

Empiricism and Design

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“Metaphysical naturalism” is, roughly speaking, the view expressed by the late Carl Sagan in his oft-repeated mantra “The physical world is all there is, all there ever was, and all there ever will be”. Obviously, this view is logically inconsistent with theism, and possibly motivated, at least in part, by a sort of theophobia. Since the intelligent design theory, henceforth referred to as ID, is clearly friendly to theism, it is not at all surprising that devotees of metaphysical naturalism are seldom if ever sympathetic to ID. It does not follow from this, however, that the challenge posed by metaphysical naturalism is the most important challenge faced by ID theorists in their struggle to be taken seriously by the scientific community. On the contrary, it would seem that ID theorists might be well-advised not to devote too much time and energy to an attack on metaphysical naturalism, for several reasons. In the first place, even those scientists who might most plausibly be described as metaphysical naturalists do not devote much attention to spelling out exactly what it means to say that something is or is not supernatural, so it is not always entirely clear exactly what they intend to rule out by means of a commitment to naturalism. In the second place, it is by no means obvious that the views of these scientists concerning the supernatural play an important role in their actual scientific work. Finally, and perhaps most importantly, the strongest opposition to ID theory often comes from scientists who are clearly not committed to metaphysical naturalism at all. Several brief examples might serve to illustrate these points.

The Shroud of Turin is an aged linen cloth which bears a very faint and highly unusual image of a crucified man. Many believe that this so-called “shroud” is simply a highly unusual medieval work of art by some otherwise unknown but highly talented artist, but there are some who believe that it is the actual burial shroud of Jesus Christ.

Interest in the Shroud reached a fever pitch about twenty-five years ago when a somewhat ecumenical group of approximately 40 scientists (who decided to call themselves the Shroud of Turin Research Project, or “STURP” for short) were given permission to subject the Shroud to an intense battery of non-destructive scientific tests and observations in an effort to determine the nature and origin of the image which it bears. After their investigations were completed, the rough consensus among this group was that the scientific evidence which they had collected counted strongly against the view that the Shroud was a work of art. As Eric Jumper, one of the original STURP researchers, was to say later, “no technologically credible process has been postulated that satisfies all the characteristics of the existing image”.¹ In response to the results announced by STURP, the Skeptical Inquirer, as might be expected, devoted an entire issue to the debunking of the Shroud. In this issue, Marvin Mueller, a research physicist at the Los Alamos National Laboratory at the time, said the following:

“There are only three classes of possibilities for the image formation: by human artifice, through natural processes transferring the image to the linen from a real crucified corpse, or by supernatural means. Of the third, not much can be said, because then all scientific discussion and all rational discourse must perforce cease.

“But a lot can be said about natural processes. In terse summary, they can be ruled out *definitively* [author’s italics]...”²

Since Mueller rejects both what he calls “natural process” and what he calls “supernatural” means of image formation, he quite logically concludes, by process of elimination, that the Shroud must be a work of art, thereby contradicting the conclusions

¹ Eric J. Jumper, et al, “A Comprehensive Examination of Various Stains and Images on the Shroud of Turin,” ACS Advances in Chemistry, No. 205, Archaeological Chemistry III, ed. Joseph B. Lambert (1984): 456.

² Marvin Mueller, “The Shroud of Turin: A Critical Appraisal”, The Skeptical Inquirer VI, 3, (Spring 1982): 27.

of STURP.³ Mueller may or may not be correct in reaching this conclusion, but for present purposes, what is of concern here is Mueller's use of the term "supernatural".

Although Mueller includes the possibility of "supernatural means" as one of his three possible classes of image formation, he immediately dismisses it as something which could not be "scientifically discussed", and as something about which we cannot even engage in "rational discourse". What is even more interesting from a philosophical point of view is that Mueller is willing to dismiss the supernatural without even attempting to define it! Philosophers are often criticized for quibbling about the meanings of words, but one appropriate response to this criticism is that if we do not know the meanings of the words we use, then there is obviously an important sense in which we do not know what we are talking about, and "knowing what we are talking about" would seem to be a prerequisite to engaging in the "rational discourse" which Mueller seems to value. Although he uses the term "supernatural" fairly often in his paper, the closest he comes to defining it, apart from the passage quoted above, is when he contrasts "rational naturalism" with "superstition and supernaturalism."⁴ He never once states or even clearly implies what he thinks it is for something to be supernatural (or natural, for that matter).

