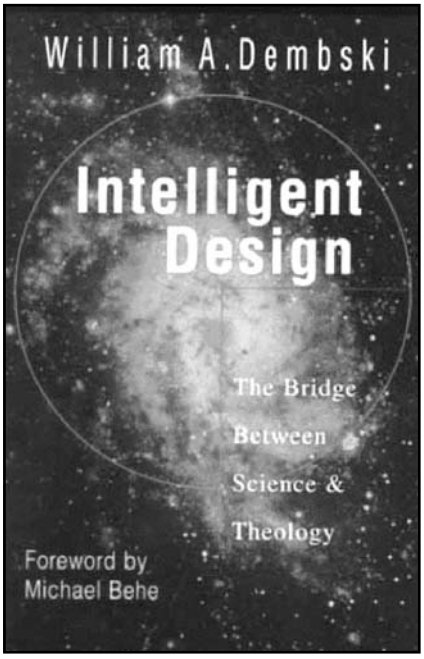
Designer science

A review of
Intelligent Design: The Bridge between Science and Theology
by William A. Dembski
InterVarsity Press
Illinois, 1999.



Royal Truman

What counts as evidence for design?

Dr William Dembski is a mathematician and philosopher of science, who has recently transferred to the University of Texas at Irving as theology professor. In his preceding work, *The Design Inference*,[1] Dembski developed the theoretical basis for his concept of 'Complex Specified Information' (CSI). Such systems conform to an independently recognizable pattern (i.e., they can be 'specified') but have a vanishing probability of arising guided only by natural laws or random processes. Such systems can only be the product of deliberate intelligent design. The key elements of *The Design Inference* were discussed in the *CEN Tech. J.*[2] and overlapping ideas and examples will be avoided here.

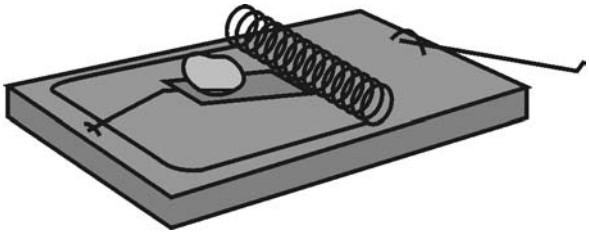
In *Intelligent Design*, Dembski has reviewed many of the earlier ideas in *The Design Inference* in less technical detail, and added new thoughts and explanations of much relevance to the evolution *vs* creation debate. Only a few highlights can be illustrated here.

Professor Behe, who wrote the foreword, espouses a sister concept he calls 'Irreducible Complexity' (IC), and his own work[3] has also been discussed in the *CEN Tech. J.*[4] Systems have IC when a number of components must be present together as an integrated unit for the overall function to be possible. Removal of one part deactivates the system and provides nothing for natural selection to act upon. Behe's challenge to explain how his biochemical examples could have arisen by any series of steps from a simpler starting point remains unanswered, and his critics have been rebutted on the Internet.[5]

Both IC and CSI have caused much discomfort in the naturalistic scientific community, because the conclusion appears irresistible that, without an intelligent causal agent, current reductionist claims are vacuous. This has gone so far, that a well-known University of Chicago mathematics professor, who taught Dembski complexity theory and was mentioned with gratitude in *The Design Inference*, asked that his name be removed from that book. This is despite his contribution to the prestigious Cambridge series of technical mathematical books, *Studies in Probability, Induction, and Decision Theory*.

Both Dembski and Behe point out correctly that their approaches to looking at what appear to be intelligently designed functional systems are based on perfectly acceptable scientific methodologies. The theological implications have been carefully downplayed so far. Nevertheless, any reasonable scientific model for origins should not be allowed to ignore details which constrain various materialistic proposals, irrespective of religious convictions.

Behe continues to be publicly coy about his theological viewpoints. In this book Dembski reveals his own thinking in a non-confrontational manner: the biblical claims are reasonable for the intelligent person. We read (p.3), *'Intelligent design is three things: a scientific research program that investigates the effects of intelligent causes; an intellectual movement that challenges Darwinism and its naturalistic legacy; and a way of understanding divine action.'* The first aspect was focused on earlier[1,2] and now he continues with the next two aspects.



