Discussion paper for Sarkar/Nelson Debate on Evolution and Intelligent Design
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1. The Problem – Finding the Right Question

The question for debate, as proposed by the Undergraduate Philosophy Association (UPA) is this:

Can the evolution of life on Earth be explained by purely natural processes?

Let's suppose that Professor Sarkar answers "yes," and I answer "no." Is a meaningful debate likely to follow?

Maybe. But probably not. To be sure, Sarkar and I could wrangle about our respective answers Yes and No, but that wrangle would quickly devolve to the deeper issue that actually separates us – an issue that lies some distance, conceptually, from the UPA debate question. To make the best use of our time, then, I want to go straight to that deeper issue. We should travel there, however, by seeing first what follows from the Yes (Sarkar) and No (Nelson) answers to the UPA question.

Q. Can the evolution of life on Earth be explained by purely natural processes?
A. Yes.

All right. Someone – if not Sarkar, then some other person – must know the purely natural process(es) that caused the following to exist:

- the first self-replicating RNA molecules
- the first proteins
- the ribosome
- the 64 trinucleotide genetic code (and its variants)
- the first cell
- the eukaryotic cell
- multicellularity in plants and animals
- cellular differentiation and specialization
- the body plans of the animal phyla
- complex sense organs (e.g., eyes, ears, antennae) and associated nervous systems

And so on.

But the processes that led to these objects and systems are unknown. Indeed, next to each bulleted object or system one finds an active area of biological research, motivated fundamentally by *our not knowing* the natural causal pathways to RNA (et cetera). Choose any science in what Leigh Van Valen calls "the evolutionary half of biology," write down its most difficult open problems, and one could extend the bulleted list indefinitely.

But that would not be illuminating. Thus, whatever a Yes answer to the UPA question may signify, it does not mean "We know that natural processes are sufficient to explain what we observe biologically." Rather, Yes would mean something like "the naturalistic program of explanation should go forward." But that is a different matter, and takes our attention in a very different direction (see below).

Now let's try the other answer.

Q. Can the evolution of life on Earth be explained by purely natural processes?
A. No.

And one knows this how, exactly? All design-theoretic reasoning holds that the specified complexity of even the simplest organism strongly implicates causation by an intelligence. Uniformly in our experience, say ID theorists, specified systems of small probability are caused by minds, organisms are specified systems of small probability …and the reader knows the rest of the story. 15 years or so into the design debate, the lines of argument have become familiar.

But many onlookers are unpersuaded. Not because an adequate or causally sufficient natural account is available, for, say, the origin of the first cell, or even the origin of the first self-replicating biomolecules. Again, in the parlance of those working on these unsolved problems, "we're talking about active areas of research here."

Rather, onlookers are unpersuaded because of ***the causal impotence claim*** standing at the head of the design theorist's chain of reasoning. To say that (for instance) RNA molecules long enough for catalytic activity are "specified, small probability" objects is not, on this ID-skeptical perspective, a well-supported or justified inference, and thus the whole chain of reasoning miscarries. The probability is small only because the natural abiotic pathway to RNA is unknown. The same problem (from this perspective) obtains with every other biological design inference. Skeptical onlookers see an unjustified assumption of empirical completeness right at the outset of any design inference.

And thus we have all the right ingredients for a fruitless impasse. Each party asks of the other something that, by the lights of his interlocutor, is unreasonable – leading to the mutual begging of questions Kuhn described as diagnostic of incommensurability.

2. No, And So What *Versus* No, And Let's Try This

So – let's back up and come at the problem along a different avenue. We should begin by rephrasing the question, to eliminate the pesky verb "can," as follows:

> ***Does* natural science at this moment possess causally sufficient explanations, rendered strictly in terms of physical entities, laws, regularities, and mechanisms, for the origin and diversification of all biological objects on Earth?**

Now, to this question, Sarkar and I would both answer "no." But to his No, Sarkar (and nearly all evolutionary biologists of my acquaintance) would immediately append "and so what?" Historical biology – or natural science, generally – is an ongoing enterprise. Scientists unlock their laboratory doors in the morning, raise the blinds, and go to work precisely because they want to learn or discover what they do not currently know. To hold the incompleteness of science against science would therefore be the least comprehending sort of charge to level.

Not every question one puts to nature, however, will yield an answer in the terms that one may prefer. Suppose, for instance, that the question one is putting to nature – the question motivating one's long-term research project – is this: *How did life on Earth come to be via natural processes only?* But if life on Earth did ***not*** come to be via natural processes only, there is no hope of answering this question. The world is everything that is the case, and (in this mini-thought experiment, anyway), abiogenesis by natural processes is not the case. And what is not the case cannot be discovered.