³ As I have argued elsewhere, Mueller's trichotomy of possibilities is almost surely exhaustive; there are no conceivable means of image formation that do not fall into one of these three categories. This leaves us with the following somewhat intriguing situation: We have Mueller ruling out (definitively, no less) one of the two naturalistic possibilities of image formation, presumably on legitimate scientific grounds; we have the STURP scientists rejecting the other naturalistic possibility of image formation, again on scientific grounds. Could this imply that we have good scientific grounds to accept or at least consider the possibility that the image was created by supernatural means? I have pursued this issue elsewhere,³ "Miracles and the Shroud of Turin", Faith and Philosophy, Volume 13, Number 1, January 1996

⁴ *op.cit.*, p.17

This attitude toward the supernatural often manifests itself among scientists. Nobel prize-winning physicist Steven Weinberg gave a talk at the “Nature of Nature” conference at Baylor in the Spring of 2000, to which he was invited specifically to address the nature of nature, as opposed, presumably, to the supernatural. What he said, in effect, was that he could not really define what he meant by “natural” and “supernatural”, except to say that supernatural explanations were all akin to explanations in terms of the activities of fairies. It is, no doubt, dismissive comments like these that lead some thinkers, most notably Intelligent Design spokesman Philip Johnson, to conclude that many if not most scientists are committed to “metaphysical naturalism”, and that it is this commitment which prevents them from taking ID theory seriously. But what is the point of attempting to engage metaphysical naturalists in a rational discussion of the natural and the supernatural when (1) they refuse to define the key terms in the discussion, (2) they presuppose that no “rational discourse”, as Mueller puts it, is possible concerning this topic anyway, and (3) they are unlikely to change their minds in any case? Besides, some of the harshest scientific critics of intelligent design are not metaphysical naturalists at all. Kenneth Miller, Professor of Biology at Dartmouth College, is a case in point. Miller is just one example of a person who considers himself a theist, and thus not a metaphysical naturalist, and is yet strongly opposed to the theory of intelligent design.⁵ The fact is that most working scientists (i.e., scientists who are actively engaged in laboratory research or high-level theorizing, as opposed to science writers or pedigreed scientists who serve merely or primarily as popularizers of science) have very few if any metaphysical commitments, or at least few if any that they have consciously adopted or attempted to articulate in any meaningful way. If they do have

⁵ cf. Finding Darwin's God, HarperCollins, New York, 1999.

any philosophical commitments, they will most likely be epistemological commitments to some form of empiricism, and even here these commitments may not have been well thought out or articulated. It would thus seem that if proponents of the intelligent design theory wish to be taken seriously by the scientific community, their most important challenge will be to show that intelligent design theory can be given an empirical foundation.

What does it mean to say that something has an “empirical foundation”? It would be beyond the scope of this paper to attempt to offer anything more than a rough characterization of what one means by this, but roughly speaking, we might start with some statement to the effect that things have an empirical foundation if and only if they are, or at least can be, based on observation and experiment. Lest it be thought that this is too vague, and that the aforementioned importance of defining one’s terms is being ignored here, it should be pointed out that the complaint against Mueller and Weinberg concerning their use of the term “supernatural” was not that they had failed to give a completely worked out theory or position concerning supernatural phenomena. The complaint was rather that they had not given any idea whatsoever what they meant by it, in any sense that would make it possible to determine, based on anything they said, whether something was or was not supernatural. What is called for here, then, is simply an understanding of the term “empirical” which enables us to determine whether something is or is not “empirical”. In particular, we want to know how to tell whether something is or is not the sort of thing that a properly trained scientist would (or should) regard as “based on empirical evidence”, or as being empirically accessible by means of observation and experiment.

