



An Introduction to Intelligent Design

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Bill Gates, Microsoft Corporation

“The machine code of the genes is uncannily computer-like”

Richard Dawkins, formerly Professor of the Public Understanding of Science,
University of Oxford



Dr Alastair Noble



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www.c4id.org

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Intelligent Design

“From the far reaches of the universe to the depths of the cell, separate branches of modern science have all discovered astonishing, unexpected fine-tuning – design.”

Michael Behe, in 'The Edge of Evolution', Free Press, 2007, p219



An idea whose time has come

Some ideas just seem right and 'Intelligent Design' (ID) is one such idea. Stated simply, it claims that the natural and living worlds show clear signs of being designed and are not the result of blind, purposeless forces.

Most people who are aware of ID assume, wrongly, that it is a variant of creationism or a form of religious fundamentalism. But when they take time to examine it, many are immediately impressed. In fact, they discover a powerful and self-evident idea. Instinctively, ID feels correct.

But Intelligent Design is not a new idea. For as long as observers of the natural world have wondered how it all came about, there have been those who concluded that the universe is designed. Some of the best known of the ancient Greek philosophers held the view that the world was the result of a creative mind. Intelligent Design in one form or another is, actually, as old as history itself.

Closer to our time, the great architects of modern science like Galileo, Kepler, Newton, Faraday, Kelvin and Pasteur regarded their work in science as exploring the works of an Almighty Creator whose ways were discernible in the natural and living world. And Einstein, whose work on time and space pushed human knowledge to its outer boundaries, acknowledged some kind of mathematical mind behind the universe. 'I want to know God's thoughts', he once said, adding, 'the rest are details'.

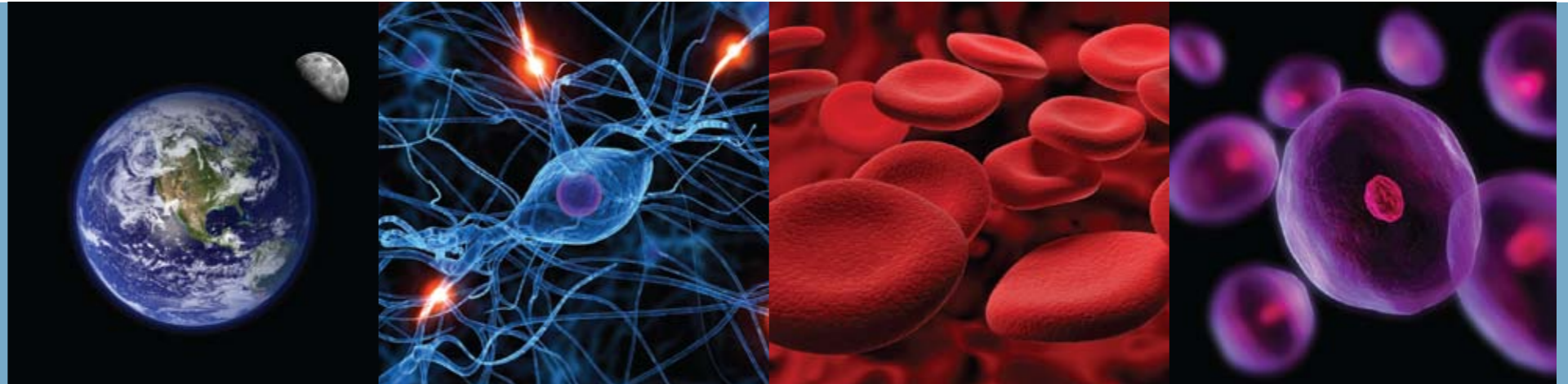
It is only relatively recently, and largely as a result of the work of Charles Darwin in the nineteenth century, that the idea of an evolving or self-organising universe has gained acceptance. It is now the dominant explanation of origins in the West and an evolutionary framework has become integral to much of Western culture.

In its current form, Intelligent Design poses a formidable challenge to the accepted theories of origins. Drawing on the work of an increasing number of scientists around the world, Intelligent Design questions the current insistence that the origin of life and the universe is a purposeless and undirected process.

ID argues from empirical evidence that is easily detected by scientific enquiry. Its distinguishing characteristic is that it does not appeal to any religious authority, but to scientific investigation alone. This booklet gives a brief overview of that evidence and what distinguishes ID from other explanations of origins.

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The cell



Over the last few decades, microbiologists have discovered that each living cell is an unbelievably complex structure. Far from being the simple blob of protoplasm that Darwin envisaged, we now know that its organisation is as complicated as that of a large city with different types of factories, power stations, communication centres, transport systems and storage areas. Every cell is a veritable hive of biochemical activity with carefully differentiated functions controlled by sophisticated information systems. And each one is too small to see with the naked eye!

The human body contains approximately 50 trillion cells. There are over 200 specialised types such as those that make up muscles, tissue, nerves, glands and skin. Each cell is surrounded by a complex membrane which not only protects it from the outside environment but also regulates the transfer of substances in and out of the cell through microscopic pores.

At the core of the cell is the nucleus. It contains almost all the DNA, packed into the chromosomes which carry a complete set of genetic information. The surface of the nucleus has tiny channels through which can pass the information-carrying chemicals which regulate the functions of the cell.

The rest of the cell, the cytoplasm, contains hundreds of different chemicals and a range of tiny bodies or organelles which are responsible for the many

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functions of the cell. Among these are the mitochondria which release the energy required by the cell in a controlled chemical reaction. Others store chemicals, release oxygen and dispose of the waste materials of the cell. There is also a complex internal transport system, composed of tiny tubes which act as pathways along which the materials of the cell are moved as required.

Elsewhere within the cell, fats and proteins are synthesised within the reticulum, a labyrinth of active membranes. Located here are the ribosomes which decode the information carried by the messenger RNA from the nucleus about the specific sequences of amino acids required for the production of the full range of proteins. Proteins are fundamental to all the processes of the cell.

In every respect, the cell is a marvel of miniaturization and biochemical engineering.

