

Appendix A:

Excerpts from *Of Pandas and People* (2nd ed., 1993), the published version used by students,

Quote A:

“This book has a single goal: to present data from six areas of science that bear on the central question of biological origins. We don't propose to give final answers, nor to unveil *The Truth*. Our purpose, rather, is to help readers understand origins better, and to see why the data may be viewed in more than one way.”

(*Of Pandas and People*, 2nd ed. 1993, pg. viii)

Quote B:

“If science is based upon experience, then science tells us the message encoded in DNA must have originated from an intelligent cause. But what kind of intelligent agent was it? On its own, science cannot answer this question; it must leave it to religion and philosophy. But that should not prevent science from acknowledging evidences for an intelligent cause origin wherever they may exist. This is no different, really, than if we discovered life did result from natural causes. We still would not know, from science, if the natural cause was all that was involved, or if the ultimate explanation was beyond nature, and using the natural cause.”

(*Of Pandas and People*, 2nd ed., 1993, pg. 7)

Quote C:

“Today we recognize that appeals to intelligent design may be considered in science, as illustrated by current NASA search for extraterrestrial intelligence (SETI). Archaeology has pioneered the development of methods for distinguishing the effects of natural and intelligent causes. We should recognize, however, that if we go further, and conclude that the intelligence responsible for biological origins is outside the universe

(supernatural) or within it, we do so without the help of science.”

(*Of Pandas and People*, 2nd ed., 1993, pg. 126-127)

Quote D:

“Since both written language and DNA have that telltale property of information carried along by specific sequence of ‘words’ and since intelligence is known to produce written language, is it not reasonable to identify the cause of the DNA’s information as an intelligence too?”

(*Of Pandas and People*, 2nd ed., 1993, pg. 57)

Quote E:

“On the other hand, the experimental work on the origin of life and the molecular biology of living cells is consistent with the hypothesis of intelligent design. What makes this interpretation so compelling is the amazing correlation between the structure of informational molecules (DNA, protein) and our universal experience that such sequences are the result of intelligent causes. This parallel suggests that life itself origin to a master intellect.”

(*Of Pandas and People*, 2nd ed., 1993, pg. 58)

Quote F:

"The experimental work on the origin of life and the molecular biology of living cells is consistent with the hypothesis of intelligent design. What makes this interpretation so compelling is the amazing correlation between the structure of informational molecules (DNA, protein) and our universal experience that such sequences are the result of intelligent causes. This strong analogy leads to the conclusion that life itself owes its origin to a master intellect. One can talk about adding innumerable random mutations, but proponents of intelligent design still wonder: How were such impressive gains

in functional information consolidated? It is a fair and crucial question."

(*Of Pandas and People*, 2nd ed., 1993, pg. 85)

Quote G:

"In the world around us, we see two classes of things: natural objects, like rivers and mountains, and man-made structures, like houses and computers. To put it in the context of origins, we see things resulting from two kinds of cause: natural and intelligent."

(*Of Pandas and People*, 2nd ed., 1993, pg. 6)

Appendix B

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intelligence (SETI). If just one decodeable message from deep space ever reached us it would be hailed as an event of cosmic significance. We would know that beings like ourselves (though not necessarily in human form) are "out there." We would infer this on the basis of the analogy principle. So creationists reason that such arguments as the above are valid and apply them to the question of the origin of life.

But is this not merely the design (or "clockmaker") argument of William Paley which long ago was abandoned by scientists? There are two important differences. First, Paley's argument was to extrapolate to the supernatural from the "clock." The problem was that biology provided no examples of the supernatural manipulating the material, and thus there was no basis in uniform experience for going from nature to the supernatural, for inferring an unobserved supernatural cause from an observed effect.

The second difference is that unlike Paley's day, we have the scientific tools and terminology to distinguish between order and information, and to quantify the latter whether encountered on the pages of a book, in the face of a mountain, or in biology. Thus from the observation that human intelligences can communicate by manipulating sequences of alphabetic letters, creationists infer that a similar kind of intelligence was responsible for the message sequences of nucleotide letters in DNA. Some master intellect is the creator of life. But such observable instances of information cannot tell us if the intellect behind them is natural or supernatural. This is not a question that science can answer. In both creation and evolution views, something from uniform experience, something which we

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cause from an observed effect. Nor is there any further basis in uniform sensory experience today for doing so.