The first thing to do is to rule out a view which might be called “naïve empiricism”. Naïve empiricism can be described as the view that something qualifies as “empirical” if and only if that thing is directly detectable by means of the human senses, with or without the aid of technological devices known or justifiably believed to refine or extend the range or sensitivity of those senses (i.e., devices such as microscopes, telescopes, microphones, etc.) Most observational reports within science, especially those at the cutting edge of research, are “theory-laden”, which is to say that they are not restricted to concepts which directly refer to observable features of the physical world, but also incorporate, either explicitly or implicitly, theoretical concepts which are not simply based on direct sensory observation. Thus the naïve empiricism referred to above would force us to rule out far too much of what respectable scientists regard as reliable scientific evidence. In other words, a proper understanding of what most scientists regard as “empirical” must allow us to include many things which would be rejected by naïve empiricism. Although a more sophisticated picture may begin to emerge near the end of this discussion, for present purposes we must simply be content to say, once again, that something is “empirical” if and only if it is ultimately based, in some way acceptable to the scientific community, on observation and experiment. It need not be based directly on sensory observation. When truly objective scientists refuse to take intelligent design theory seriously, it is not necessarily or even primarily because they are committed to metaphysical naturalism, but is most often because they believe, rightly or wrongly, that intelligent design theory not only is not, but probably cannot be, based on observation and experiment, even in a broader sense of these terms. The remainder of this paper will be an attempt to address this concern.

Although the intelligent design theory ultimately embodies profound philosophical, mathematical, and scientific insights of a fairly abstract nature, it is nevertheless rooted in some of our most basic common sense ideas about the world. One of these ideas is that human beings, and possibly some non-human animals as well, are intelligent, that this intelligence plays a significant role in determining their overt physical behavior, and that, in particular, it results in their deliberately altering their environment, either by organizing and arranging existing things or constructing new things, with some particular purpose in mind. Whenever human behavior of the former sort has results of the latter sort, we say that the resultant objects or states of affairs have been designed. The basic idea of ID theory is that living things, (and possibly various aspects of the non-living cosmos as well) also exhibit design, albeit obviously not human design. The challenge is to show that this idea can be at least empirically investigated if not proven in a way acceptable to the scientific community.

Suppose we sketch out the overall strategy of those who wish ID theory to be taken seriously as a scientific theory in the following way: First, (that is, pre-scientifically), we identify some paradigm cases of situations in which we regard something as having been intelligently designed. These will typically be cases in which a human being has constructed some sort of complex artifact, which might very likely have some particular and obvious purpose, or perhaps it will involve the organization of diverse items in some systematic way for some similarly obvious purpose. (More contentiously, we might even include some things constructed by non-human animals, such as some birds' nests, beaver dams, and structures constructed and used by some social insects, but for present purposes, such contentious possibilities will be ignored). So

far, we have not done anything which is in any significant way “scientific”, although it is important to note that nothing we have done so far is “unscientific”, i.e., inconsistent with scientific methodology, either. Next, we attempt to discover some empirically detectable feature of the designed objects which, as a matter of empirical fact, distinguishes them from things we do not readily recognize as having been designed. As ID theorists Michael Behe and William Dembski have so clearly and forcefully pointed out, “being irreducibly complex” and “exhibiting specified complex information” jump readily to mind as features of the physical world which seem to characterize those things which we typically regard as having been designed. For reasons which will soon become apparent, it is important that “irreducible complexity”, “specified complex information”, or whatever else is thought to distinguish things which we ordinarily regard as designed from things which we do not so regard be empirically detectable independently of the corresponding designers of those things. The next step would be to determine how we might define “intelligence” empirically, the bottom line being simply that we must have some empirical way of distinguishing “intelligence” or “intelligent behavior” from things which are not intelligent. After both “design” (roughly speaking) and “intelligence” have been given appropriate empirical definitions, the next step is to articulate the precise nature of the correlation between them. Since we have stipulated that “intelligence” and “design” must be detectable independently of each other, we have left open the possibility of establishing some sort of “causal” connection between them, and if we can do this, we are halfway home. The next step is to determine empirically whether living things have those features which typically characterize those things which are ordinarily recognized as having been designed. If they do, our final step would be to extrapolate