Behe's classic example of irreducible complexity.

Biblical examples of intelligent supernatural agency

Through biblical examples we see that people have often used physical evidence to learn about God. Gideon requested two signs from God whether to go to war with Midian (that on alternate nights a fleece would be wet and dry contrary to the surroundings, Judges 6:36–40) and Jonah's shipmates threw dice (probably several times) for divine information. Even the Philistines, wishing to know whether their string of unusual misfortunes had any relationship to the ark they had captured from the Israelites (1 Samuel 4:22) devised a series of signs to see if God wished this

ark to be returned, signs which without supernatural intervention would not be expected to occur (1 Samuel 6:7–9).

In *The Biotic Message,*[6] Walter ReMine suggests there are imprints in the biological record which allow us to surmise there is but a single Creator who uses unifying concepts such as DNA, RNA, proteins, and ATP. Further, there is too much variety to be accommodated by any evolutionist theory of common descent.[7]

I think such signs have been shown to possess several characteristics:

- The initiator can be God or man.
- The physical event must be extraordinary (p. 28) and non-fuzzy in its original formulation (p. 29). It may be of a miraculous nature, such as the burning-but-not-consumed bush Moses saw, or simply depart from the ordinary course of events (some of the plagues brought upon the Egyptians could arguably have been pre-planned by God and brought about using existing natural laws).
- The signs are contingent, meaning they can happen but don't need to. God, having a will, can deny the request for a sign, such as when God no longer responded to Saul (1 Samuel 28:15 ff.), or when Jesus refused to play clown for the Pharisees (Matthew 12:39) or Herod Antipas (Luke 23:8–9).
- Fulfilment of a sign by God is expected to be followed by very specific behaviour on the part of the observer.
- The signs guide decision-making in an indirect way. A typical sign did not resemble something like Moses saying, 'If we kill 100 of the Amorites without losing a man, I'll commit all of our forces', but rather, 'Since I don't have immediate access to You I want to be sure through some otherwise inexplicable physical evidence which is not connected to the issue at hand that I am correct in believing You wish me to perform a specific action.' (p. 32).

We observe that the unbeliever can attempt to discredit the validity of a sign, even as the naturalist seeks explanations to weaken the case for a Designer. The Egyptian magicians were able to duplicate the first three signs Moses performed although not necessarily by naturalist methods only. However, to their credit, when unable to bring forth lice, they candidly admitted: '*This is the finger of God*' (Exodus 8:19). What a contrast this is to what is observed today: after vast resources have been spent in an effort to explain abiogenesis using only naturalistic processes, I am not aware of either fruitful progress, plausible suggestions or any technological spin-offs from such efforts.

Given that evidence for God's existence and His will have been documented in many occasions in the Bible, through signs, prophecies, and in particular by Christ's virginal conception and bodily resurrection, we might nevertheless ask whether this has scientific relevance. One might point out that, *'Paul Feyerabend, with the history of science to back him up, even went so far as to deny that there is a scientific method.'* (p. 258). Nevertheless, in this book we learn that, '*Predictive prophecies in Scripture are instances of specified complexity and signal information inputted by God as part of his sovereign activity within creation*' (p. 233). These can indeed be discussed using scientific notions currently in use.

Intelligent supernatural agency may be of a miraculous nature as with the burning bush.

Miracles and science

J.P. Moreland wrote an in-depth study on the philosophy of science,[8] and showed that there is no single method, but indeed various epistemic virtues which can be emphasized as a matter of individual taste. When one has very good reason to accept as true some ideas from an area not part of the traditional natural sciences, and this conflicts with one scientific model but agrees with the other, then it is perfectly reasonable to favour the viewpoint for which interdisciplinary agreement exists.

Dembski points out (p. 46):

'Premodernity always maintained that the natural causes described by natural laws were fundamentally incomplete and that intelligent causes had free play in the world as well … Within the premodern worldview the world is not under the grip of natural laws but is a stage in which natural causes form the backdrop and intelligent causes perform the primary action.'