Not every unsolved problem or question is equally deserving of attention. For example, the research question, "How can humans communicate in real time between Earth and Mars?" can certainly be asked – there, I just asked it – and we understand pretty well what it would mean to find the answer. It would be possible to dial up Mars and chat with one's nephew who works there in a NASA lab. Absent a revolution in physics, however, overturning what is now the case about the propagation of signals, one will never communicate in real time with anyone on Mars. What is not the case cannot be discovered.

So "incompleteness," at least in some instances, may be telling us something. There is no merit in trying longer, or harder, to solve a research problem that is predicated on an erroneous question – "erroneous" in the sense that the model of Nature presupposed by the question misconceives Nature herself. In these instances, "No, and so what?" is exactly the wrong response. When one finds that the alley ends in a brick wall, it is not rational to keep walking into the wall.

"No, and let's try this" is the response of the intelligent design community to many (not all, but many) of the unsolved problems of naturalistic evolution. "No, and let's try this" stops at the wall and turns around to walk in the other direction. In its fumbling, adolescent, maybe-there's-a-theory-here fashion, the intelligent design community is

struggling to articulate a view of life (or the universe) that (a) makes sense of the long-unsolved problems of the naturalistic program (e.g., the origin of life), but also (b) illuminates organisms for what they really are, and thus (c) leads to discoveries unanticipated under any naturalistic model. The last stage is plainly far off, but that is the goal.

Standing in the path, however, is the principle of methodological naturalism – recently elevated by Judge John Jones in his *Kitzmiller v. Dover* ruling to the status of a defining criterion of scientific knowledge. "The statements of science," said the National Academy of Sciences in 1998, "must invoke only natural things and processes." Methodological naturalism has been much debated over the past decade and a half; I want to discuss an epistemological asymmetry that the principle entails. I will argue that the cost of this asymmetry is paid entirely by the methodological naturalist.

3. A Room At the End of Time: Enter Sage, Drinking Coffee

A thought experiment helps to illuminate this asymmetry and its implications.

Sarkar and I travel to the end of time; our universe is concluding its run. We find ourselves in a sparsely-furnished room that holds a very large computer. In through a doorway walks a figure carrying a cup of coffee. This is the Sage.

The Sage is not God (don't worry – no theology required for this story). The Sage is the Last Scientist, and he is exceedingly wise and knowledgeable indeed. The computer in the room is the Sage's project. He is compiling, and in fact, has just finished, the ***Apocalyptically Complete Encyclopedia of the Physical***, or **ACEP**.

ACEP includes *everything* physical – *all* fundamental entities and their relations, up through the hierarchy of being, such that *every **physical** law, regularity, process, mechanism, or cause, that ever operated in the history of the universe or ever will operate, is recorded somewhere in the encyclopedia*. The catalog is ontologically complete, at least as far as physical (bottom-up) causes are concerned; ACEP is wholly comprehensive.

So Sarkar and I rush over to the keyboard to type "origin of life, causal story," into the ACEP search function. A pitcher of beer and TOLD-YOU-SO! rights are at stake. But the Sage steps in front of us and raises his hands. Stop. "Hang on a minute," he says.

"You two jokers may be time travelers," he continues, toggling the computer into Hibernate mode (the screen goes black), "but there are still proprieties to be respected here. Don't think you get to jump to the answer without doing the work."

"Sorry, but ACEP is not for you to use. At any given moment in the history of human scientific inquiry, however, you had your own, incomplete encyclopedia of the physical. And in that fact there's a deep epistemological moral, one with real consequences for the practice of science."

"Both of you wanted to know whether the origin of life could by explained by strictly physical causes (Sarkar) – or not (Nelson). If it could – and I'm not telling, sorry – the causal account would be here in ACEP. One could map congruently from ACEP into phenomena to be explained [see Figure 1, p.], with nothing left unaccounted for, on that question, anyway."

"But here's the twist, and here's where you both need to think hard. **If the origin of life was not strictly physically caused, its corresponding cause would not be in ACEP <u>at any time</u>.** Not when you looked, in March 2006, with your sadly incomplete version of the encyclopedia, and not now either, at the end of time. The physical story was never there. And, because it was never there, it was never there to be discovered, no matter how long you looked. Now, maybe it ***is*** there in ACEP; maybe it's ***not***; the Sage won't say to interloping time travellers. In any event, that's not the point."