inductively from the correlation previously established between our paradigm cases of design and intelligence to living things, thereby concluding that they, too, have been designed. Although there are still an enormous number of questions to be asked and answered and difficulties to be resolved, there would as yet not seem to be any reason in principle why something like this could not become a perfectly legitimate scientific research project. The next step is simply to explain in greater detail how this might be done. But it will first be necessary to explain why we must be wary of naïve empiricism in this context.

There is a passage in Kenneth Miller's Finding Darwin's God concerning the so-called "lac" genes of bacteria that would be worth quoting in its entirety if it were not quite so long. In this passage, Miller is responding to Michael Behe's claim that there are irreducibly complex biological systems and organs which simply cannot be explained by means of neo-Darwinian mechanisms. He describes an experiment performed by Barry Hall in which certain genes which are essential parts of the system of "lac" genes, a system which Behe would probably regard as an irreducibly complex mechanism, are deleted in a laboratory. According to Miller, when this was done, not just one but two genetic mutations occurred which enabled the system to compensate for the deleted gene. Although Behe may not agree with Miller's description and analysis of Hall's experiment, what is important for present purposes is the way Miller frames his conclusion. According to Miller,

By the very same logic applied by Michael Behe to other systems, therefore, we could conclude that the system had been designed. Except we *know* that it was *not* designed. We know that it evolved because we watched it happen right in the laboratory!⁶

⁶ Ibid., p. 146

Clearly, Miller thinks that Hall has observed something. In particular, he believes that Hall has observed evolution in action, and that he has NOT observed design. But what does he think it would be like to “observe design”? As Miller himself points out, Behe and others who believe in intelligent design might very well regard what happens in this experiment as evidence of intelligent design. Why does Miller think they are wrong? And how is observing “evolution” in this case any different than observing design? If the term “evolution” simply means something like “observable genetic mutation”, etc., then of course Hall observed evolution, but this is not a scientifically or philosophically interesting definition of the term “evolution”. If evolution is defined, however, in terms of “genetic mutations which have occurred entirely by chance”, which it must be if neo-Darwinism is to be maintained and ID theory refuted, it is not at all obvious that Hall has observed evolution, since it is not at all obvious that what he observed happened entirely by chance. It would appear that Miller is simply begging the question here. Since he never explains himself, we cannot be sure why Miller thinks that design has not been observed in this instance, or, more precisely, why he thinks that what has been observed rules out design. Perhaps he attributes what might be called the “Gepetto” theory of intelligent design to intelligent design theorists. (For those of you who skipped childhood and went directly to graduate school, Gepetto is the kindly toymaker who created the wooden puppet, Pinocchio, who subsequently turned into a “real live boy”)⁷. If all intelligent designers were like Gepetto, and if the “lac” system were designed, then we would presumably see such a designer in action in this case, just as we would have been able to see Gepetto in action as he carved and assembled his puppet. According to this line of thinking, since we don’t literally “see” any such designer at work in the “lac”

⁷ Pinocchio, Carlo Collodi

example, we are not scientifically justified in attributing what we do see to a designer. This way of ruling out intelligent design is reminiscent of the comments made by the original Soviet cosmonauts, sticking to the atheistic party line and announcing that they had proven, supposedly by means of scientific observation, that there was no God, because they had been to heaven and He was nowhere to be seen. One wonders if they took notice of the fact that there was no noticeable drop in the number of believers after this announcement. In Miller's defense, however, we must agree that there is an important sense in which we do not "observe" design in this case. We certainly do not "see" it in the same sense that we "see" the mutations and their subsequent effects. But we don't "see" chance either. Naïve empiricism is a blind alley here in any case. It does not provide any means of settling the issue before us.