The Evidence for Intelligent Design

Design is detectable when there is low probability and high specificity. An object or system can be said to be designed when there is a low probability of it arising by chance or as the result of an existing law or process, and when it matches an existing pattern and fulfills a specific purpose.

It is easier to detect design than to describe how we recognise it! But we should be clear that design is not just a subjective decision. It has objective, scientific criteria which distinguish it from the random or merely repetitive.

Intelligent Design is based on the observation that natural and living systems show clear evidence of having been designed. To be precise, ID says that 'certain features' of the universe show evidence of design. ID implies that the whole universe is designed, but that the evidence for design is more obvious in some areas than in others. This most certainly does not imply, as some continue to assert, that ID only deals with gaps in our knowledge. Actually, the opposite is true. ID deals, not with what we don't know, but with what we do know.

Intelligent Design is an example of the science of design detection – how to identify patterns arranged by an intelligent cause for a purpose. Design detection is used in a number of scientific fields, such as anthropology, crypto-analysis and the forensic sciences, which seek to explain the cause of events such as a death or fire, and the search for extra-terrestrial intelligence (SETI). The inference that biological information may be the product of an intelligent cause can be tested and evaluated in the same way that scientists test for design in other sciences.

So how and where do we detect design? Let's take the 'how' question first. We know instinctively how to distinguish between designed systems and those that are randomly assembled. We do not ever question whether the thousands of gadgets we use every day are designed – it is obvious that they are. We also recognise collections of things that have been randomly assembled, though the objects in the collection may be individually designed. For example, a rubbish heap is usually a random collection of designed objects.

More importantly, scientists and engineers have identified technical criteria for design. Although these involve fairly complex calculations which draw on information and probability theory, the conclusions are relatively straightforward. Design is detectable when there is low probability and high specificity. This means, essentially, that an object or system can be said to be designed when there is a very low probability of it arising by chance or as the result of an existing law or process, and when it also matches an existing pattern and fulfills a specific purpose.

It is easier to detect design than to describe how we recognise it! But we should be clear that design is not just a subjective decision. It has objective, scientific criteria which distinguishes it from the random or merely repetitive.

Where, then, in natural and living systems can we detect design? Actually it is not difficult. When we apply the criteria for design to natural and living systems, the existence of design is obvious. For example, the universal constants, such as the very precise values of the forces which govern gravity, electricity, magnetism and the various types of chemical and nuclear bonds, appear to be finely tuned to make our planet able to sustain life and suggest intrinsic design. The specified complexity of some living systems, like the eye, the ear or the blood clotting system, is a further clear indicator of design.

But the most compelling argument for design lies in the information content of DNA, the molecule in every living cell which carries much more data than most modern software programmes. We know that information can only arise from prior intelligence and the clear implication of the information content of DNA is that it was assembled by a designing intelligence.

To these matters we now turn in greater detail.

Universal constants

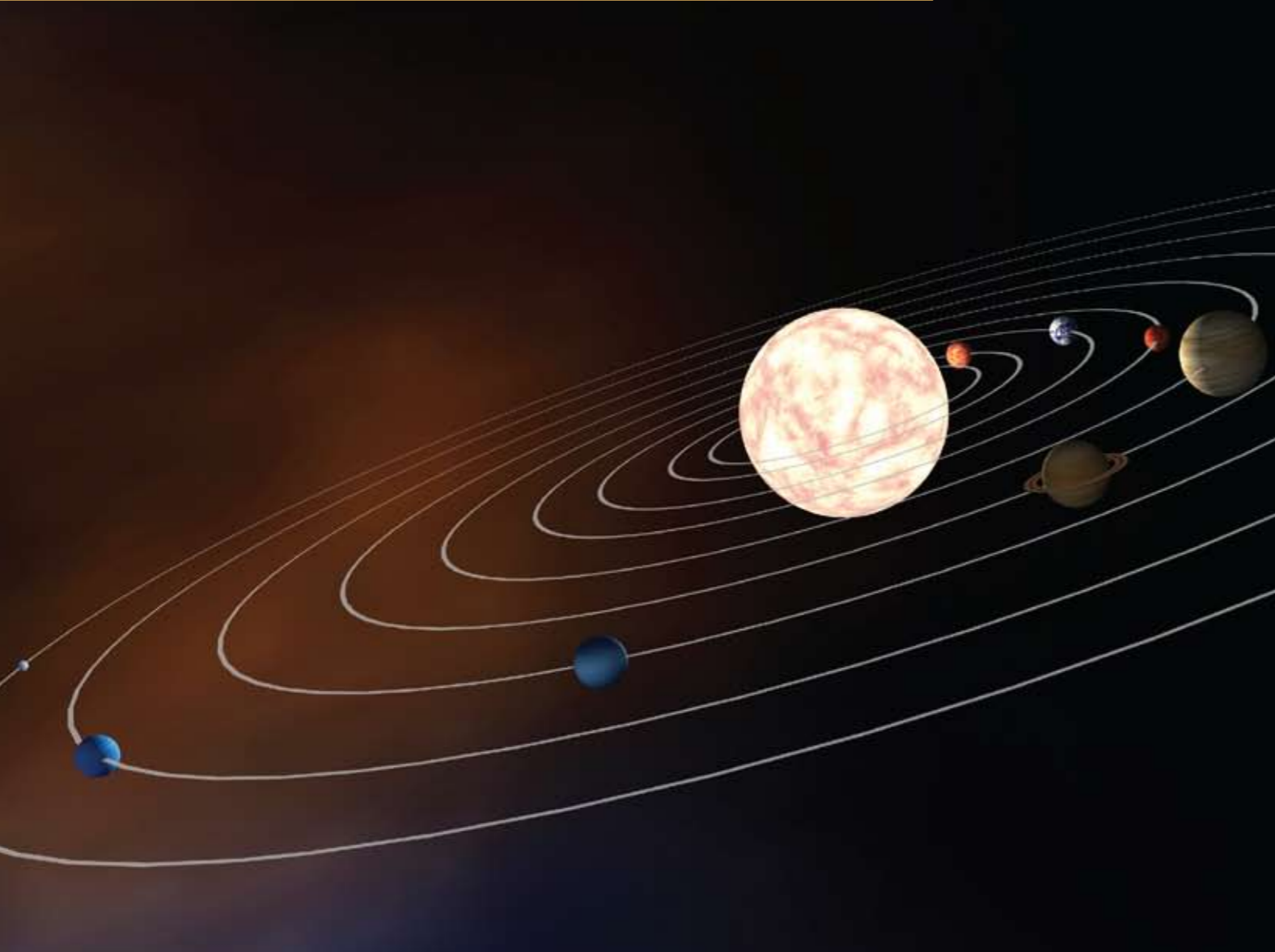
“A common sense approach to the data suggests that a super-intellect has monkeyed with the physics, as well as the chemistry and biology.”