"Here is the point. **It just doesn't matter how large or comprehensive ACEP gets** – and let me tell you, from the perspective of the end of time, our physical knowledge is going to grow beyond your imagining. But because intelligent design is ontologically distinct (by definition) from the strictly physical, the causal possibilities that design entails, if any, will always exist ***<u>in addition</u>*** to whatever we come to know physically."

"Take a look at Figure 2 [p. 7] Yes, that's your puny fund of physical knowledge, circa March 2006, to which both the naturalist and the design theorist have equal access. But notice that the design side has a distinct epistemological advantage. The ID theorist possesses a richer **possible ontology** of causes. It doesn't matter if, at the end of time, there never was anything corresponding to 'intelligence' as an ontologically distinct type of cause. In that case, the design theorist would simply have carried around a useless notion. Since the design theorist has free access to every physical cause for which there's any good evidence, however, he's not losing anything by allowing for the possibility of design."

"The naturalist, by contrast, pays a heavy cost indeed by not allowing even for the empirical possibility of design. Think about it. Since, at any time, our theories (employing the physical causes we know) are going to fall short of the phenomena we wish to explain, the design theorist without ever risking anything gets a free ride on the shortcomings of current naturalistic theories. Thus, even if there's nothing at all to the idea of design – no empirical content there – a casual onlooker might nevertheless conclude that design is a better explanation for this or that puzzle, given the miserable performance of design's apparent naturalistic competitors."

"But it's worse than that for the naturalist, really. What's the best way to show that any theory is false? **<u>Allow it to fail.</u>** Look, naturalistic theories fail all the time, and the lazy design theorist can exploit those failures to his apparent credit without doing any work at all. The naturalist should invite his design interlocutor to make specific predictions about phenomena that will not yield to any physical story. This gives a target for scrutiny, and makes the design theorist work for a change."

"Look at Fig. 3 (p. 8). Here the design theorist has isolated some phenomenon that he argues can be explained only by intelligent causation. Does it cost the naturalist anything to allow this prediction? Of course not. If the design theorist is wrong, the physical story will be forthcoming on further research, to the greater glory of ACEP and the ignominy of design."

"If the design theorist is right, on the other hand, the sufficient physical account never was in ACEP, and the phenomenon in question will not yield."

"In either case, there is no advantage – none – to confronting the world with a smaller toolkit of possible causes. Dictators like smaller ontologies. Explorers…not so much."

"Want some coffee?" concluded the Sage. "Got a big pot brewing back there."

4. Conclusion: The Right Question

Why hold to methodological naturalism? That's the right question.

Fig. 1: The Apocalyptically Complete Encyclopedia of the Physical (ACEP) Mapping into the Phenomena to be Explained

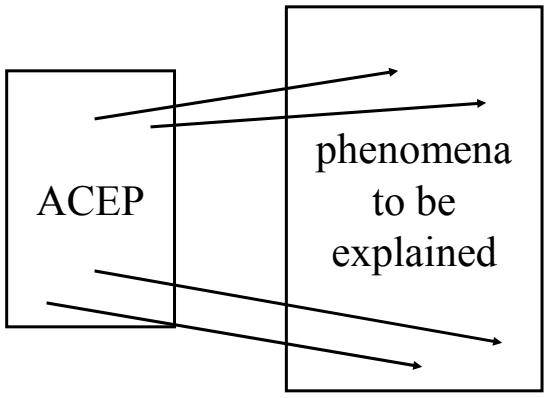

Fig. 2: The epistemological asymmetry between design and methodological naturalism

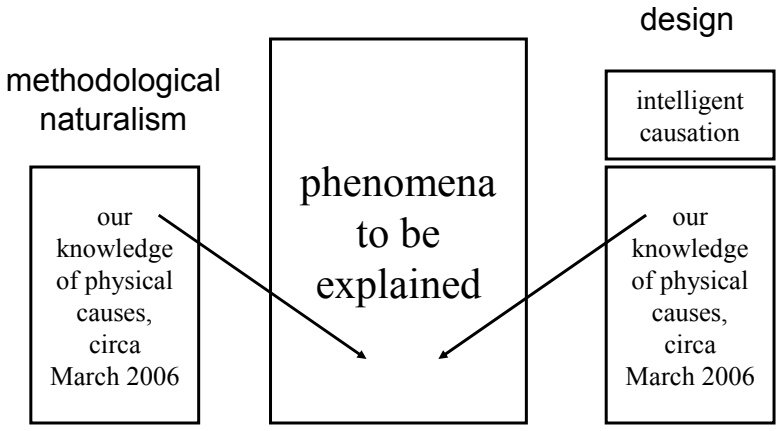

Fig. 3: The poverty of naturalism, with respect to what might be the case