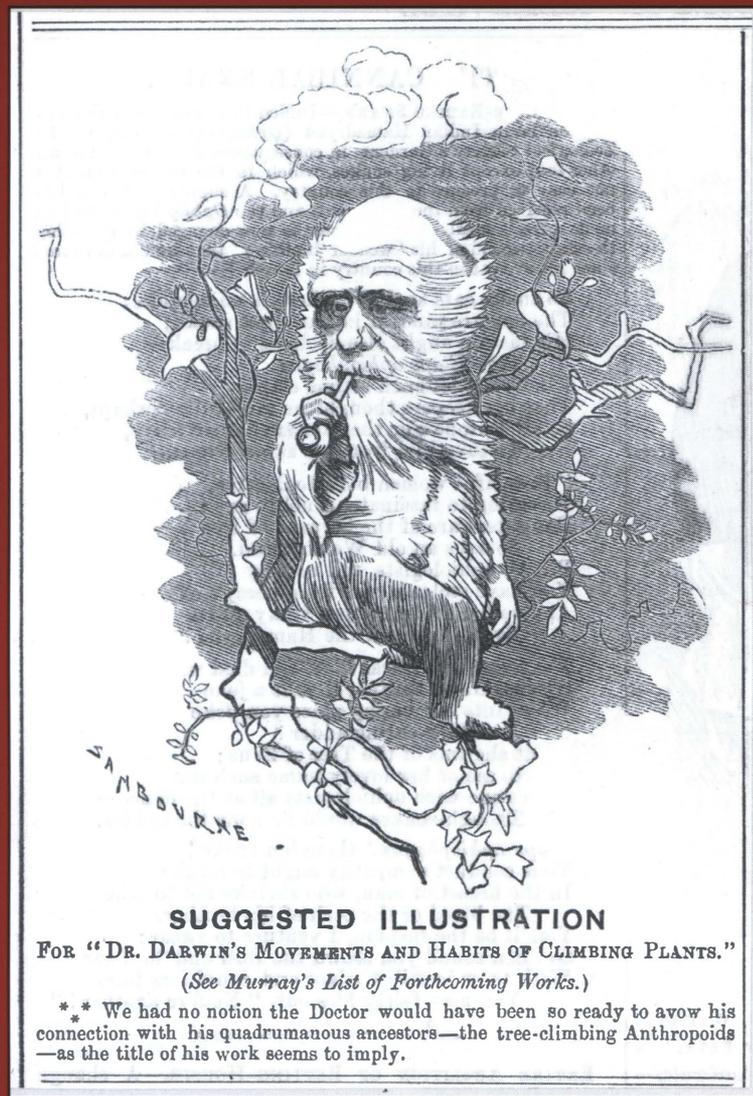


The **Skeptic**



The Evolution Controversy

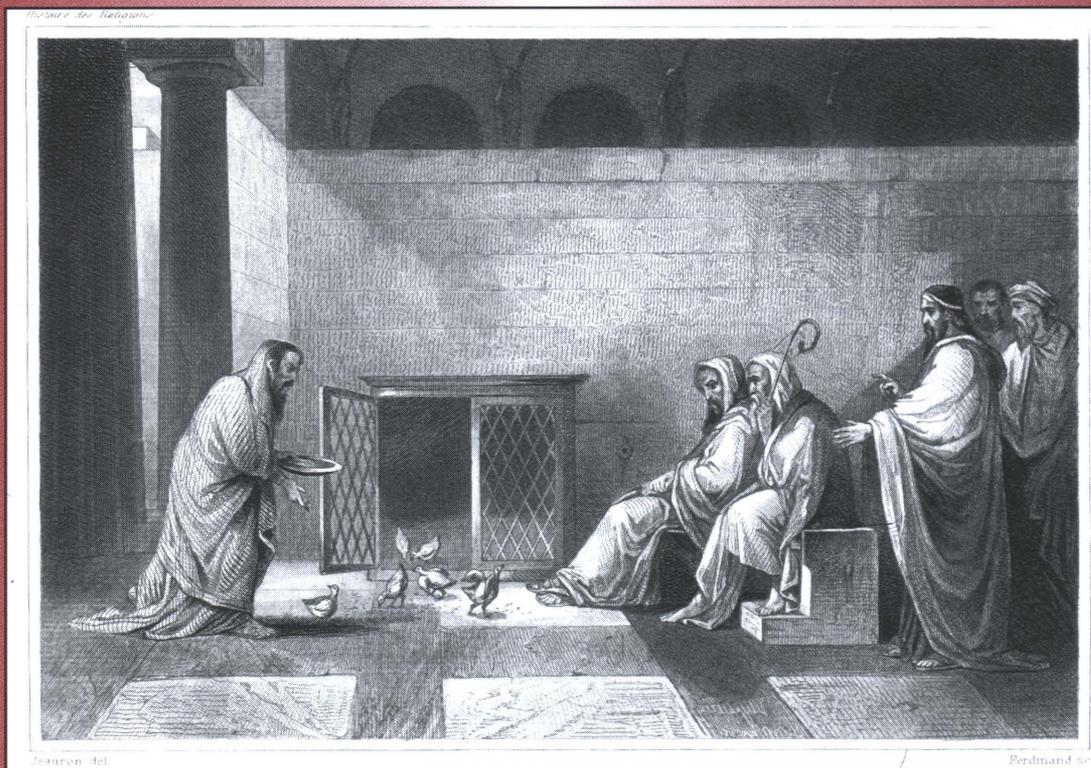
Also in this issue:

Do 17 percent of people in Britain really believe in "intelligent design"?

An open letter to the public about Young Earth Creationism

Plus: News. Book Reviews. Comment. Humour

Hilary Evans' Paranormal Picture Gallery



WHAT DO THE AUGURS SAY THE HENS SAY?

Before making any important decision, like going to war or buying a house, most Romans would call in an augur for a preview of the outcome, as indicated by the behaviour of hens or the state of a bull's entrails. Not all were so credulous, however. Cicero wondered how two augurs could meet in the street without exchanging a conspiratorial smile at the absurdity of their profession.

Hilary Evans is co-proprietor of the Mary Evans Picture Library, 59 Tranquil Vale, London SE3 OBS.



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Editorial enquiries to
**The Anomalistic Psychology
Research Unit
Department of Psychology
Goldsmiths College
New Cross, London SE14 6NW
United Kingdom**

Subscriptions/sample issues
**Mike Hutchinson
10 Crescent View
Loughton, Essex IG10 4PZ
United Kingdom**

Email: edit@skeptic.org.uk
Web: www.skeptic.org.uk
AOL Keyword: **skeptic**
Tel.: 07020 935 370
Fax: 020 7919 7873 FAO Chris French