'The premodern logic of signs used signs to identify intelligent causes. Intelligent design is the systematic study of intelligent causes and specifically of the effects they leave behind' (p. 47).

This can be done using current scientifically acceptable probabilistic analysis within the CSI framework. Some researchers claim that including God's personal involvement as a valid explanatory factor would limit the further search for natural explanations. Until all such possibilities have been

exhausted science should not impose such an artificial limitation.

> *'Nevertheless, there is nothing to prevent empirical and theoretical resources from coming in limited supplies and getting exhausted, and in turn nothing to prevent scientists from recognizing when in fact these resources have been exhausted ...(p. 244). We no longer look kindly on angle trisectors and circle squarers. We are amused by purported* ***perpetuum mobile*** *devices ... (p. 244). Undirected natural causes are incapable of explaining specified complexity' (p. 247).*

Historical developments

In chapter two, Dembski examines the historical development between 1650 and 1850 which systematically excluded God from His creation. Whereas Confucius, Buddha, Cicero and Mohammed refused to accept miracles (at least, since creation), it is ironic that Western Europe, the cradle of modern technological and scientific thought, had no difficulty in recognizing God's fingerprint during most of its history.

Beginning with the Jewish philosopher Baruch Spinoza, the process of naturalistic thinking was essentially completed by Friedrich Schleiermacher, the father of liberal theology. Spinoza, who as a monist identified God with nature itself, denied the existence of miracles altogether as a self contradiction and claimed they were a refuge for ignorance. Eighteenth-century deists emphasized Newtonian mechanics to exclude divine intervention, arguing God's role had been merely to establish the laws of nature and original conditions.

For the most part these thinkers claimed not to be atheists, but hard-core theological determinists. The natural consequence of such thinking leads to a denial of the efficacy of prayer: no outcome is truly the result of God's response. Instead, He is presumably limited to a system of nature He himself has built. The conditional promise to bless Israel if they keep the Mosaic Law would be viewed as an empty promise.

Note that we have here an issue worth giving thought to. In many cases, natural laws were apparently 'defied', although, as C.S. Lewis pointed out, it would be better to say 'added to'.[9] Examples are when Jesus walked on the water or raised Lazarus from the dead. On the other hand, phrases such as, 'In the fullness of the Gentiles' (Rom. 11:25; Luke 21:24), or the use of Israel's natural enemies to punish disobedience suggest some involvement of 'natural processes', given God's foresight.

Although clearly God is restricted only by His own holy nature and not by what He created, it does appear that He generally does not interact with humans in ways which seem totally incomprehensible nor capricious. In feeding the 5000 men plus women and children (Matthew 14), Jesus did not simply fill their stomachs in an instant, but food was distributed which was followed by the familiar act of chewing and swallowing. When healing a blind man, Jesus spat on the ground and spread the clay on the man's eye (John 9:6), in some resemblance to a medical ointment. No one doubted that a miracle had occurred or attributed the healing to the clay.

Since God apparently chooses to interact with us in ways our minds can comprehend, it is surely reasonable to look for physical evidence left behind for examples of God's interaction with His nature, such as fiat creation and Noah's Flood. Not that God is in any way restricted to using natural processes, but because He often provides physical evidence to deliberately facilitate our understanding.

Are miracles anti-science?

Spanish scientist and creationist Dr Escuain showed me his instructive response to an evolutionist's challenge. Notice how important it is to avoid confusion over the processes God can use to carry out His purposes. Many Christians have been misled by god-of-the-gaps type arguments, or incorrectly cornered into thinking other believers have been forced to backtrack on earlier positions held.

Evolutionist: *'Which of these objects and processes were attributed to the supernatural until they were better explained by natural science centuries later:*

a) rain
b) the motion of the planets
c) earthquakes and volcanoes
d) comets
e) geometric crystals
f) human reproduction and development
g) memory and emotion
h) mental illness
i) sickness and death
j) the origin of stars & planets
k) all of the above

Do we ever learn? Well, some of us do.'