Sir Fred Hoyle



ID

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If the moon was not exactly the size it is and in the position it is, the rotation of the Earth would become unstable and life would be unsustainable.

The forces which govern our universe involve a number of physical or mathematical constants whose values must remain within very narrow limits. Such universal constants are involved in determining, for example, the force of gravity, the motion of the planets, the energy of electromagnetic radiation, and the values of the forces that are involved in holding nuclear particles together and those that bond atoms to form molecules.

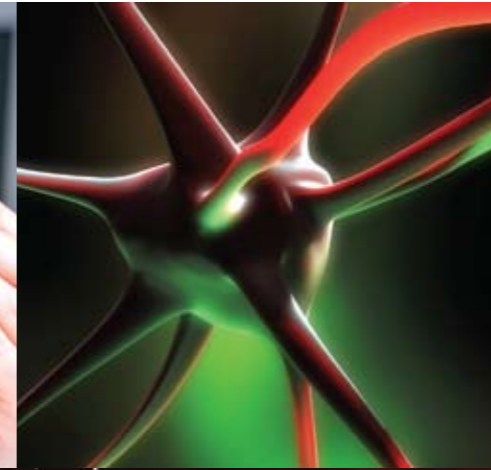
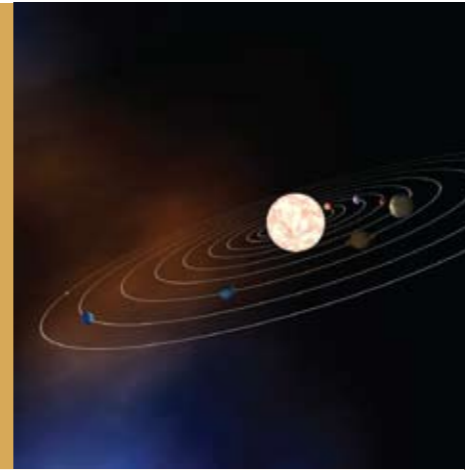
Taken together, all these forces and their associated physical constants make a varied and impressive set of values which appear to be finely tuned to ensure the maintenance of life on Planet Earth. It has been demonstrated that even tiny variations in these constants and the associated forces they control would make life on earth impossible. For example, if water was a gas at normal temperature, rather than a liquid, as would be predicted purely by the position of its constituent elements in the Periodic Table, life as we know it just could not exist. If the moon was not exactly the size it is and in the position it is, the rotation of the Earth would become unstable and life would be unsustainable.

There are around 20 such universal constants whose values are just right to create the conditions for life as we know it. The probability of arriving at all these values by chance is so incredibly small that it suggests they have been deliberately set.

A common response to this is that we might live in a 'multiverse' with billions of universes, among which ours just happens to have the set of universal constants it does. However, this proposition is highly speculative and incapable of verification. It also deliberately avoids the most obvious explanation, which is what all good scientists consider first until there is good reason to reject it.

Of course the fine tuning of universal constants is not in itself conclusive proof of Intelligent Design. But it is pretty impressive nevertheless and demands a credible explanation. As cosmologist Sir Fred Hoyle has commented, 'A common sense approach to the data suggests that a super-intellect has monkeyed with the physics, as well as the chemistry and biology'.

'Fine tuning' of universal constants



The numerical values that nature has assigned to the fundamental constants, such as the charge on the electron, the mass of the proton, and the Newtonian gravitational constant, may be mysterious, but they are crucially relevant to the structure of the universe that we perceive. As more and more physical systems, from nuclei to galaxies, have become better understood, scientists have begun to realise that many characteristics of these systems are remarkably sensitive to the precise values of the universal constants. Had nature opted for a slightly different set of numbers, the world would be a very different place. Probably we would not be here to see it.

More intriguing still, certain structures, such as solar-type stars, depend for their characteristic features on wildly improbable numerical accidents that combine together fundamental constants from distinct branches of physics. And when one goes on to study cosmology – the overall structure and evolution of the universe – incredulity mounts. Recent discoveries about the primeval cosmos oblige us to accept that the expanding universe has been set up in its motion with a cooperation of astonishing precision.

Paul C W Davies, in 'The Accidental Universe', 1982, Cambridge University Press



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Biological complexity

Modern molecular biology has revealed a cellular world as complex as a galaxy of stars or a modern mega-city. The complexity and variety of the living cell is one of the best kept secrets of the modern world.

The biological research of the last few decades has revealed the remarkable complexity of living things and, in particular, of the living cell. For example, although the 50 trillion (that's fifty thousand billion or 50,000,000,000,000) or so cells which make up the human body are too small to be seen except with a microscope, each one is a veritable nano-technological factory on a grand scale. Far from being the simple blob of protoplasm envisaged by Darwin and his contemporaries, modern molecular biology has revealed a cellular world as complex as a galaxy of stars or a modern mega-city. The complexity and variety of the living cell is one of the best kept secrets of the modern world.