It is worth generalizing on this point, which will be illustrated by utilizing one of the favorite devices of science fiction writers; namely, a time machine. Suppose that a team consisting of several neo-Darwinians and several ID theorists decide to settle their disagreements concerning the origins of life (or, for that matter, the evolution of species) by traveling back in time to observe what actually happened. Suppose their time machine contains a "window" which enables them to "observe" whatever is going on in the world as they travel backwards in time, and suppose they all agree to keep going back to the time at which life first appears on Earth. Now there are some possible observations which would clearly be definitive for certain theories. If, for example, it turned out that we only needed to go back several thousand years to see the origins of life, young earth creationists would be vindicated and neo-Darwinians vexed, whereas if we needed to go back several million years, the opposite would be true, although the losing side in this

dispute could always challenge the accuracy or calibration of whatever device we used to determine how far we had gone back in time. Similarly, if we were to discover that there had always been a fixed number of species, and that each one had more or less popped into existence, fully developed, at some particular time (presumably, but not, *nota bene*, observably, by divine *fiat*), some creationists would be vindicated and neo-Darwinians vexed. Suppose, however, that we were to discover that life on Earth began just about as long ago as the scientific community believes it did, and suppose that changes in life forms occurred in an observably continuous manner over an immense stretch of time, again as believed by most contemporary scientists. Finally, suppose that no Gepetto is observed. In this eventuality, neo-Darwinians would undoubtedly claim vindication, but would their claim be any more justifiable than Miller's claim about Hall's experiment? Must intelligent design theorists believe that a designer would be directly observable, and would failure to observe such a being count as evidence against a designer? Or consider the following passage from the Psalms: "...thou didst knit me together in my mother's womb..."⁸ Must the psalmist believe that an ultrasound would reveal a tiny Gepetto at work with tiny knitting needles in order to believe that God was at work in his mother's womb? Hardly. How, then, can we resolve the dispute between neo-Darwinians and ID theorists, if direct observation would not do the trick?

The key here is to realize that the sort of empiricism operative in science does not require that everything be directly observable. Neo-Darwinians are not entitled to claim that there is no designer simply because they do not observe one, and ID theorists need not assume that a designer must be directly observable in order to be a proper object of scientific enquiry. The fact is that there is an important sense in which we do not directly

⁸ Psalm 139, v.13, RSV

observe either designers *qua* designers or design *qua* design, and this is true even in the case of human designers. What I directly observe in the case of a human designer is simply a human organism engaged in relatively complex behavior which results in the production of something relatively complex. Even in this case, I do not directly observe intelligent thought processes or creativity. In all cases, then, both design and the activity of the designer must be inferred from what we directly observe, and can never be directly observed in itself. One reason for this is that, for any physical object whatsoever, it is logically possible for an object exactly like that object to be the end product either of design or of chance. In other words, any object which has in fact been designed could, in the sense that it is logically possible for it to have done so, come into existence by chance, and any object which has in fact come into existence by chance could, in the same sense, have been designed. This is true not only for some of the most frequently cited examples of intelligent design (such as Mount Rushmore), but also for some of the most obvious examples of things that have not been designed, such as Plymouth Rock. It is in fact logically possible, (though ridiculously unlikely), for a naturally occurring outcropping of rock to look exactly like Mount Rushmore. If we begin with an appropriately shaped outcropping (as the sculptor of the real Mount Rushmore did), it is then consistent not only with the laws of logic but also with the laws of physics for wind and water to erode it into a shape indistinguishable from the real Mount Rushmore. Similarly, it is possible for a sculptor to intentionally carve a large rock which deliberately resembles an actual, naturally occurring boulder like Plymouth Rock. What this implies is that it is not possible, simply by means of direct empirical observation, to determine conclusively whether something has come into existence by means of chance

or by design. It is important to realize that this cuts both ways. On the one hand, it means that ID theorists cannot claim, on the basis of direct empirical observation alone, that something must have been designed. On the other hand, a neo-Darwinian cannot disprove design simply by proposing a logically and physically possible scenario by means of which that same thing might have come into existence by chance. Again, from a purely logical point of view, absolutely anything might have come into existence by chance, or it might have been designed. There is no way to settle the issue absolutely by means of direct empirical observation alone.