Dr Escuain:

'I would attribute all of them to God in Creation, Providence or Retribution (i.e., as to death and other negative consequences of man's departure from God.)

Of course there are secondary causes. Imagine you go to your mom's and there is a kettle of water happily boiling on the stove. Somebody says to you: Why is the water boiling? You say: "Why, because here is a source of heat underneath, which causes an agitation of the molecules of water, which keeps moving faster and faster till the internal energy, manifested as pressure, overcomes the atmospheric pressure, and the water breaks to a boil."

Your mom comes into the kitchen, hears this explanation, and says: "Well, the water is boiling because I am going to make tea."

There are different levels of causation, as you can see. You explained the ***how*** *as to a very limited cause and effect context (science). Your mom told you the* ***why*** *as to the real reason behind that event (personal action, ID, teleology).*

By the way, this type of distinction is as old as the hills, and any intelligent Christian and also any non-Christian philosopher knows it.'

Dembski shares his own metaphysical view of God and nature which is,

> *'to view creation as an interrelated set of entities each endowed by God with certain inherent capacities to interact with other entities. In some cases these inherent capacities can be described by natural laws. Nevertheless, no logical necessity attaches to these laws, nor for that matter to the inherent capacities. On this view God freely bestows capacities and can freely rescind them, not least the capacity to exist'* (p. 65).

God remains master over His creation and not vice-versa, unlike the gods of the Vedas (Hindu 'scriptures') which are subject to nature. Modern 'methodological naturalism' is the flawed result of a presupposition that nature is a closed system, which excludes God from all consideration even should He indeed exist. This is nothing but the idolatry practised since ancient times. Contradictory evidence from the Bible is simply discarded as factually false or as being incorrectly interpreted.

Natural theology to methodological naturalism

Dr Robert Gentry, the world's expert on polonium radiohalos, has interpreted the rings found in granite as being the radioactive result of short-lived polonium decay trapped the instant these foundational rocks were formed.[10] A natural, very slow cooling mechanism for such rocks would not allow such rings to be formed. Such a theory would be denied even possible validity by modern naturalism. Gentry has recently rebutted his critics in the *CEN Tech. J.*[11]

Isaac Newton always affirmed that his concept of force was not an ultimate explanation at all, but merely a postulate used to explain observations. Observed forces need not be inevitably associated with, nor *caused* by matter, which made it easier for him and other Christians to accept the notion of miracles. Moreland[8] and others[12] have also pointed out that natural laws merely *describe* physical behavior and do not actually *cause* anything. Notice the significant of Dembski's metaphysical viewpoint above. Mathematical laws can be devised to describe properties which are at this time associated with matter, but the causal nature of these has *not* thereby been explained, and such properties can be effortlessly deactivated by God.

During the heyday of British natural theology in the late eighteenth century, William Paley and Thomas Reid developed design arguments in terms of contrivance, God's direct interaction in the current state of affairs. Many examples were presented which argued for His goodness and wisdom. By the 1830s, thinking had changed considerably. Charles Babbage criticized the notion of a God who needed to constantly interfere to keep the apparatus functioning. He never intended, however, to deny the existence of the Designer who had instituted natural laws. The worldview of that time was oriented towards a remote God who had built a plan into the laws established during creation. This deity could be postulated only indirectly through outcomes.

Notice the similarity with Howard van Till's 'Fully Endowed Creation': supposedly a more noble view which assigns God enough foresight and ingenuity to set up the necessary causes once for all and not have to be troubled with maintenance work.[13,14] Apparently God does not enjoy interacting with His creation and responding to the prayers of the faithful, but is content with a bored detachment.

Why is the water boiling?