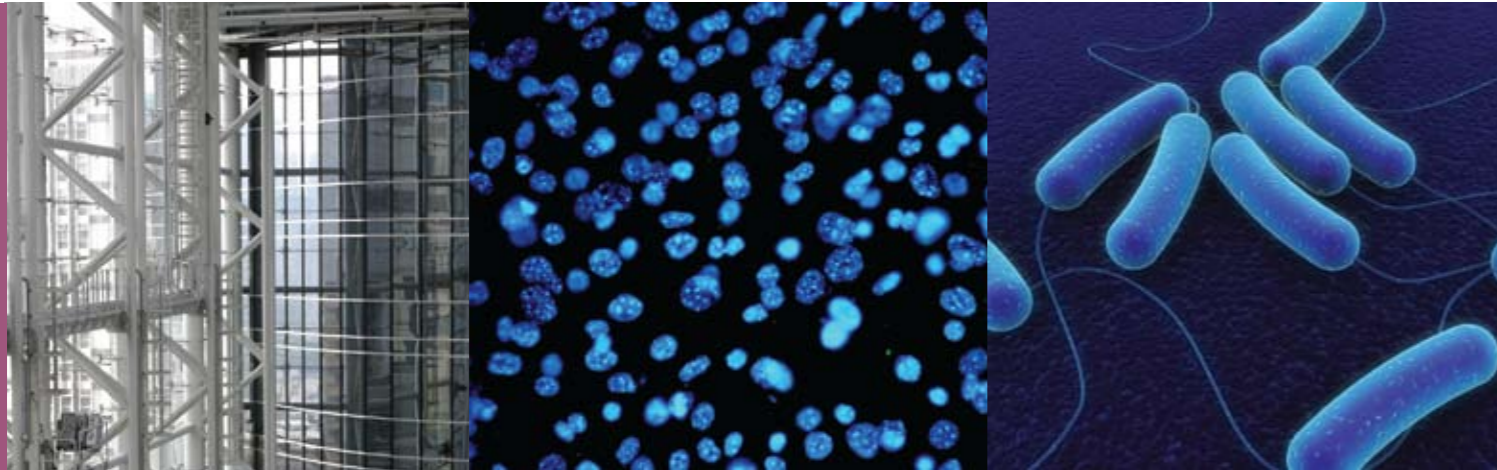
Intuitively, complexity on this scale suggests deliberate design. But there is a more secure basis for that conclusion than intuition. William Dembski, a mathematician and philosopher of science, has studied the complex biochemistry of living systems from the perspective of probability theory. He has demonstrated mathematically that their complexity cannot be explained by chance processes or existing natural laws, but are in fact 'specified'. By that he means that it requires the input of specific information to assemble and operate such systems.

A simple analogy clarifies the nature of 'specific complexity'. A safety razor is a useful, and to many people, an indispensable tool. It is clearly designed and, in its own way, complex. The plastic or metal handle is shaped for ease of handling; its head can follow the contours of the skin; and its single or multiple blades protrude to just the right height for effective shaving and to avoid cutting the skin. Although razors come in various shapes, sizes and colours, the basic design is clear. You would never even consider that it was not deliberately designed. It has obviously been constructed according to a previously specified plan.

But what is also clear is that a safety razor is made for a specific purpose. It is not for stripping wallpaper or for removing stains from the carpet. It is specifically designed to remove hair from skin. In that sense it has 'specified complexity' relating to its function. The analogy illustrates that 'specified complexity' relates to both assembly and function.

A further analogy comes from a fax machine. When a fax reaches my office, I do not think that it has been generated by electrical noise, but by someone perhaps many miles away. The message I take out of my machine is not just a random collection of bits of paper and blobs of ink, but an intelligible message. Although the paper I hold in my hand has no physical connection with the paper that was inserted in the fax machine at the sending office, it is 'specified' by the contents of the original document and the information in both originated in the mind of the individual who composed the message. So a fax message which is received in my office has a complexity which is specified by a distant mind and expressed in language which has been transmitted to me.

This indeed is the nature of the complexity found in living systems. For example, the mechanisms in the living cell for producing proteins from amino acids, the essential basis of all life, are colossally complex. They depend on enzymes, which act like chemical ushers which select and modify the individual chemicals which are required in the process. They also involve tiny structures like ribosomes which act like extrusion mechanisms for the



Beyond the reach of chance



newly formed proteins. The operation of the system for protein synthesis is not only complex, but it is also very specific, generating in different parts of the cell and of the body each one of the thousands of proteins in the exact configurations and quantities required to sustain life. And this is only one example of specified complexity in living systems. There are thousands of them.

Michael Behe, a prominent American biochemist, has taken the idea one stage further. He has concluded that the specified complexity of certain living systems suggest that they are also 'irreducibly complex'. By that he means that each single component is required to make the system operate and the removal of any one of them makes it impossible to function.

Many structures we encounter in daily life are irreducibly complex. A mousetrap is a good example of an irreducibly complex system. It has 5 parts and each one is necessary if the device is to catch a mouse. If any one of the parts is removed, the trap will not work.

Behe has used the term to describe the function of the bacterial flagellum. The flagellum is a tail-like structure present in many bacteria. It is, in effect, a biological outboard motor with almost 40 parts. It can rotate at speeds of up to 100,000 rpm and has protein parts that act as stators, rotors, O-rings and drive shafts. The removal of any single part of the bacterial flagellum renders it useless. It is, clearly, irreducibly complex.

This points not only to the existence of deliberate design, but also raises a critical problem for accepted evolutionary explanations of its origin. In order to evolve a system like the bacterial flagellum, evolutionary theory requires that each intermediate stage, and there would have to be scores of them, has to be fully functional and beneficial to the organism. It is difficult to visualise how a system that requires each one of its 40 parts to be fully operational can gradually evolve by random mutation and natural selection, while maintaining full functionality at each stage.

And again, the bacterial flagellum is only one of hundreds of systems in living things which can be described as irreducibly complex.