A brief aside is in order to clarify an ambiguity, one that has often mesmerized attempts to discuss the issue. It is the ambiguity of the word naturalism, with its diverse meanings. The Oxford English Dictionary devotes three pages to the etymology and meaning of the words nature, natural, and naturalism. The fourth meaning of naturalism is: "Adherence or attachment to what is natural." Here the reference is doubtless made to the primary meaning of natural, which can be summarized from the same dictionary as the normal and systematic order of the material world. But another, equally proper meaning of the term naturalism--a meaning variously conveyed intentionally or unintentionally, is philosophical naturalism: "A view of the world, and of man's relation to it, in which only the operation of natural (as opposed to supernatural or spiritual) laws and forces is admitted or assumed." (2.). In philosophical naturalism then, there is a presumption that there is nothing beyond the material world.

The point of clarification to be made is this. We can know from uniform sensory experience, and thus from science, about the material world. But there are two things about which we cannot learn through uniform sensory experience. One is the supernatural, and so to teach it in science classes would be out of place. The other thing we cannot learn through uniform sensory experience is that there is no supernatural, i.e., that natural causes identified through sensory experience exhaust reality. We cannot detect evidence for philosophical naturalism. To teach either of these two--even by the presumption of excluding the other--is to yield the classroom to apologetics, either the apologetics or theism of the apologetics of philosophical naturalism. Thus science can identify an intellect, but is

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powerless to tell us if that intellect is within the universe or beyond it.

The Oxford English Dictionary frequently contrasts natural and artificial. In contrast to natural, artificial means produced by human art, or manufactured. This is significant, because in science, the proper contrary to natural cause is not supernatural cause, but intelligent cause. But entertaining both a natural cause explanation and an intelligent cause explanation is pluralistic, and many who wholeheartedly embrace a pluralistic approach in other contexts have maintained that science enables us to waive this otherwise common practice. The process of science, we are told, with its ability to cut through opinion and "get to the facts" eliminates the need for such an approach. So is the design view a real alternative for a scientist with mastery in both the methodology and facts of science?

At the time of this writing, the perception on the part of most scientists and educators is that the explanation of design is not science; therefore it should not be included as part of the science curriculum, even though intelligence is a valid inference from information. Only if this objection can be met and a satisfactory rationale offered for supplementing evolution with the explanation of design in the public school science curriculum will the need for the present supplement be apparent.

WHAT IS SCIENCE?

That rationale must be born of an understanding of what science is. According to the National Science Teachers Association ("Inclusion of Nonscience Theories in Science Instruction"), "Science is the system of knowing about the universe through data collected by observation and controlled experimentation." The NSTA further listed a three-fold test for a true theory of science:

- 1) its ability to explain what has been observed;

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Appendix C:

Quotes from Scientists on Abrupt Appearance:

“The fossil record with its **abrupt** transitions offers no support for gradual change . . . transitions between major groups are characteristically **abrupt**.”

(Stephen Jay Gould, “The Return of Hopeful Monsters,” *Natural History*, 86:22, 24 (June-July, 1977) (emphasis added))

“Anything truly novel always seemed to appear quite **abruptly** in the fossil record.”

(Mayr, E., *One Long Argument: Charles Darwin and the Genesis of Modern Evolutionary Thought* 138 (Harvard University Press, 1991) (emphasis added))

“It is this relatively **abrupt appearance** of living phyla that has been dubbed the ‘Cambrian explosion.’”

(Valentine, J.W. *et al.*, “Fossils, molecules and embryos: new perspectives on the Cambrian Explosion,” *Development* 126:851-859 (1999) (emphasis added))

“The ‘Cambrian explosion’ refers to the seemingly **abrupt appearance** of diverse metazoan groups...”

(Conway Morris *et al.*, “Lower Cambrian vertebrates from south China,” *Nature*, 402:42-46 (Nov 4, 1999) (emphasis added))

Appendix D:

Selected Scientific Publications of Intelligent Design Proponents which Post-date the publication of *Of Pandas and People*

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

Meyer argues that competing materialistic models (Neo-Darwinism, Self-Organization Models, Punctuated Equilibrium and Structuralism) are not sufficient to account for origin of the information necessary to build novel animal forms present in the Cambrian Explosion. He proposes intelligent design as an alternative explanation for the origin of biological information and the higher taxa.

Lönnig, W.-E. *Dynamic genomes, morphological stasis and the origin of irreducible complexity*, Dynamical Genetics, Pp. 101-119.