Editors
**Victoria Hamilton
Chris French**

Book Reviews Editor
Paul Taylor

Editorial Assistance
**Wendy M Grossman
Steve Donnelly
Mark Williams**

Founding editor
Wendy M Grossman

Webmaster
Phil McKerracher

AOL Area
Liam Proven

Finance Manager
Mike Hutchinson

Skeptics in the Pub
Sid Rodrigues

Cartoons
**Donald Rooum
Tim Pearce
The Parking Lot is Full**

Special Consultant
Cyril Howard

Graphic Design
Christopher Fix / Lisa A Hutter

Illustrations
Mary Evans Picture Library

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Editorial

Victoria Hamilton and Chris French



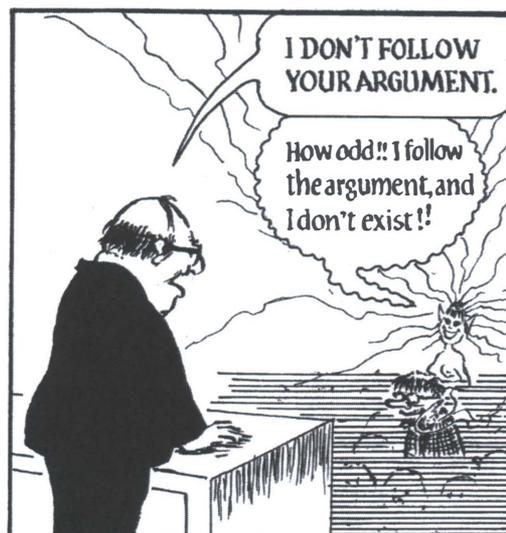
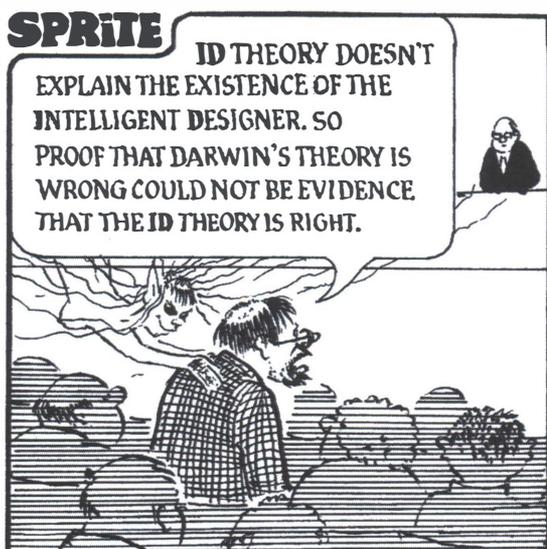
HELLO AND WELCOME to issue 20.2 of *The Skeptic*. We have an evolution theme for you in this issue. Our feature article is Nell Barrie's *The Evolution Controversy*, from which sprouts the question: How does the UK public view the theory of evolution? We do hear a lot about the debate in the USA over evolution versus creationism (or Intelligent Design). Reasonably well protected by the US Constitution, creationists have found it difficult to incorporate their ideology into the science classrooms of America, though it does appear to be an uphill battle to keep it separate from those concepts that stem from legitimate, validated scientific methodology. The first step to addressing this, surely, is recognising that agreement can't be reached if both parties are arguing from entirely separate, or contradictory, premises. ID proponents must have realised this, hence their race to come up with 'scientific' support for their ideas. We'll wait with bated breath. So what did Barrie discover along her journey to establish the British perspective on the evolution debate? Turn to page 8 to find out!

But what do we all really know about Intelligent Design? Adam Buick questions exactly this after viewing an episode of the BBC's *Horizon* series called *A War on Science*, about Intelligent Design. In *Do 17 percent of people in Britain really believe in 'intelligent design'?* Buick questions the semantics in the Mori poll, and suggests that perhaps the responses should not be taken too seriously, considering that some of the questioning could be construed as vague. Buick states that the poll

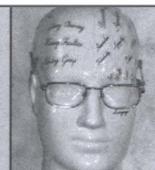
had questions framed around the origin of life, as opposed to the development of species, and without an opportunity to select an answer which would support evolution but not compromise a belief in God. However, after reading Barrie's article, it doesn't deviate too much from the sizeable minority figure we might expect would accept ID concepts and reject evolutionary ones. Where some may rely on science as a reliable source of evidence against the concept of intelligent design, the other half will argue that creationism and intelligent design might be the very reason to argue against evolution. We don't think this debate is going anywhere very soon.

Julian Kirchherr, a German student, travelled to America as an exchange student last year. In *An Open Letter to the Public about Young Earth Creationism versus Science and Tolerance*, Kirchherr enthusiastically describes his dismay at witnessing the stronghold that Creationism has over some residents in Colorado Springs. Kirchherr's incredulous thinking is probably influenced by his parents' occupations (both biologists), and is unfaltering even in the face of popular and pervasive beliefs held by his peers at school in Colorado. Motivated, or 'obligated', as he puts it, to share his abhorrence of Young Earth Creationism (YEC), Kirchherr has provided some worrying anecdotes of just some of the things being preached by the YECs.

We hope you enjoy all of our regular columns, letters pages, cartoons, and book reviews. With best wishes, Victoria and Chris.