The Darwinian claim that all the adaptive design of nature has resulted from a random search is one of the most daring claims in the history of science. But it is also one of the least substantiated. No evolutionary biologist has ever produced any quantitative proof that the designs of nature are in fact within the reach of chance. There is not the slightest justification for claiming, as did Richard Dawkins :

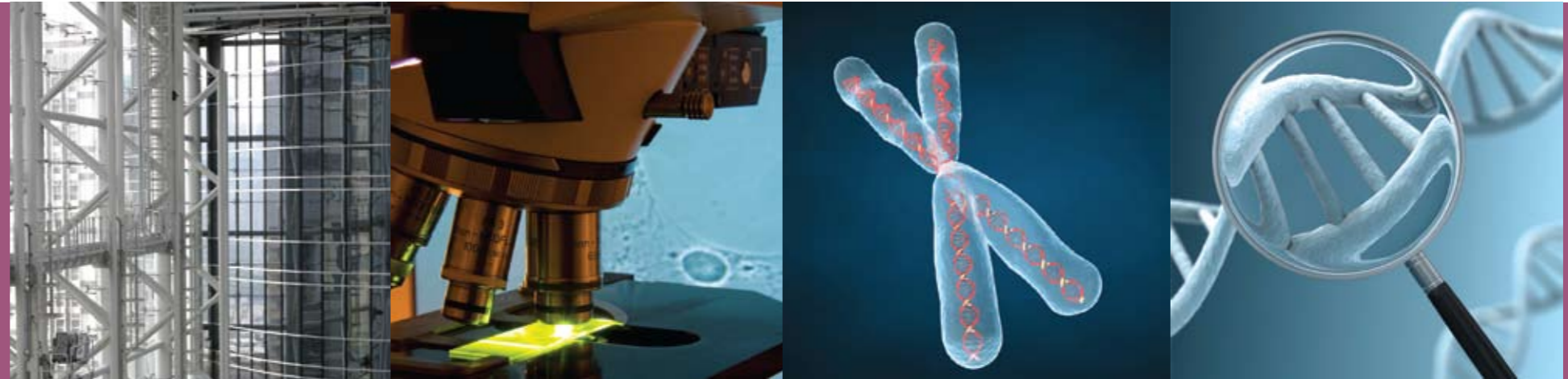
Charles Darwin showed how it is possible for blind physical forces to mimic the effects of conscious design, and, by operating as a cumulative filter of chance variations, to lead eventually to organised and adaptive complexity, to mosquitoes and mammoths, to humans and therefore, indirectly, to books and computers.

New Scientist, 15 April, 1982, pp 130-132

Neither Darwin, Dawkins nor any other biologist has ever calculated the probability of a random search finding in the finite time available the sorts of complex systems which are so ubiquitous in nature. Even today we have no way of rigorously estimating the probability or degree of isolation of even one functional protein. It is surely a little premature to claim that random processes could have assembled mosquitoes and elephants when we still have to determine the actual probability of the discovery by chance of one single functional protein molecule!

Michael Denton, *Evolution: A Theory in Crisis*, Adler and Adler, 1986, p324

DNA, RNA and chromosomes



DNA, or deoxyribonucleic acid, is a remarkable substance. Its molecular structure was first established in the 1950s by James Watson and Francis Crick at Cambridge, who also drew on the earlier work of Maurice Wilkins and Rosalind Franklin in London. Its double helical structure consists of two intertwined sugar-phosphate strands, bonded together by the base pairs adenine (A) which pairs with thymine (T), and cytosine(C) with guanine (G). There are several billion bases in a single molecule of DNA and the genetic information is encoded in the sequences of the bases. RNA (ribonucleic acid) is similar to DNA, but its molecules are shorter and uracil (U) replaces thymine (T). Each triplet of bases codes for an amino acid which is an essential ingredient in the process of protein synthesis.

The information in DNA is held in short sequences or genes, of which there are about 24,500 in the human genome. The DNA is packaged in a highly ordered manner in the chromosomes, of which there are 46 in human cells. Messenger RNA copies segments of the information in DNA and carries it out of the nucleus where it is eventually used to assemble specific proteins in the ribosomes deep within the cell.

The chemical constituents in DNA function like letters in a written language or symbols in a computer code. Just as English letters may convey a particular

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message depending on their arrangement, so too do certain sequences of chemical bases along the spine of a DNA molecule convey precise instructions for building proteins. The arrangement of the chemical characters determines the function of the sequence as a whole. Thus, the DNA molecule has the property of 'sequence specificity' that characterises codes and language. As Richard Dawkins has acknowledged, 'The machine code of the genes is uncannily computer-like.' Bill Gates has noted, 'DNA is like a computer program, but far, far more advanced than any software we've ever created.'

After the early 1960s, further discoveries made clear that the digital information in DNA and RNA is only part of a complex information processing system – an advanced form of nanotechnology that both mirrors and exceeds our own in its complexity, design logic and information storage density.

Norman Nevin, Emeritus Professor of Medical Genetics, Queens University, Belfast, Northern Ireland

The information mystery

“Living organisms are mysterious not for their complexity per se, but for their tightly specified complexity.”

Paul Davies

Paul Davies, in his book ‘The Fifth Miracle’, has identified specified complexity as the key to resolving life’s origin. He writes, ‘Living organisms are mysterious not for their complexity per se, but for their tightly specified complexity. To comprehend fully how life arose from non-life, we need to know not only how biological information was concentrated, but also how biologically useful information came to be specified.’

Indeed it is the origin of the digitally coded genetic information within the DNA molecule which provides both the enduring mystery of modern biology and the most compelling argument for design in nature. That sort of information carries the potential to generate every living creature which has ever lived and to confer on each one a unique identity. Bill Gates of Microsoft has described the information in DNA as far more complex than any of his software programmes and, of course, he employed software engineers to design them.

Each cell in our bodies contains about 2 metres of DNA. If we could join up all the DNA in one human body into a single chain, it would reach to the moon and back – 8,000 times! Each molecule of DNA has about 3 billion units of information which is carried in just 4 repeating chemical units or ‘base pairs’. But the units do not repeat randomly or repetitively. Each series of three units codes specifically for particular proteins which ultimately determine the unique characteristics of each individual.