From Natural Law, it was a short step to the agnosticism that entered science from the 1860s. Darwin's insistence on totally natural explanations in biology appealed to those researchers already impressed by the success of Newtonian mechanics in areas such as astronomy, physics and engineering. This process of restricting the kinds of possibilities deemed appropriate for scientific investigations has been brought to an extreme position known as 'methodological naturalism', the view that science can only be permitted to deal with observable laws which guide matter. Intelligent design is, by the fallacy of stipulative definition, excluded from the discussion. Only the observable has become worthy of study. **The creation and not the Creator has become the object of worship.** However, many astute thinkers have pointed out that this is not how science really operates. Unobservable constructs, such as quarks, strings and big bangs are permitted even in 'polite' (i.e. naturalistic) scientific circles.

Dembski points out that theistic evolutionary proposals have offered no empirical content, being indistinguishable from natural law autonomously leading to what is observed.

The danger in this restriction on God's possible modes of action arises when the approach is considered true in fact. It is overlooked that this is merely a metaphysical, and thus subjective, point of view. For example, when every attempt at a naturalistic explanation for the origin of the genetic code or function of the brain appears transparently absurd, to many it becomes less so if it is believed that a naturalistic explanation *must* be true since no other possibility is claimed to be possible. It is this artificial constraining of discourse which Professor Phillip Johnson criticizes so strenuously.[15–17]

Science, we are told, deals with natural causes, but to invoke God introduces supernatural causes. However, *'The proper contrast is between natural causes on the one hand and intelligent causes on the other. Intelligent causes can do things that natural*

causes cannot' (p. 105). When so clearly spelled out this is actually rather obvious. Intelligent causes can build complex electronic objects or design a mathematical convergence algorithm to solve a problem intractable by random guesses.

Considering the human desire to be able to understand and control nature, one wonders why notions such as planning, thinking and deliberate ordering have fallen into scientific disrepute, although useful in daily discourse and fields ranging from literature to the arts, from engineering to medicine.

> *'What has kept design outside the scientific mainstream these last hundred and forty years is the absence of precise methods for distinguishing intelligently caused objects from unintelligently caused ones ... The underlying entity they uncover is information. Intelligent design properly formulated is a theory of information ... (p. 106). Biochemist Michael Behe's 'irreducible complexity', mathematician Marcel Schützenberger's 'functional complexity' and Dembski's own 'specified complexity' are alternate routes to the same reality'* (p. 107).

Dembski, like many in the Intelligent Design movement, believes evolutionary theory can be rejected on strictly its lack of scientific merit.

> *'Indeed, the following problems have proven utterly intractable not only for the mutation-selection mechanism but also for any other undirected natural process proposed to date: the origin of life, the origin of the genetic code, the origin of multicellular life, the origin of sexuality, the absence of transitional forms in the fossil record, the biological big bang that occurred in the Cambrian era, the development of complex organ systems and the development of irreducibly complex molecular machines ... (p. 113). Design is characterized by three things: contingency, complexity and specification. Contingency ensures that the object in question is not the result of an automatic and therefore unintelligent process ... (Dembski 1998, p. 128). The principle characteristic of intelligent agency is choice' (p. 144).*

Information theory and design

In Chapter 6, Dembski shows how Shannon's statistical information theory[18,19] can be translated into CSI numerical values, which are too great to ever occur in the history of the universe through chance processes. In *The Design Inference* anything requiring specified probability value of 10^{-150} or less can be assigned unambiguously to design. It is physically impossible to arrive at such a configuration through any chance mechanism. This corresponds to 500 bits of information in the Shannon sense. Evolutionists try to wiggle out by invoking some vague accelerated convergence through a combination of chance and selection.

I had to think back on the many analogies I've encountered which attempt to show how random processes might lead to something complex and novel, and it is claimed these are reasonable comparisons with biological process. Most are transparently absurd as analogies, since they target a specific goal and provide an algorithm and all the necessary resources to guarantee that outcome will be met in a finite number of iterations.[20,21] Since success in arriving where intended is inevitable, the examples are not driven by random processes able to generate various unanticipated results, but are rather intelligently planned solutions. The relevance to evolutionary explanations of biological systems is clearly lacking.