Biology exhibits numerous invariants -- aspects of the biological world that do not change over time. These include basic genetic processes that have persisted unchanged for more than three-and-a-half billion years and molecular mechanisms of animal ontogenesis that have been constant for more than one billion years. Such invariants, however, are difficult to square with dynamic genomes in light of conventional evolutionary theory. Indeed, Ernst Mayr regarded this as one of the great unsolved problems of biology. In this paper Dr. Wolf-Ekkehard Lönnig Lönnig Senior Scientist in the Department of Molecular Plant Genetics at the Max-Planck-Institute for Plant Breeding Research employs the design-theoretic concepts of irreducible complexity (as developed by Michael Behe) and specified complexity (as developed by William Dembski) to elucidate these invariants, accounting for them in terms of an intelligent design (ID) hypothesis.

Jonathan Wells, "Do Centrioles Generate a Polar Ejection Force? *Rivista di Biologia/Biology Forum* 98 (2005): 37-62.

Most animal cells contain a pair of centrioles, tiny turbine-like organelles oriented at right angles to each other that replicate at every cell division. Yet the function and behavior of centrioles remain mysterious. Since all

centrioles appear to be equally complex, there are no plausible evolutionary intermediates with which to construct phylogenies; and since centrioles contain no DNA, they have attracted relatively little attention from neo Darwinian biologists who think that DNA is the secret of life. From an intelligent design (ID) perspective, centrioles may have no evolutionary intermediates because they are irreducibly complex. And they may need no DNA because they carry another form of biological information that is independent of the genetic mutations relied upon by neo-Darwinists. In this paper, Wells assumes that centrioles are designed to function as the tiny turbines they appear to be, rather than being accidental by-products of Darwinian evolution. He then formulates a testable hypothesis about centriole function and behavior that—if corroborated by experiment could have important implications for our understanding of cell division and cancer. Wells thus makes a case for ID by showing its *strong heuristic* value in biology. That is, he uses the theory of intelligent design to make new discoveries in biology.

Scott Minnich and Stephen C. Meyer, “Genetic Analysis of Coordinate Flagellar and Type III Regulatory Circuits,” *Proceedings of the Second International Conference on Design & Nature*, Rhodes Greece, edited by M.W. Collins and C.A. Brebbia (WIT Press, 2004).

This article underwent conference peer review in order to be included in this peer-edited proceedings. Minnich and Meyer do three important things in this paper. First, they refute a popular objection to Michael Behe’s argument for the irreducible complexity of the bacterial flagellum. Second, they suggest that the Type III Secretory System present in some bacteria, rather than being an evolutionary intermediate to the bacterial flagellum, is probably represents a degenerate form of the bacterial flagellum. Finally, they argue explicitly that intelligent design is a better than the Neo-Darwinian mechanism for explaining the origin of the bacterial flagellum.

Peer-Reviewed Books Supportive of Intelligent Design Published by Trade Presses or University Presses

W.A. Dembski, *The Design Inference: Eliminating Chance through Small Probabilities* (Cambridge: Cambridge University Press, 1998).

This book was published by Cambridge University Press and peer-reviewed as part of a distinguished monograph series, *Cambridge Studies in Probability, Induction, and Decision Theory*. The editorial board of that series includes members of the National Academy of Sciences as well as one Nobel laureate, John Harsanyi, who shared the prize in 1994 with John Nash, the protagonist in the film *A Beautiful Mind*. Commenting on the ideas in *The Design Inference*, well-known physicist and science writer Paul Davies remarks: “Dembski’s attempt to quantify design, or provide mathematical criteria for design, is extremely useful. I’m concerned that the suspicion of a hidden agenda is going to prevent that sort of work from receiving the recognition it deserves.” Quoted in L. Witham, *By Design* (San Francisco: Encounter Books, 2003), p. 149.

Michael Behe, *Darwin’s Black Box: The Biochemical Challenge to Evolution* (The Free Press, 1996).

In this book Behe develops a critique of the mechanism of natural selection and a positive case for the theory of intelligent design based upon the presence of “irreducibly complex molecular machines” and circuits inside cells. Though this book was published by The Free Press, a trade press, the publisher subjected the book to standard scientific peer-review by several prominent biochemists and biological scientists.

Charles B. Thaxton, Walter L. Bradley, Roger L. Olsen, *The Mystery of Life’s Origin: Reassessing Current Theories* (Philosophical Library, 1984, Lewis & Stanley, 4th ed., 1992).

In this book Thaxton, Bradley and Olsen develop a seminal critique of origin of life studies and develop a case for the theory of intelligent design based upon the information content and “low-configurational entropy” of living systems.