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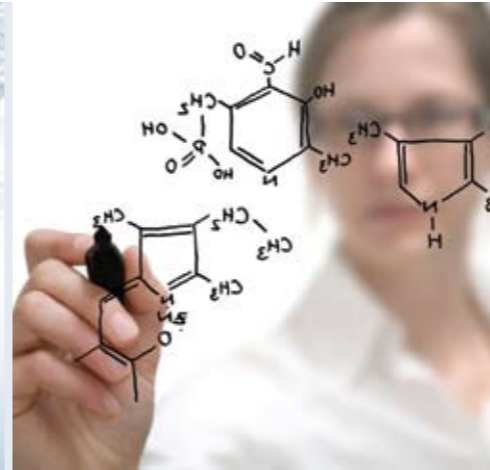
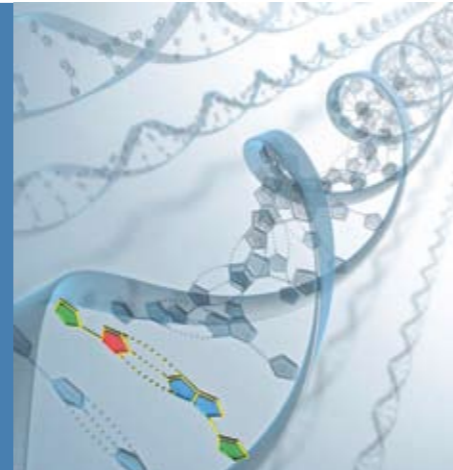
DNA is part of the most sophisticated system of information transfer in the world. It easily outstrips the computerised systems of our age. Occasionally errors arise in DNA transcription, sometimes with devastating consequences for the individual involved. But the extent, precision and durability of the system are truly breathtaking.

Now this poses a fundamental question. Where does this very complex and highly specific information come from? All our experience tells us that information only arises from prior intelligence. The information in a letter comes from the mind of its writer. An article in a newspaper comes from the mind of the journalist who wrote it. The information in a PC comes from the mind of the software engineer who wrote it. There is no known example anywhere of functional information arising randomly or by chance. We only get information from prior intelligence.

So the conclusion about the information content of DNA is obvious. It can only have arisen from a designing intelligence. It is simply not acceptable to say that we might someday find an explanation for the origin of information which does not involve intelligence. On this basis, no sensible scientific conclusion could ever be drawn.

The origin of the information in DNA alone is sufficient grounds for proposing the Theory of Intelligent Design.

Information and intelligence



After the early 1960s, further discoveries made clear that the digital information in DNA and RNA is only part of a complex information processing system – an advanced form of nanotechnology that both mirrors and exceeds our own in its complexity, design logic and information storage density.

Where did the digital information in the cell come from? And how did the cell's complex information processing system arise? Today, these questions lie at the heart of origin-of-life research. Clearly the informational features of the cell at least appear designed. And to date, no theory of undirected chemical evolution has explained the origin of digital information needed to build the first living cell. Why? There is simply too much information in the cell to be explained by chance alone. And the information in DNA has also been shown to defy explanation by reference to the laws of chemistry. Saying otherwise would be like saying that a newspaper headline might arise as the result of the chemical attraction between ink and paper. Clearly 'something else' is at work.

Yet, the scientists arguing for Intelligent Design do not do so merely because natural processes, chance, law – or the combination of these – have failed to explain the origin of the information and information-processing systems in cells. Instead, they also argue for design because we know from experience that systems possessing these features invariably arise from intelligent causes. The information on a computer screen can be traced back to a user or programmer. The information in a newspaper ultimately came from a writer – from a mental,

As the pioneering information theorist Henry Quastler observed, **'Information habitually arises from conscious activity.'**

rather than a strictly material, cause. As the pioneering information theorist Henry Quastler observed, 'Information habitually arises from conscious activity.'

This connection between information and prior intelligence enables us to detect or infer intelligent activity even from unobservable sources in the distant past. Archaeologists infer ancient scribes from hieroglyphic inscriptions. SETI's search for extraterrestrial intelligence presupposes that information imbedded in electromagnetic signals from space would indicate an intelligent source. As yet, radio astronomers have not found information-bearing signals from distant star systems. But closer to home, molecular biologists have discovered information in the cell, suggesting – by the same logic that underwrites the SETI program and ordinary scientific reasoning about other informational artifacts – an intelligent source for the information in DNA.

DNA functions like a software program. We know from experience that software comes from programmers. We know generally that information – whether inscribed in hieroglyphics, written in a book or encoded in a radio signal – always arises from an intelligent source. So the discovery of information in the DNA molecule provides strong grounds for inferring that intelligence played a role in the origin of DNA, even if we weren't there to observe the system coming into existence.

Dr Stephen Meyer, Director, Discovery Institute, Seattle, in the National Post, Canada, Dec 1st, 2005

Intelligent Design is science

“Even if all the data point to an intelligent designer, such a hypothesis is excluded because it is not naturalistic.”

Scott Todd

ID is essentially an interpretation of the data that already exists. There is not much point in gathering more information if you already have enough on which to base your hypothesis.

It is frequently claimed that ID is not really science and is derived from religious ideas. But the above shows that ID is entirely based on scientific observations and what is sometimes known as ‘inference to the best explanation’. The difficulty for some arises because ID proposes an explanation which goes beyond purely material considerations. But that cannot rule it out as science.

Suppose for a moment that a Designing Intelligence actually exists. Are we seriously saying that, if that is the case, science would be unable to recognise it from the material evidence produced by such a Designer? Scott Todd, an eminent American scientist, has actually said as much (Nature, Sept 30th, 1999). He claimed that ‘even if all the data point to an intelligent designer, such a hypothesis is excluded because it is not naturalistic’. If that is the case, science is in real trouble. It has all the logic of saying that traffic signals can’t exist because some people are colour blind!