There is a second class of analogies I have been presented with which are even more absurd. There are two claims about the origin and development of cities and economies which are supposed to parallel those of organisms:

1. They can arise by random, stochastic processes.
2. They become eventually 'irreducibly complex'.

Both claims are false. Intelligent agents (e.g. governments) make decisions after examining their environments, and adjust parts of cities and economies accordingly. This is done after giving thought as to what one wishes to attain and what is necessary to fulfil this. The slow process of development is perfectly reversible, i.e. one can begin with a functioning city or economy and remove an element, e.g., all the parks could be removed and the city would still function. Since 'irreducibly complex' means that **no** element can be removed without the system falling apart, then the city or economy cannot be defined as 'irreducibly complex', so the second claim is by definition incorrect.

Dembski discusses in more rigorous mathematical terms the flaw in assuming that stochastic processes can result in CSI. Whether genetic algorithms, mutation-selection, or any other chance-law combination, the modelling mathematics invariably relies on a deterministic function, and therefore cannot generate CSI.

Bible/science interaction

Dembski discusses various approaches as to how the Bible and science might interact: compartmentalization, complementarity and conflict are practised in our age, but the most interesting for us is the fourth option: the mutual support model. Here one must be a little careful, since inevitably the Bible *or* current science will be emphasized as more reliable. The Christian who believes in biblical inerrancy in the original revelation, as I do, should not be generous in compromising the obvious interpretation gleaned from a careful reading.

Nevertheless, some in the ID movement argue that given a choice of, say, 'big-bang' theory, possibly supporting a *Creatio ex nihilo*, or a steady-state infinitely old universe cosmology (which would not require a creator of matter and energy) one sees that the former approaches the biblical statement more closely.

However, biblical Christians should **not** be seduced by the unbiblical 'big bang' theory. As the physicist Dr Russell Humphreys has shown, the 'big

bang' is based on an unbiblical assumption called the *cosmological principle*, which states that an observer's view of the universe depends neither on the direction in which he looks nor on his location. His alternative cosmology[22] should be seriously considered, and he has rebutted all his critics in recent letters published in the *CEN Tech. J.* The creationist astronomy professor Dr Danny Faulkner also warns that the 'big bang' is an essentially atheistic theory with many scientific problems.[23,24] Finally, what happens to their compromised apologetics if (when) the secular cosmologists abandon the 'big bang'?

Members of the Intelligent Design movement hold to different views as to when and how life arose, but are in agreement that it was under God's direction. I find a straightforward interpretation of the Genesis record, with a fiat creation less than10,000 years ago, as offering the most satisfactory theological interpretation. It resolves additional difficulties in understanding highly integrated ecological systems and how genomes can still be functional in the presence of continual genetic degradation.[25] Conversely, efforts to combine uniformitarian (billions of years) timescales with intelligent design, e.g. the writings of 'progressive creationist' Hugh Ross, have insoluble scriptural and scientific problems, and have a baneful effect on biblical theology, apologetics and theodicy.[23,26]

Dembski, Johnson and others suspect the earth is much older and feel that the proportion and nature of God's direct and indirect creative activities need to be explored after examining the physical evidence. That the earth may in fact be much younger is not excluded outright, since Christians in the natural sciences have learned to recognize that the raw data is badly tainted through evolutionist bias.

What is scientifically true is not so 'cut and dried' as often implied. In fact, there is often a significant subjective element to what is deemed acceptable.

> *'Philosophers of science have proposed three criteria that need to be satisfied for (possible explanation) B to constitute the best explanation of (observation) A. First, B must be consonant with A. Thus instead of injecting discord or dissonance into our understanding of A, B must harmonize with A ... Second, B must contribute to A. B must solve problems or answer questions pertinent to A which could not be handled without it ... Third, as the best explanation, B must be the reigning champion among current competing explanations for A'* (p. 203).