Hits and Misses



Cryptic

Computer security professor Matt Blaze, a mathematician and cryptography expert at the University of Pennsylvania, claimed James Randi's million-dollar prize in January. In a posting on his blog (at www.crypto.com), Blaze explained the means by which he and his colleague Jutta Degener successfully visualized the contents of a box Randi had created as part of a remote viewing experiment. In creating such a challenge, Randi's foundation, Blaze explained, faces the problem of both hiding the contents of the box and assuring psychics and would-be challengers that the test is fair. Randi solved this problem by publishing an encoded description of the box's contents on the Foundation Web site (www.randi.org): It is:

0679
4388
66/27
5 -14



After examining this code for a while, Blaze and Degener thought the first ten digits could be the ISBN of a published book. Looking it up, they discovered those digits are the ISBN of the 1995 edition of the *Random House Webster's College Dictionary*. In the library copy they eventually found, the 14th entry from the bottom on page 275 is the definition for compact disc. Blaze and Degener therefore concluded that's what the box contained, correctly.

Blaze noted a couple of further points. Quite apart

from the fact that they were able to crack the published code, because the rules for creating the code were not specified it would still be possible for Randi to cheat by claiming the code had a different meaning than the one the psychic divined. Second, that cryptographically encoding the string wouldn't help, in part because the workings of cryptography are too complicated for most people to understand.

In the meantime, Blaze decided to forego collecting the million dollars.

For sceptics, though, the story is a bit alarming. If it's this difficult for Randi, with all his years of experience, to devise a test that can't be cracked and blocks cheating on both sides, what hope is there for the rest of us?

Chimps get the point

In late February the journal *Current Biology* ran a paper by Jill D. Pruetz and Paco Bertolani from the Department of Anthropology at Iowa State University reporting that chimpanzees have been observed using tools to hunt other animals in Senegal. The chimps were seen identifying appropriate tree branches, breaking them off, removing the bark, and sharpening the tips with their teeth. The paper includes a picture of one of these spear-like tools; it measures about 28 inches long. Overall, chimps have been spotted using tools in over 25 different contexts: opening hard nuts, trying to extract bush babies from cavities in branches or tree trunks (one of the uses for those spears). Curiously, although hunting is a predominantly male activity among chimpanzees, tools are more commonly used by females and immature males. (Maybe not using them is the chimp version of being macho.)

So far, no one has reported finding a large, black monolith nearby playing *Thus Spake Zarathustra*.

The 80 percent hypothesis

The indefatigable Sid Rodrigues (thanks, Sid!) who maintains *The Skeptic's* news blog (ukskeptic.livejournal.com) recently included a pointer to a story from *Continuity Central* questioning the oft-repeated statistic that "80 percent of businesses affected by a major incident close within 18 months". Where, the writer, Mel Gosling, asked, does this statistic come from? Everyone quotes it as true, but no one cites a source. Vendors do, however, find it useful for frightening businesses into developing continuity plans (always a good idea in any case). We have quoted it ourselves. We have also tried ourselves to find a source – and failed.

Gosling cited three examples suggesting it's not true. One: foot and mouth disease. No contingency plans among farmers and small rural businesses; after 18 months less than 10 percent folded. Two: Carlisle floods in 2005. Only 90 percent contingency plans; less than 20 percent closed. Three: the 1998 Omagh bombing. Probably no contingency plans; majority of businesses still trading in 2006.

We would be interested in hearing from anyone who can cite a verifiable source for this statistic.

Is there a doctor in the house?

The Advertising Standards Authority ruled in February that Channel 4 personality Gillian McKeith may not continue to call herself "Dr" after a complaint was submitted by a regular reader of Ben Goldacre's *BadScience.net*. Goldacre, who saw a draft of the adjudication – it went unpublished when McKeith agreed to stop using the title in her advertising – notes that McKeith's claimed qualification came from an unaccredited American correspondence course. McKeith was also recently censured by the Medicines and Healthcare Products Regulatory Agency for selling herbal pills she claimed promoted sexual satisfaction.