At this point, certain epistemological considerations come into play. Since the time of Descartes, philosophers have spent far too much time investigating the nature of knowledge and not nearly enough time investigating the nature of reasonable belief. From a purely philosophical point of view, knowledge is an all or nothing thing. One either knows something, in which case it must be true, or one does not, in which case it might or might not, for all one knows, be true. There are, however, few things in life, and even fewer in science, which one simply “knows” in this sense. Everything in science is provisional, i.e., subject to review upon further observation and experiment. For this and other reasons, it is more appropriate in scientific contexts to discuss how reasonable it is to believe something than it is to discuss whether we know something to be true. Thus, the real question concerning intelligent design is not, can we prove that something has been designed, but rather, how reasonable is it to believe that it has been. Or, in the debate between neo-Darwinism and Intelligent Design, the question is not, can one of these theories be proven, but rather, which is more reasonable to believe? For intelligent design theorists, the optimum case would be one in which it is simply unreasonable to

believe that something, e.g., Mount Rushmore, has not been designed. Although it is both logically and physically possible for something like Mount Rushmore to come into existence entirely by chance, it is simply unreasonable to believe that something like this could actually happen. For neo-Darwinians, on the other hand, the optimum case would be at the opposite end of the spectrum where it would be unreasonable to believe that something had been designed. Were it not for the fact that, by hypothesis, absolute proof in cases of the sort under discussion is impossible to come by, the present point might be expressed by saying that the real question here is who has the burden of proof?

It's time to take stock. We are here concerned with two competing theories, neo-Darwinism and Intelligent Design Theory, concerning the origins of life and the evolution (in the broad sense of the term) of species. Most scientists subscribe to the former, presumably at least partly on the grounds that it is consistent with (i.e., logically compatible with) directly observable data obtained in the laboratory or from the fossil record. We have now seen, however, that this same data is also consistent, in the same sense, with the Intelligent Design Theory. The ultimate question then becomes, which theory is the most reasonable, based on available evidence. But the answer to this question cannot be based entirely on what is directly observable. Both the conclusion that things have been designed and the conclusion that they have simply happened by chance must be inferred from the evidence, not simply observed. Neo-Darwinians apparently infer that things happen by chance simply because it is logically possible that they do and because they do not directly observe a designer. What then of the Intelligent Design Theory? If it is not to be based on direct observation, how can it be empirical in a way acceptable to the scientific community?

The obvious response here is that intelligent design theory, if it is not to be based on things which are directly observable, must be based on things which are indirectly observable. More precisely, it must be based only indirectly on observation and experiment. The existence of design must be inferred from what is directly observable by means of concepts which are ultimately defined or explicated in terms of things which are directly observable. This is commonplace in science. Consider, for example, the concept of entropy. The concept of entropy is a perfectly acceptable and important concept in science, but entropy itself is not directly observable. Both the proverbial man in the street and the trained scientist can directly observe that it is relatively hotter in one room than in another, but neither of them can straightforwardly observe how much entropy there is in either room (except perhaps in my office, where the degree of disorder is readily apparent). More importantly, my pet pig can readily detect small differences in temperature from one room to the next, but could probably not even be trained to detect differences in entropy, since entropy is not detected directly by any particular sensory modality. The reason for this is that “entropy” is not the name of some quality directly detected by one of our senses, but is rather an abstract property of physical systems defined ultimately in terms of properties which are so detected. If intelligent design theory is to be “empirical” in the sense demanded by modern science, it must be based on abstract concepts which are related to directly observable aspects of the physical world in some similar fashion.