As I read this, I thought about the materialistic reduction of human minds to mechanistic activities of a collection of chemicals. How poorly this explanation maps into our views of human qualities, such as evaluation, foresight, regret, courage, anticipation, intuition and so on. Dembski points out:

> *'As we've seen, neurophysiology hasn't a clue about how to reduce intelligent agency to natural causes ... (p. 221) Bottom line: The naturalistic reduction of intelligent agency is not the conclusion of an empirically based evidential argument but merely a straightforward consequence of presupposing naturalism in the first place ... (p. 221). Thus whatever information the various disciplines offer needs to be taken seriously, and indeed it will be taken seriously when construed through the Christological lens.'* (p. 206).[27]

Objections to intelligent design refuted

This is the topic of the book's final section. One line of attack follows David Hume's claim that design is a weak argument from analogy. The other criticism is that it fails as an inductive generalization since there are no demonstrable examples of previous creative works by God. Dembski shows both arguments miss the point entirely. The design argument is based on the principle of ***'an inference to the best explanation'*** (p. 274). In a nutshell, consider a biological observation B and two competing explanations, L_1 and L_2:

B: Living things are intricate and well-suited to the task of surviving and reproducing.

L_1: Living things are the product of intelligent design.

L_2: Living things are the product of random physical processes.

Then Paley watchmaker's argument or the creationist's claim is simply that $P(B|L_1) >> P(B|L_2)$: the probability of observing fact B is far more likely should L_1 indeed be true than should L_2 be the case. The merits of CSI must be evaluated under this framework. Any valid critique needs to suggest a better explanation, L_n, for biological observations. We could consider some possibilities:

L_3: Living things are wholly the product of variation and selection.

Beginning with this premise, would we expect then to find observations such as B? The Second Law of Thermodynamics describes what we know about our universe: matter tends towards disorder, to states with the minimum distributional, rotational and sequential constraints. Would one expect processes such as photosynthesis, too complex to be understood to date, to arise unguided? What are the observed facts about genetic mutations? They are neutral or destroy functionality. What would justify assuming the opposite?

Are coded information systems expected to arise if L_3 is assumed? An alphabet and coding scheme able to communicate instructions to guide behavior of matter in 'unnatural' ways needs to be established; and such a convention then integrated with a Sender able to encode the intentions and a Receiver able to decode and act upon such intructions.[18] We observe biological examples ranging from the foraging bee's waggle dance to the genetic code. Since we *know* intelligent agents, such as humans, do construct such schemes (e.g. building an automated chemical process), clearly L_1 handles such observations far better than L_3.

Could L_3 handle long-term goals? The existence of very complex biological structures, such as eyes and brains, or thousands of integrated biochemical pathways in a cell, need

to be explained. If it were possible for a collection of chemicals to adjust (via strictly materialistic mechanisms) to external conditions and to replicate themselves accordingly, then they would reach a 'fitness peak'.

It would be impossible to move toward another 'fitness peak' (i.e. change to a different optimal structure) by gradual changes, because the collection of chemicals would move down the peak. So natural selection, which works only on the short term, and has no foresight of long-term goals, would tend to maintain the *status quo*. The only way around this is if every small change results in a local optimum. But such a series of local optima is an article of faith, not fact.

L_4: Living things are the product of massive chemical/genetic jumps (*saltations*) which left no evidence behind.

Clearly, such jumps dare not be too great since they would then be indistinguishable from miracles. They must also be small enough to not demand ridiculous gullibility. Any change must be compatible with the physical and ecological environment, reproducible, and very infrequent so as to not be observable. Somehow the problems of tendency towards maximum entropy and destructive trends of mutations must be overcome. Furthermore, these highly infrequent, massive and random changes must result in extreme cases of perfection, such as fine structures of feathers or enzymatic correction of flawed portions of DNA.

Of the alternative proposals, only L_1, intelligent design, is known to be capable of providing the necessary organisation and information to produce complex biological observations. Immutable laws of nature and chance are not.

Conclusion

This book has too much excellent material to do justice in even a long review. It can be used profitably by those wishing to refine how apologetic arguments can be more subtly presented.