Duct tape

There's an American saying that goes like this: if it doesn't move and it should, spray it with WD-40; if it moves and it shouldn't, use duct tape. Duct tape (also known, in the film industry, as "gaffer's tape") is the cure-all for everything from rattling cars to terrorist activity. We had not, however, heard that in 2002 a small study suggested that duct tape was also the way to get rid of warts. Apparently, you're supposed to apply it to the affected area and leave it on for a week, then soak the area and rub it with pumice stone.

Now it turns out that duct tape isn't as effective at this as they thought it was. *The New York Times* recently reported that a newer study that examined the data from 60 studies looking at different removal methods concluded that the most effective method is applying salicylic acid, which works about 73 percent of the time. The duct tape treatment only works 16 percent of the time, according to the latest tests.

It's probably better this way. Now you can save your duct tape for the really important things – like eliminating rattles and squeaks that otherwise might make you think you were being haunted.

Hot air

On February 1, a group of around 15 glowing lights were seen travelling southwards over the Archway roundabout. The *Hornsey and Crouch End Journal* posted on its Web site a video of the lights, which are being studied by the Islington-based UFOlogy and Supernatural Studies group. A few weeks later, the paper reported that Camden Council has admitted that the lights were sky lanterns launched at a private memorial service for a young



Chinese woman. These are mini hot air balloons that cost about £10 for six and can rise as high as 1,000 metres, according to the paper. Readers were divided as to the cause of the lights.

We have to say: we didn't know about mini hot air balloons either. But we're willing to first say we don't know what caused it and second to accept a perfectly plausible natural explanation. When it comes to things in the sky any non-expert can be easily impressed – as you'll see if you read some of the interpretations posted by visitors to the paper's Web site who have viewed the video. Go look for yourself (www.hornseyjournal.co.uk).

Randi update

We paid a personal visit to James Randi's Educational Foundation in December, and can report that he is recovering well from his heart attack and is gradually getting back to a full schedule.

Skeptic at large . . .

Wendy M Grossman



Experimental Knowledge

“Your truth or mine?” asks Stacy Schiff in the March 7 issue of *The New Yorker* as a tidy way of finishing off a lengthy and well-written article about *Wikipedia*, the collaborative Web-based encyclopaedia that has become one of the Net’s leading sources of information. The occasion was the moment when *Wikipedia* had passed the one million-article mark.

And then Schiff found herself in the middle of a controversy. One of the sources she quoted in the piece, a *Wikipedia* administrator, editor, and contributor who styles himself “Essjay”, turned out to have lied about his credentials. Essjay, who has contributed to some 16,000 *Wikipedia* articles, had claimed a PhD in theology, a degree in canon law, and a teaching position at a private college. He also claimed to spend 14 hours a day on the *Wikipedia* site. The latter was probably true. The former, Essjay revealed later, was not: he identifies himself now as 24-year-old Ryan Jordan, with no advanced degrees or teaching experience.

This all reminds me of the Shirley episode of last year, in which a comedian invited a bunch of sceptics to a lab to “test a psychic”. We got all geared up to look for the ordinary kind of trickery: sneaking a peek at the drawing in advance, cold reading, manipulation. None of us were primed to ask whether the coiffed, white-suited, aggressive, hostile supposed psychic we were dealing with was actually someone who made a living out of his psychic claims. (Although: Tony Youens observed shortly after leaving Shirley’s presence, “If that man is a psychic, I’m a lion-tamer.”)

Similarly, you check up on someone’s credentials when they’re applying for a job, but if you’re a journalist it’s common to assume that someone who is respected for his long history of work on a particular subject is who he says he is. As is the way with these things, Jordan’s credential inflation seems to have been less controversial than the discovery that *Wikipedia* founder Jimmy Wales was so little bothered by the incident; that he gave Jordan a job at Wikia, *Wikipedia*’s for-profit sibling company.

Time was – and not so long ago – when people were astonished if anything accurate was found on the Web. Now, people complain that *Wikipedia* is unreliable.