Does intelligent design theory satisfy this condition? Yes it does, or at least it can in principle. William Dembski has shown us the way, with the able assistance of his colleagues Steve Meyer and others. The basic strategy is as follows: first, define

information in the form of specified complexity in a way which makes it empirically detectable, albeit indirectly. Many scientists both within and without the intelligent design community agree that this has or at least can be done.⁹ Next, define “intelligence” in some similar manner, so that it too can be empirically detectable just as specified complexity can be. This is a bit more difficult, but some suggestions are given below. Next, determine whether information and intelligence, as thus defined, can be empirically correlated. Once the proper definitions have been given, this would seem to be a straightforward, albeit technologically challenging, empirical research project. Next, define “design” in terms of this correlation. In other words, simply agree to say that something has been “designed” if and only if things of comparable specified complexity have been reliably correlated with intelligence. The questions as to whether the correlations under consideration are causal, as to the degree of correlation required, and so on, are no different from the sorts of questions which confront scientists in other areas of their research and can be debated and resolved (or not resolved) in the same manner. In any case, this would appear to be a straightforwardly acceptable and respectable scientific research project. Finally, determine whether living things exhibit the requisite sort of specified complexity. If so, inductive reasoning confirms design in their case as well.

What now of the definition of “intelligence”? Within the philosophical community, all theories about how intelligence, or any other “mentalistic” or “psychological” concept, for that matter, ought to be defined are notoriously contentious. If the intelligent design theory is to win an attentive audience in the scientific community, intelligence will need to be defined, at least initially, in a manner acceptable to that

⁹ cf. Paul Davies, in [The Fifth Miracle](#)

community, which means that it will need to be defined in a suitably empirical manner. Two possibilities immediately come to mind. First, we might define intelligence in purely behavioristic terms. Since behavior is directly observable, this would seem to satisfy the requirement that our subject be amenable to empirical investigation. Neo-Darwinians, however, are more likely to prefer a more “reductionistic“ or physicalistic definition in terms of brain states and processes, of the sort championed by John Searle or the Churchlands. Although this may be, as previously indicated, philosophically problematic, let us suppose, for the sake of argument, that this can be done satisfactorily. (If it cannot, so much the worse for both neo-Darwinians and metaphysical naturalists, since only definitions of this sort could possibly be acceptable to them, unless they are willing to deny the existence of intelligence. But denying the existence of intelligence would obviously be self-defeating for them, (or for anyone else who wanted to prove something, for that matter) since in that case their words and arguments (as well as those of everyone else, of course) would be no more meaningful than the chirping of crickets). Neo-Darwinians, of course, might object that intelligent design theorists have not in fact come up with any such physicalistic theory as to what intelligence might be, but neither have neo-Darwinians come up with plausible evolutionary pathways for the evolutionary development of many if not most biological organs and systems, and this does not render their attempts to do so nonscientific. Besides, as mentioned above, they are much more likely than intelligent design theorists to insist that a physicalistic analysis of intelligence must be possible. So now we have, in rough outline at least, a perfectly legitimate research program. Define, in a satisfactorily empirical way, what we mean by specified complexity. Define, in a satisfactorily empirical way, what we mean by intelligence.

Determine, in a satisfactorily empirical way, whether there is a meaningful correlation between cases of humanly produced things which exhibit specified complexity and those cases which we regard as paradigm cases of intelligence in action. If there is such a correlation, extrapolate inductively to other cases which exhibit specified complexity and conclude that there must be intelligence involved in those cases as well. (It is worth noting that Carl Sagan himself, a paradigm case of someone who is committed to metaphysical naturalism, is also a strong proponent of the SETI research program carried out by one of his own students, Jill Tartar, among others. The point here is that people like Sagan are willing to accept purely physical evidence, gathered by purely empirical means, as evidence of non-observed intelligence or intelligent design, albeit it is presumed by Sagan that the sort of intelligence involved must be of a purely physical nature.

