theory of biological origins that had some explanatory power and held together with an internal consistency. In doing this he was able to engineer a revolution in the popular mind concerning biological origins.

Keeping with this model, it was shown that each of the three major Darwinian assumptions can be successfully called into question. Gradualism was shown to be false in that it does not represent an accurate rendering of the fossil record (which prompted the theory of punctuated-equilibrium), and it currently rests upon a view of geologic history that has been discarded. The assumption that genealogical relationships can be inferred from the fossil record is called into question by the advent of Cladistics. These scientists regard with great suspicion any continuous narrative plunged into Deep Time. Cladistics, however, rests heavily upon the assumption of an ultimate common ancestor. According to Christian Schwabe, a chemist, any reasonable view of life's origins that starts from a chemical environment will never naturally produce one single outcome.

This has prompted him to develop the Genomic Potential Hypothesis in which multiple origins develop essentially distinct species during an early biogenic phase. These pro-forms then emerge suddenly in the fossil record without any fictional transitions between species. The similarities among species can be referred to a common environment and not a common ancestor, and, under his model, biological information is held to have emerged necessarily based on chemical principles.

This naturalistic alternative is rhetorically helpful in the Evolution versus Intelligent Design debate because it spotlights the theoretical nature of neo-Darwinism. It shows the scientific community that an alternative to Darwinism can be established on naturalistic grounds, and, therefore. neo-Darwinian conclusions do not simply follow from the accumulated evidence. Further, since the structure of the Genomic revolution follows Darwin's structure and the content comes solely from naturalistic sources (Gould-Eldredge, Gee, and Schwabe) it follows that the neo-Darwinists cannot impugn the argument's structure without impugning Darwin himself, or its content without conflicting with their fellow naturalists. This dilemma is helpful in the debate because it strips away the false "us-them" dichotomy that neo-Darwinists try to establish against ID. This naturalistic alternative proves that reasonable disagreement to neo-Darwinism can arise within the naturalist camp and is not just motivated by those who have non-naturalistic metaphysical concerns.

By co-opting Genomic Potential to create the Genomic Design Hypothesis, the Design community can offer a fully orbed theory of biological origins that maintains this mathematical relationship with small-scale biological data. Origin of Life, Speciation, Similarities among species, and Information all refer to molecular evidence that can readily be approached with ID's mathematical analyses. The fossil

record is understood under a sudden emergence model that may also have teleological significance. The design-based conclusion will be that species have always displayed informational aspects of design: from the multiple origin event, to the early biogenic phase, to genomic construction, to their ancient and modern expressions. Finally, in his 1999 work *Intelligent Design: The Bridge Between Science and Theology*, William Dembski declares that information should become the "central and unifying concept" in evolutionary biology.[22] By presenting Genomic Potential and Genomic Design as possible alternatives to neo-Darwinism, the choice one is faced with will ultimately rest on one's view of biological information. The strategy in this paper makes the nature of biological information the central question in deciding between Genomic Potential and Genomic Design. It effectively allows the ID proponent to center the debate in the area where ID claims are strongest, most mathematically rigorous and scientifically objective.

ID proponents recognize that their paradigm is young and needs to be developed as a scientific and intellectual project in order to continue making in roads into the scientific community and broader culture. This new design hypothesis takes ID influence deeper into the realm of biological origins than ever and in doing so should destroy Darwinian dogmatism. Keep in mind that we need not argue that Darwinism is false, it is enough to show that it is one theory among many. If a strategy like this is adopted then university students in the future will have something they have long been denied: a choice.

[22]Dembski, 180.