John Angus Campbell and Stephen C. Meyer, *Darwinism, Design, & Public Education* (Michigan State University Press, 2003)

This is a collection of interdisciplinary essays that addresses the scientific and educational controversy concerning the theory of intelligent design. Accordingly, it was peer-reviewed by a philosopher of science, a rhetorician

of science, and a professor in the biological sciences from an Ivy League university. The book contains five scientific articles advancing the case for the theory of intelligent design, the contents of which are summarized below.

Books Supportive of Intelligent Design Published by Prominent Trade Presses

Guillermo Gonzalez and Jay W. Richards, *The Privileged Planet: How Our Place in the Cosmos is Designed for Discovery* (Regnery Publishing, 2004).

Gonzalez and Richards develop a novel case for the theory of intelligent design based on developments in astronomy and planetary science. They show that the conditions necessary to produce a habitable planet are extremely rare and improbable. In addition, they show that the one planet we are aware of that possesses these characteristics is also a planet that has characteristics uniquely adapted to scientific exploration, thus suggesting not simply that the earth is the recipient of the fortunate conditions necessary for life, but that it appears to be uniquely designed for scientific discovery.

William Dembski, *No Free Lunch: Why Specified Complexity Cannot be Purchased without Intelligence* (Rowman & Littlefield Publishers, 2002).

Dembski refines his scientific method of design detection, responds to critics of his previous book (*The Design Inference*) and shows how his method of design detection applies to the kind of molecular machines analyzed by Michael Behe in *Darwin's Black Box*.

Michael Denton, *Evolution: A Theory in Crisis* (Adler & Adler, 1985).

Denton, an Australian molecular biologist, provides a comprehensive critique of neo-Darwinian evolutionary theory. In a penultimate chapter, entitled "The Molecular Labyrinth," he also develops a strong positive case for the design hypothesis based on the integrated complexity of molecular biological systems. As a religiously agnostic scientist, Denton emphasizes that this case for design is based upon scientific evidence and the application of standard forms of scientific reasoning. As Denton explains, while the case

for design may have religious implications, “it does not depend upon religious premises.”

Articles Supportive of Intelligent Design Published in Peer-Reviewed Scientific Journals

S.C. Meyer, “The Origin of Biological Information and the Higher Taxonomic Categories,” *Proceedings of the Biological Society of Washington*, 117(2) (2004): 213-239.

This article argues for intelligent design as an explanation for the origin of the Cambrian fauna. Not surprisingly, it created an international firestorm within the scientific community when it was published. (See Klinghoffer, *The Branding of a Heretic*, WALL STREET JOURNAL, Jan. 28, 2005, as well as the following website by the editor who oversaw the article’s peer-review process: <http://www.rsternberg.net>.) The treatment of the editor who sent Meyer’s article out for peer-review is a striking illustration of the sociological obstacles that proponents of intelligent design encounter in publishing articles that explicitly defend the theory of intelligent design.

M.J. Behe and D.W. Snoke, “Simulating Evolution by Gene Duplication of Protein Features That Require Multiple Amino Acid Residues,” *Protein Science*, 13 (2004): 2651-2664.

In this article, Behe and Snoke show how difficult it is for unguided evolutionary processes to take existing protein structures and add novel proteins whose interface compatibility is such that they could combine functionally with the original proteins. By demonstrating inherent limitations to unguided evolutionary processes, this work gives indirect scientific support to intelligent design and bolsters Behe’s case for intelligent design in answer to some of his critics.

W.-E. Lönnig & H. Saedler, “Chromosome Rearrangements and Transposable Elements,” *Annual Review of Genetics*, 36 (2002): 389-410.

This article examines the role of transposons in the abrupt origin of new species and the possibility of a partly predetermined generation of biodiversity and new species. The authors’ approach is non-Darwinian, and

they cite favorably the work of design theorists Michael Behe and William Dembski.

D.K.Y. Chiu & T.H. Lui, "Integrated Use of Multiple Interdependent Patterns for Biomolecular Sequence Analysis," *International Journal of Fuzzy Systems*, 4(3) (September 2002): 766-775.

The opening paragraph of this article reads: Detection of complex specified information is introduced to infer unknown underlying causes for observed patterns. By complex information, it refers to information obtained from observed pattern or patterns that are highly improbable by random chance alone. We evaluate here the complex pattern corresponding to multiple observations of statistical interdependency such that they all deviate significantly from the prior or null hypothesis. Such multiple interdependent patterns when consistently observed can be a powerful indication of common underlying causes. That is, detection of significant multiple interdependent patterns in a consistent way can lead to the discovery of possible new or hidden knowledge."