Sagan's presumption that the intelligent beings for the existence of which the SETI program might produce evidence must be physical beings calls attention to one further difficulty which must be overcome. Assuming that the correlation between things known to have been designed and intelligent human or other biological designers referred to above can be established, the correlation in question will be, by hypothesis, a correlation between two sorts of things which are both defined in a completely physical manner. It will be a correlation between physical brain states or processes, on the one hand, and physical entities which exhibit specified complexity, on the other. In the case of biological organisms which exhibit specified complexity, however, there does not seem to be a corresponding physical correlate. Must intelligent design theorists be committed to the view that there is some purely physical agent, yet to be found, which

exhibits the intelligence thought to be systematically correlated with specified complexity? Hardly. To think this is in effect to return to the Gopetito theory, although it would need to be a considerably more complex theory. But what is the alternative? We must here remind ourselves that we accepted a physicalistic definition of intelligence only provisionally. What we must recognize is that, even if we can come up with the sort of physicalistic “definition” of intelligence considered above, the physical entities, states, or processes that satisfy this definition are only coextensive with intelligence in those cases, not identical with it.¹⁰ In other words, what we mean by intelligence is not that something involves certain biochemical states or processes, but something else altogether, and it is this something else that explains the correlation in question. Without this “something else”, in other words, we would have no explanation for the specified complexity with which the intelligence is coordinated. What now of the specified complexity of living things? If the specified complexity of human artifacts can only be explained in terms of the “something else” which we are now identifying as “intelligence”, then our inductive conclusion that the specified complexity of living things can only be explained in terms of intelligence can still be established, irrespective of the fact that there is no evidence of the existence of a Gopetito-like intelligent being in this case. Only a commitment to metaphysical naturalism would require us to rule out the possibility of a non-physical designer.

There is one other possibility which would vex both neo-Darwinians and ID theorists, but which must nevertheless be mentioned, if only for the sake of completeness.

¹⁰ It is worth noting that this does not necessarily commit us to metaphysical dualism. A monism which attempts to identify both the mental and physical in terms of some third sort of thing, a la Leibniz, might do. This might also suggest a different way of thinking about naturalism, which typically regards only physical or material things as natural.

Suppose we can agree that there are aspects of the physical world, or at least of some of the constituents of the physical world, which simply cannot be explained without reference to intelligent design. This, of course, would not be acceptable to neo-Darwinians. But suppose we can also agree that science must concern itself only with things that are empirically detectable, and that our criteria for empirical detectability, even if we reject naïve empiricism, are still too strict to admit the empirical detectability of any sort of intelligence sufficiently powerful to explain the existence of specified complex information. Any scientific theory of our mental life which reduces the mental to the physical in such a way as to strip the mental of its explanatory powers would thereby limit the ability of science to explain things, but the scientific community could thereby continue to reject ID theory, albeit at a heavy price.

Incidentally, in our earlier references to the controversy concerning the Shroud of Turin, it was pointed out that Marvin Mueller had ruled out (definitively, no less) the possibility that the image on the Shroud was a result of “natural processes” involving physical interaction between the cloth and a human corpse. There are two things worth pointing out about his remarks in this context. The first is that he contrasts “natural processes” with “human artifice”, as if human behavior and its consequences are not natural. Although he clearly does not want to suggest that there is anything “supernatural” about human artifice, it is equally clear that he thinks that at least some things which have been created by human beings are thereby significantly different from things which have not been so created, and that this difference is empirically detectable. Although he does not mention intelligence, it would seem rather obvious that it is human intelligence, or at least some sort of human mental ability, that accounts for the difference

that he implicitly detects between things which occur naturally and those which are produced by human artifice. The second noteworthy thing is that his stated reason for ruling out the possibility that the Shroud image is the result of “natural processes” is the “quality and beauty of the image”.¹¹ Could it be that he has, perhaps subconsciously, realized that the image on the Shroud contains specified complex information?¹² Could it be that he is hereby admitting that there are some empirically detectable features of physical objects which can only be explained as being the result of intelligent design? Could it be that we can thereby conclude that it was intelligently designed, whether or not we can identify the designer, i.e., irrespective of whether the designer was human or divine? If so, why should we not draw the same conclusion concerning anything else that exhibits the requisite empirically detectable features?

¹¹ *Op.cit.*, p. 27

¹² cf. Mt. Rushmore