The Design Inference: Eliminating Chance through Small Probabilities

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SUMMARY

A review of William Dembski's book, The Design Inference, which provides the philosophical under-pinning for the upstart Intelligent Design movement. It is shown how Dembski's Generic Chance Elimination Argument might be applied to the so-called "fine-tuning" of the universe to yield an inference to a Cosmic Designer.

THE DESIGN INFERENCE: ELIMINATING CHANCE THROUGH SMALL PROBABILITIES

On July 22, 1985, the New Jersey Supreme Court suggested that county clerk Nicholas Caputo institute new procedures for determining the places of candidates' names on county election ballots, since out of the last 41 drawings conducted by Caputo Democratic candidates had won the coveted top line on the ballot an astonishing 40 times. Observing that the odds against such results are 50 billion to 1, the Court remarked that few reasonable persons would think that blind chance was responsible for the results of Caputo's drawings.

We all recognize the wisdom of the Court's recommendation. But why? We are tempted to say that the results of Caputo's drawings were simply too improbable to be attributed to chance. But that answer cannot be the whole story, since any result of a random drawing is as equally improbable as any other. What is it in addition to the improbability of the result that warrants our intuitive inference to design rather than chance?

This is the question which mathematician and philosopher William Dembski seeks to answer. The solution—which Dembski develops with great precision and detail—may be roughly summarized by saying that chance is ruled out when the highly improbable event conforms to a discernible pattern which is given independently of the event itself. A pattern is given independently of an event if we can formulate this pattern without any information concerning the event itself. Dembski calls a probability conjoined with such a pattern a "specified" probability and formulates the Law of Small Probability: specified events of small probability do not occur by chance.

In the Caputo case, knowing that Caputo was a Democrat and that he had control over the drawings, we can formulate various cheating patterns which would emerge if Caputo were rigging the drawings. Inquiring what pattern characterized the actual series of drawings, we find—lo and behold!—that the actual pattern of drawings is included in the set of preformulated cheating

patterns. Therefore, we know that the pattern was not due to chance, but to design.

On the basis of his analysis, Dembski outlines a tenstep Generic Chance Elimination Argument:

1. One learns that some event has occurred.

2. Examining the circumstances under which the event occurred, one finds that the event could only have been produced by a certain chance process (or processes).

3. One identifies a pattern which characterizes the event.

4. One calculates the probability of the event given the chance hypothesis.

5. One determines what probabilistic resources were available for producing the event via the chance hypothesis.

6. On the basis of the probabilistic resources, one calculates the probability of the event's occurring by chance once out of all the available opportunities to occur.

7. One finds that the above probability is sufficiently small.

8. One identifies a body of information which is independent of the event's occurrence.

9. One determines that one can formulate the pattern referred to in step (3) on the basis of this body of independent information.

10. One is warranted in inferring that the event did not occur by chance.

This is a simplification of Dembski's analysis, which he develops and defends with painstaking rigor and detail.

Dembski's analysis will be of interest to all persons who are concerned with detecting design, including forensic scientists, detectives, insurance fraud investigators, exposers of scientific data falsification, cryptographers, and SETI investigators. Intriguingly, it will also be of interest to natural theologians. For in contemporary cosmology the heated debate surrounding the finetuning of the universe and the socalled Anthropic Principle will be greatly clarified by Dembski's Law of Small Probability.

Consider the application of the above Generic Chance Elimination Argument to the finetuning of the universe:

1. One learns that the physical constants and quantities given in the Big Bang possess certain values.

2. Examining the circumstances under which the Big Bang occurred, one finds that there is no Theory of Everything which would render physically necessary the values of all the constants and quantities, so they must be attributed to sheer accident.

3. One discovers that the values of the constants and quantities are incomprehensibly finetuned for the existence of intelligent, carbonbased life.

4. The probability of each value and of all the values together occurring by chance is vanishingly small.

5. There is only one universe; it is illicit in the absence of evidence to multiply one's probabilistic resources (*i.e.*, postulate a World Ensemble of universes) simply to avert the design inference.

6. Given that the universe has occurred only once, the probability of the constants and quantities' all having the values they do remains vanishingly small.

7. This probability is well within the bounds needed to eliminate chance.

8. One has physical information concerning the necessary conditions for intelligent, carbonbased life (*e.g.*, certain temperature range, existence of certain elements, certain gravitational and electromagnetic forces, *etc.*).

9. This information about the finelytuned conditions requisite for a life permitting universe is independent of the pattern discerned in step (3).

10. One is warranted in inferring that the physical constants and quantities given in the Big Bang are not the result of chance.

One is thus justified in inferring that the initial conditions of the universe are due to design.

Dembski emphasizes that in attributing an event to design, he is not characterizing it as a product of intelligence. For he defines "design" to mean "neither regularity nor chance," that is to say, if something is not explicable in terms of natural law or chance, then *by definition* it is due to "design." To say that something is due to "design" is just to say that it exhibits a certain kind of pattern. Nevertheless, Dembski thinks that proving that something is due to neither regularity nor chance is the logical prerequisite for proving that it is due to intelligence. He makes the move from "design" to a *bona fide* designer or intelligent agent by means of a threestep schema of

actualizationexclusionspecification; that is to say, one finds that a certain possibility has been actualized (and therefore presumably requires a cause), one excludes accounts of the event based on natural law explanations (thereby showing that the event is physically contingent), and finally one specifies that contingency so as to show that it conforms to an independently given pattern (thereby distinguishing choice from mere chance as the cause of the event). Since the hallmark of intelligent agency is choice, one has thus shown that the best explanation for the occurrence of the event is an intelligent agent. Obviously, this threestep schema simply retraces the steps of Dembski's design inference, so that it turns out that one is getting to genuine design (a previsioned product of intelligent agency) after all. Thus, if the initial conditions of the universe are due to "design," as argued above, then the inference to a Cosmic Designer is warranted.