References

1. Dembski, William. A., *The Design Inference: Eliminating Chance Through Small Probabilities,* Cambridge University Press, Cambridge, UK, 1998.
2. Truman, R., Divining design: A review of *The Design Inference: Eliminating chance through small probabilities* by William A. Dembski, *CEN Tech. J.* **13**(2):34–39, 1999.
3. Behe, M.J., *Darwin's Black Box: the Biochemical Challenge to Evolution*, A Touchstone Book, Simon & Schuster, New York, NY, USA, 1996.
4. Ury, T.H., Review of *Darwin's Black Box*, *CEN Tech. J.* **11**(3):283–291, 1997.
5. Di Silvestro, R., Rebuttals to common criticisms of the book *Darwin's Black Box*, <http://www.leaderu.com/science/disilvestro-dbb.html>, 26 October, 1999.
6. ReMine, W.J., *The Biotic Message: Evolution versus Message Theory,* St. Paul Science, St. Paul, MN, 1993.
7. Batten, D., Review of *The Biotic Message*, *CEN Tech. J.* **11**(3):292–298, 1997.
8. Moreland, J.P., *Christianity and the Nature of Science,* Baker Books, Grand Rapids, MI, USA, 1989.
9. Lewis, C.S., *Miracles*, Fontana, UK, ch. VIII, 1960 (orig. 1947).
10. Gentry, R.V., *Creation's Tiny Mystery*, Earth Science Associates, Knoxville, Tennessee, USA, 3rd ed., 1992.
11. Gentry, R.V., reply to Kurt Wise, *CEN Tech. J.* **12**(3):287–290, 1996.
12. Renard, K., God of the Gaps, *Creation Matters* **4**(3):1–5, 1999.
13. Howard Van Till, The Fully Gifted Creation, in *Three Views on Creation and Evolution*, ed. J.P. Moreland and John Mark Reynolds, Zondervan, Grand Rapids, MI, pp. 161–218, 1999.
14. See the review of *Three Views on Creation and Evolution* by Kulikovsky, A., *CEN Tech. J.* **14**(1):26, 2000, which exposes its bias against biblical creationism.
15. Johnson, P., *Darwin on Trial*, Regnery Gateway, Washington, DC, 1991.
16. Johnson, P., *Defeating Darwinism by Opening Minds*, InterVarsity Press, Downers Grove, IL, USA, 1997.
17. Oard, M., Review of *Defeating Darwinism*. *CEN Tech. J.* **12**(1):28–29, 1998.
18. However, information theorist Prof. Dr. Werner Gitt shows that Shannon's purely statistical approach is inadequate — see Gitt, Werner, 1997. *In the Beginning was Information*, Christliche Literature-Verbreitung e.V., Bielefeld, Germany.
19. In reference 21, I defend Dr Gitt's approach.
20. Truman, R., Dawkins' Weasel Revisited, *CEN Tech. J.* **12**(3):358–361, 1998.
21. Truman, R., The problem of information for the theory of evolution: Has Dawkins really solved it? <http://www.trueorigin.org/dawkinfo.htm>; July 14, 1999.
22. Humphreys, D.R., *Starlight and Time*, Master Books, Green Forest, AR, USA, 1994.
23. Faulkner, D.R., The dubious apologetics of Hugh Ross, *CEN Tech. J.* **13**(2):52–60, 1999.
24. See also the layman's article: Gitt, W., What about the 'big bang'? *Creation* **20**(3):42–44, 1998.
25. Zuill, H.; in: Ashton, J., ed., *In Six Days: Why 50 [Ph.D.] scientists choose to believe in creation, New* Holland, Sydney/Auckland/London/Cape Town, pp. 50–63, 1999.
26. Sarfati, J.D., Genesis questioned by billions of years beliefs: a review of *The Genesis Question* by Hugh Ross, *CEN Tech. J.* **13**(2):22–30, 1999.
27. Orthodox Christology, as proclaimed at the Council of Chalcedon in AD 451, is the doctrine that Jesus Christ has two natures — one fully human and one fully divine — united in one Person — the Second Person of the Holy Trinity. Incidentally, the leading 'progressive creationist' Hugh Ross denies orthodox Christology in favour of a one-nature Christological heresy — see Craig, W.L., Hugh Ross' extra-dimensional deity: a review article*, J. Evang. Theol. Soc.* **42**(2):293–304, 1999.