It is also claimed that ID is not science because it cannot make predictions that can be tested and that it cannot be falsified by experiment. Assuming that these are criteria for good science – and that is by no means certain – ID is capable of responding positively. As we have seen, there are theoretical criteria for detecting design such as probability and specificity. ID predicts that if you apply these principles to natural and living systems, you will get the answer that design is present. That exercise certainly involves making and testing predictions.

And on the second point of ID being capable of being falsified, all that is necessary is that someone demonstrates that functional information on the scale of DNA can arise without prior intelligence or that there is a clear step-by-step evolutionary pathway with all the intermediary stages to a bacterial flagellum or similar irreducibly complex structures. In either case, ID would fail. The fact that no such falsifications are forthcoming, or are likely to be, is testimony to the strength of the design hypothesis.

A further objection to the scientific status of ID is that its theorists do not undertake research and publish in the peer-reviewed literature. In fact, this is quite false. The work of, for example, William Dembski on the design hypothesis and Steven Meyer on the Cambrian fossil record are some of a dozen or so papers and articles on research which point to ID and which are in the current scientific literature. And further work is being done in a number of laboratories around the world.

But there are two further points to make about this. In one sense, research work which supports ID is not the central issue. ID is essentially an interpretation of the data that already exists. There is not much point in gathering more information if you already have enough on which to base your hypothesis. And secondly, when assessing the claim that ID does not publish enough research, it is important to recognise that the peer review process is biased in the direction of the reigning Darwinian paradigm. Papers which argue the ID case are often rejected because they are not judged to be consistent with the accepted naturalistic position on origins. Now there’s a real catch 22. You don’t publish enough ID research, but we will not approve it anyway because we don’t like ID!



Implications

Although ID does not draw on any religious authority, it clearly has philosophical and religious implications. While it does not specify who the Designer is, it provides support for a theistic view of the universe. And it certainly confronts the neo-Darwinian world view that we live in a bleak, purposeless and undirected universe.

Intelligent Design also challenges the view that science can only deal in materialistic explanations – a position known as ‘methodological naturalism’. Sean Carroll of California Institute of Technology has given a very clear statement of this position in his 2003 paper now available on the Internet, ‘Why (Almost All) Cosmologists are Atheists’. He writes, ‘The materialist thesis is simple: that’s all there is to the world. Once we figure out the correct formal structure, patterns, boundary conditions and interpretation, we have obtained a complete description of reality’. Revealingly, he then adds in parenthesis, ‘Of course we don’t have the final answers as to what such a description is, but a materialist believes that such a description does exist’. It is evident that none of that is science. It is, in fact, a philosophical position, a world view, a kind of faith position, posing as a coherent scientific conclusion.

It is becoming increasingly apparent that Darwinism succeeds as a worldview only if it is assumed that there cannot be a non-material explanation of origins. But ID demonstrates that there is incontrovertible evidence of intelligence behind the universe. It is a poor scientist indeed who cannot be sufficiently open-minded to consider the possibility of a non-material origin for the universe, especially when so much of the evidence points in that direction. Science should always go where the evidence leads and should not, as a starting point, rule out one set of explanations.

Intelligent Design is not just good science. It also raises philosophical questions which go to the heart of Western civilisation. It has the potential to make people reflect on the most fundamental questions about their existence. It is, perhaps, because the implications of ID challenges deeply-held beliefs about fundamental questions of life that it is so vehemently opposed without good scientific reasons.

ID and evolution’

“Random variation doesn’t explain the most basic features of biology. It doesn’t explain the elegant sophisticated molecular machinery that undergirds life.”

Michael Behe



ID

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It is important to say that ID does not dismiss evolutionary processes. ID is about the deep design inherent in the universe whereas evolution is essentially a theory about the processes by which living things develop. They deal, therefore, with quite significantly different aspects of origins.

However, there are two areas in which ID and evolution collide. The first is the implication of neo-Darwinism that life is essentially the result of blind and undirected processes. ID maintains that the science points to deliberate design and prior intelligence. The second is evolution’s claim that random mutation and natural selection can account for the generation of greater genetic complexity over time. ID questions whether there is sufficient evidence that such a mechanism is capable of doing what is claimed.

In any serious discussion of evolution, it is important to know which meaning of 'evolution' is being used. In fact, there are two major and quite different uses of the term 'evolution'.

The first use of the term 'evolution' is what Darwin discovered in the 19th century and essentially refers to the ability of living things to adapt to their environment. Darwin noticed that Nature is able to do what plant and animal breeders have done for centuries. It is clearly possible to breed living things selectively to obtain the particular form that you want. You might want white horses or purple tulips and breeders can select those strains that are most likely to produce the required result.

That Nature can do the same thing is hardly surprising. Natural selection means simply that, by a process of eliminating forms of life which are not suited to a particular environment, living things with specific characteristics survive while the others die. So, for example, birds with short tough beaks will survive if the only available food is nuts with hard shells. Those birds with long slender beaks don't have a chance of surviving. They

Birds with short tough beaks will survive if the only available food is nuts with hard shells. Those birds with long slender beaks don't have a chance of surviving. They might, though, if the only available food is soft worms which live 2 inches below the surface of sand.

might, though, if the only available food is soft worms which live 2 inches below the surface of sand. In that case, the birds with the short beaks have no chance of survival.

This form of evolution – sometimes called 'microevolution' – might be better described as 'adaptation'. It really depends on the wide variety of forms of any species which can be produced by the DNA of the species. Natural selection is simply picking out those forms that can best survive in a given environment.

The critical process here is that the wide range of genetic information is significantly narrowed to retain only the desired characteristics. In technical terms we say that the 'gene pool' (ie the total amount of information carried in the DNA of a species) has been reduced by the elimination of those forms of the species which have characteristics which are undesirable.

It is the second use of the term 'evolution' which is much more contentious. In this case it is argued that by a process of random mutation of the information in DNA and natural selection of any beneficial result produced in the form of the living organism, it is possible to increase the complexity of living things. And this is not just a modest claim. The contemporary neo-Darwinian view is that random mutation and natural selection can take us, in an unplanned and undirected process, from a single cell to a human being, via all the other living things in between. This is often referred to as 'macroevolution'.