M.J. Denton & J.C. Marshall, "The Laws of Form Revisited," *Nature*, 410 (22 March 2001): 417.I.

M.J. Denton, J.C. Marshall & M. Legge, (2002) "The Protein Folds as Platonic Forms: New Support for the pre-Darwinian Conception of Evolution by Natural Law," *Journal of Theoretical Biology* 219 (2002): 325-342.

This research is thoroughly non-Darwinian and teleological. It looks to laws of form embedded in nature to bring about biological structures. The intelligent design research program is broad, and design like this that's programmed into nature falls within its ambit.

Articles Supportive of Intelligent Design Published in Peer-Reviewed Scientific Anthologies

Lönnig, W.-E. *Dynamic genomes, morphological stasis and the origin of irreducible complexity*, Dynamical Genetics, Pp. 101-119. In i>Dynamical

Genetics by V. Parisi, V. de Fonzo & F. Aluffi-Pentini, eds., (Research Signpost, 2004)

Biology exhibits numerous invariants -- aspects of the biological world that do not change over time. These include basic genetic processes that have persisted unchanged for more than three-and-a-half billion years and molecular mechanisms of animal ontogenesis that have been constant for more than one billion years. Such invariants, however, are difficult to square with dynamic genomes in light of conventional evolutionary theory. Indeed, Ernst Mayr regarded this as one of the great unsolved problems of biology. In this paper Dr. Wolf-Ekkehard Lönning Lönning Senior Scientist in the Department of Molecular Plant Genetics at the Max-Planck-Institute for Plant Breeding Research employs the design-theoretic concepts of irreducible complexity (as developed by Michael Behe) and specified complexity (as developed by William Dembski) to elucidate these invariants, accounting for them in terms of an intelligent design (ID) hypothesis.

Five science articles from *Darwinism, Design, & Public Education*, edited by John Angus Campbell and Stephen C. Meyer (Michigan State University Press, 2003) (hereinafter DDPE):

Meyer, S. C. *DNA and the origin of life: Information, specification and explanation*, DDPE Pp. 223-285.

Meyer contends that intelligent design provides a better explanation than competing chemical evolutionary models for the origin of the information present in large bio-macromolecules such as DNA, RNA, and proteins. Meyer shows that the term *information* as applied to DNA connotes not only improbability or complexity but also specificity of function. He then argues that neither chance nor necessity, nor the combination of the two, can explain the origin of information starting from purely physical-chemical antecedents. Instead, he argues that our knowledge of the causal powers of both natural entities and intelligent agency suggests intelligent design as the best explanation for the origin of the information necessary to build a cell in the first place.

Behe, M. J., *Design in the details: The origin of biomolecular machines*. DDPE Pp. 287-302

Behe sets forth a central concept of the contemporary design argument, the notion of “irreducible complexity.” Behe argues that the phenomena of his field include systems and mechanisms that display complex, interdependent, and coordinated functions. Such intricacy, Behe argues, defies the causal power of natural selection acting on random variation, the “no end in view” mechanism of neo-Darwinism. Yet he notes that irreducible complexity is a feature of systems that are known to be designed by intelligent agents. He thus concludes that intelligent design provides a better explanation for the presence of irreducible complexity in the molecular machines of the cell.

Nelson, P. & J. Wells, *Homology in biology: Problem for naturalistic science and prospect for intelligent design*, DDPE, Pp. 303-322.

Paul Nelson and Jonathan Wells reexamine the phenomenon of homology, the structural identity of parts in distinct species such as the pentadactyl plan of the human hand, the wing of a bird, and the flipper of a seal, on which Darwin was willing to rest his entire argument. Nelson and Wells contend that natural selection explains some of the facts of homology but leaves important anomalies (including many so-called molecular sequence homologies) unexplained. They argue that intelligent design explains the origin of homology better than the mechanisms cited by advocates of neo-Darwinism.

Meyer, S. C., Ross, M., Nelson, P. & P. Chien, *The Cambrian explosion: biology's big bang*, DDPE, Pp. 323-402.

Meyer, Ross, Nelson, and Chien show that the pattern of fossil appearance in the Cambrian period contradicts the predictions or empirical expectations of neo-Darwinian (and punctuationalist) evolutionary theory. They argue that the fossil record displays several features—a hierarchical top-down pattern of appearance, the morphological isolation of disparate body plans, and a discontinuous increase in information content—that are strongly reminiscent of the pattern of evidence found in the history of human technology. Thus, they conclude that intelligent design provides a better, more causally adequate, explanation of the origin of the novel animal forms present in the Cambrian explosion.