Such a breathtaking proposition, which is widely and uncritically accepted in Western culture, requires clear proof that there is a mechanism of such creative power. The reality is that the 'mountain' of evidence for evolution is almost entirely about the first type of evolution or adaptation. The evidence for the second version is flimsy in the extreme.

There is a huge inconsistency here. Microevolution necessarily involves an overall



reduction in the amount of genetic information. That the evidence for microevolution is used to prove the exact opposite – increasing the complexity of genetic information – is quite bizarre.

We now know that the genetic information carried in the DNA of every living cell is hugely complex. To suggest that such complexity can be generated by random and undirected processes is a bit like saying that computer software can be generated by letting the wind and rain blow through the laboratories where it is produced. We know that software programmes depend on computer engineers for their design, not on the vagaries of the weather!

Michael Behe, a biochemist and Professor of Biological Science at Lehigh University, Penn, USA, on p83 of his book, 'The Edge of Evolution', puts it like this:

'But, although Darwin hoped otherwise, random variation doesn't explain the most basic features of biology. It doesn't explain the elegant sophisticated molecular machinery that undergirds life. To account for that – and to account for the root and thick branches of the tree of common descent – multiple coherent genetic mutations are needed. Now that we know what sort of mutations can happen to DNA, and what random changes can produce, we can begin to do the math to find the edge of evolution with some precision. What we'll discover is something quite basic, yet heresy to Darwinists: Most mutations that build the great structures of life must have been non-random.'

Overall, ID claims that, while evolution may contain some of the elements which have produced the variety of living things, it is impossible to conceive of any process for generating the complexity of genetic information which does not involve prior intelligence and design.

And in addition to that we need to find credible explanations for the emergence of life in the first place and, in addition, how consciousness exists within our neurobiology. It is overwhelmingly likely that the data will point to design in these areas also.

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ID and creationism



What next?



The commonest charge levelled against ID is that it is just ‘Creationism in a cheap tuxedo’. So what is the connection between the two?

It is important to note that Creationism comes in several forms. Some hold that the earth was created relatively recently – say 10,000 years ago – while others maintain that the creation of the Earth happened billions of years ago. Most creationists hold that the Earth was created progressively in a series of creative acts. For example, the Big Bang, if it actually happened, might have been the original act of creation.

It also needs to be said that creationism, in its central assertion that the universe has a Creator, is a perfectly respectable and reasonable position. Indeed, it is by far the view that has dominated human thought since the beginning of time. It is, to most people who have ever lived, the most credible explanation of why anything is here.

But it is the connection between creationism and science which causes the confusion. Creationism is based, not primarily on scientific observation, though that is part of it, but on religious authority. For example, Christians derive their belief in a Creator ultimately from the teachings of the Bible. Muslims hold the same view on the basis of the teachings of the Koran. Of course, they both find confirmation of their belief in nature and science. But their starting point is essentially religious authority – a valid part of human experience nonetheless.

However, ID is not creationism. ID is derived purely from scientific observations, not from religious authority. Clearly, ID provides support for religious belief, but it does not propose it or depend on it. The criticism that ID is simply another form of Creationism is just simply wrong and arises from a confusion of religious and scientific ideas.

Anyone who scans the current media will know that, generally speaking, Intelligent Design gets a bad press. It is variously described as the end of reason, the corruption of science and the refuge of idiots. Some critics say it takes us back to the dark ages. Others claim that it is religion disguised as science or politics dressed up as philosophy. How come, you might wonder, that an idea can generate such passionate and at times intemperate criticism? Is it in the same league as racism, fascism or terrorism?

ID is an idea that is not going to go away. It has much too long a history for that. A recent Mori poll, commissioned for a BBC Horizon programme in 2006, found that only 48% of Britons think that evolution gives an adequate explanation of origins. In addition, 40% felt that Intelligent Design should be taught in high schools. More recently, a survey published by Theos, the public theology think tank, in 2009 found only 37% of the population found evolution credible, as opposed to 51% for Intelligent Design.

The strength of Intelligent Design is that it is, strictly, a position which argues solely from scientific evidence. Although ID has philosophical and religious implications, it is not based on any such presupposition.

In the growing disquiet about the scientific credibility of neo-Darwinism, Intelligent Design is destined to regain its former position of becoming the major consideration in what is, unquestionably, the most important debate of our time. It was, after all, the perception of Intelligent Design in the universe which gave rise to the development of modern science – the pursuit of understanding how a designed universe operates.

For further reading and research

Here are some books and websites you may wish to consult:

Darwin on Trial
Philip Johnson, IVP, 1991

Evolution, a Theory in Crisis
Michael Denton, Adler and Adler, 1986

Evolution under the Microscope
David Swift, Leighton, 2002

The Design Revolution
William Dembski, IVP, 2004

Debating Design
ed Dembski and Ruse, Cambridge UP, 2004

Darwin's Black Box
Michael Behe, Simon and Schuster, 1996

The Edge of Evolution
Michael Behe, Free Press, 2007

Uncommon Dissent
ed William Dembski, ISI Books, 2004

Dissent over Descent
Steve Fuller, Icon Books, 2008

The Naked Emperor
Anthony Latham, Janus Publishing, 2005

The Design of Life
Dembski and Wells, Foundation for Thought and Ethics, 2008

Signature in the Cell
Steve Meyer, Harper One, 2009

God's Undertaker
John Lennox, Lion, 2007

Explore Evolution
Meyer et al, Hill House, 2007

Science vs Religion
Steve Fuller, Polity, 2007

The Privileged Planet
Gonzalez and Richards, Regnery, 2004

Websites

www.c4id.org
www.discovery.org/csc
www.arn.org



An Introduction to Intelligent Design

Dr Alastair Noble

The Centre for Intelligent Design (c4id), set up in Britain in 2009, is committed to promoting the public understanding of Intelligent Design. The Centre arranges academic and public lectures and promotes a range of specialist and popular publications and other media.

Further details of the work of the Centre can be found at www.c4id.org.uk