Dembski, W.A., *Reinstating design within science*, DDPE, Pp. 403-418.

Dembski argues that advances in the information sciences have provided a theoretical basis for detecting the prior action of an intelligent agent. Starting from the commonsense observation that we make design inferences all the time, Dembski shows that we do so on the basis of clear criteria. He then shows how those criteria, complexity and specification, reliably indicate intelligent causation. He gives a rational reconstruction of a method by which rational agents decide between competing types of explanation, those based on chance, physical-chemical necessity, or intelligent design. Since he asserts we can detect design by reference to objective criteria, Dembski also argues for the scientific legitimacy of inferences to intelligent design.

Articles Supportive of Intelligent Design Published in Peer-Edited Scientific Anthologies and Conference Proceedings

Four science articles from W. A. Dembski & M. Ruse, eds., DEBATING DESIGN: FROM DARWIN TO DNA (Cambridge, United Kingdom, Cambridge University Press, 2004) (hereinafter DEBATING DESIGN)

Dembski, W.A., *The logical underpinnings of intelligent design*, DEBATING DESIGN, Pp. 311-330.

In this article, Dembski outlines his method of design detection. In it he proposes a rigorous way of identifying the effects of intelligent causation and distinguishing them from the effects of undirected natural causes and material mechanisms. Dembski shows how the presence of specified complexity or “complex specified information” provides a reliable marker or indicator of prior intelligent activity. He also responds to a common criticism made against his method of design detection, namely that design inferences constitute “an argument from ignorance.”

Bradley, W. L., *Information, Entropy, and the Origin of Life*, DEBATING DESIGN, Pp. 331-351.

Walter Bradley is a mechanical engineer and polymer scientist. In the mid-1980's he co-authored what supporters consider a seminal critique of origin of life studies in the book *The Mystery of Life's Origins*. Bradley and his co-authors also developed a case for the theory of intelligent design based upon the information content and “low-configurational entropy” of living systems.

In this chapter he updates that work. He clarifies the distinction between configurational and thermal entropy, and shows why materialistic theories of chemical evolution have not explained the configurational entropy present in living systems—a feature of living systems that Bradley takes to be strong evidence of intelligent design.

Behe, M., *Irreducible complexity: obstacle to Darwinian evolution*, DEBATING DESIGN, Pp. 352-370.

In this essay Behe briefly explains the concept of irreducible complexity and reviews why he thinks it poses a severe problem for the Darwinian mechanism of natural selection. In addition, he responds to several criticisms of his argument for intelligent design from irreducible complexity and several misconceptions about how the theory of intelligent design applies to biochemistry. In particular he discusses several putative counterexamples that some scientists have advanced against his claim that irreducibly complex biochemical systems demonstrate intelligent design. Behe turns the table on these counterexamples, arguing that these examples actually underscore the barrier that irreducible complexity poses to Darwinian explanations, and, if anything, show the need for intelligent design.

Meyer, S. C., *The Cambrian information explosion: evidence for intelligent design*, DEBATING DESIGN, Pp. 371-391.

Meyer argues for design on the basis of the Cambrian explosion, the geologically sudden appearance of new animal body plans during the Cambrian period. Meyer notes that this episode in the history of life represents a dramatic and discontinuous increase in the complex specified information of the biological world. He argues that neither the Darwinian mechanism of natural selection acting on random mutations nor alternative self-organizational mechanisms are sufficient to produce such an increase in information in the time allowed by the fossil evidence. Instead, he suggests that such increases in specified complex information are invariably associated with conscious and rational activity—that is, with intelligent design.

Scott Minnich and Stephen C. Meyer, “Genetic Analysis of Coordinate Flagellar and Type III Regulatory Circuits,” *Proceedings of the Second*

International Conference on Design & Nature, Rhodes Greece, edited by M.W. Collins and C.A. Brebbia (WIT Press, 2004).

This article underwent conference peer review in order to be included in this peer-edited proceedings. Minnich and Meyer do three important things in this paper. First, they refute a popular objection to Michael Behe's argument for the irreducible complexity of the bacterial flagellum. Second, they suggest that the Type III Secretory System present in some bacteria, rather than being an evolutionary intermediate to the bacterial flagellum, is probably represents a degenerate form of the bacterial flagellum. Finally, they argue explicitly that intelligent design is a better than the Neo-Darwinian mechanism for explaining the origin of the bacterial flagellum.