There are some standard answers to this complaint. It’s free. It’s compiled by volunteers; anyone can edit or contribute to articles, although there are administrators who monitor changes for abuse. Everything else has errors, too; in a face-off compiled by *Nature* last year, *Encyclopaedia Britannica* had three errors for every four in *Wikipedia*,

which doesn’t look all that good considering that *Britannica* is written by paid experts and has had more than a century to perfect its editorial practice. *Britannica* is the result of deliberate design and planning; *Wikipedia* is an experiment.

Wikipedia is indeed young. Founded in 2001, in less than six years it has become the Internet’s favourite go-to source for background information. It has shown off both the best and worst kind of collaborative instincts. It is, like many Net projects, a true meritocracy in that over time only the best information is supposed to survive. Many genuine experts do contribute to *Wikipedia*, particularly on scientific and technical subjects, the special province of so many of the Net’s active users even now. But – and this is why the Ryan Jordan affair is so mysterious – you do not need to have an advanced degree to write about even the most abstruse subjects. You can be the dog in the famous cartoon or a 14-year-old in a back bedroom; if you have something valuable to contribute in the way of arcane knowledge *Wikipedia* will accept it. Next time you complain that kids today never read any more, remember that some of them write *Wikipedia* articles.

The general belief among Wikipedians is, like the general belief among the programmers who contribute to open-source software, that over time errors will be winnowed out. That rather utopian view works in open-source software, where there is generally a project leader who decides whether to accept a given new bit of coding as part of the official release or not. It has come to work less well as *Wikipedia* has gotten bigger and better-known. According to the project’s rules, people are not supposed to edit their own entries; they are certainly not supposed to spin them to their own benefit. Yet of course we’ve seen this sort of thing happening, particularly in relation to politicians’ entries (though of course abuse is not limited to those). Meanwhile, someone could write a book – if they’re not working on one already – about the microcosm of *Wikipedia*’s editorial debates.

So: your truth or mine? It seems to me that the problem is not *Wikipedia*, and the question of whether it has unreliable articles (and editors) is kind of pointless. All human endeavour has errors. The problem is that humans want a single source of truth. But the fact that such a thing does not exist is the reason journalists have always been told to get *two* sources.

P.S.: A big thank you to Nick Pullar, who is retiring as convener of *Skeptics in the Pub* after five successful years. Good luck to him and his family in their new lives in Hungary.

▶ **Wendy M Grossman** is founder and former editor (twice) of *The Skeptic*, and author of *From Anarchy to Power: the Net Comes of Age*. Wendy M Grossman also writes for *Scientific American*. Her web site is at <http://www.pelicancrossing.net>.

The Evolution Controversy

Nell Barrie reflects upon the controversy that just will not go away...

THE THEORY OF evolution is one of the most famous scientific theories of all time. But despite being almost 150 years old, Charles Darwin's idea is still making headlines. This controversial theory seems to bring science and society into conflict in a way that few ideas can claim to do. It has entered the public consciousness and become as important in culture as it is in biology.

But the way it is treated in these two spheres could not be more different. Among scientists evolution is almost universally accepted as being the best theory we have to explain the variety of life on Earth. But in the public sphere, opinion is divided. Is evolution a well-supported scientific theory that should form the foundations of biology? Or is it scientific dogma, put up on a pedestal and accepted without question, both morally and spiritually offensive? I have always been fascinated by this dichotomy. How can such a hugely important scientific concept still be disputed nearly 150 years after its birth?

It's not just an academic question. Recent legal wranglings in the US show that evolution and its religious opponent, intelligent design (ID), have escaped from the intellectual and spiritual debates to which they were once confined. Both are on the public stage and the controversy seems to be making its way into the UK. In 2006, an organisation called Truth in Science sent out educational packs to every school in the UK, containing information and a video presenting "alternative views" to evolution. Truth in Science say that "we consider that it is time for students to be permitted to adopt a critical approach to Darwinism in science lessons. They should be given fair and accurate presentations of alternative views". They point out that an Ipsos MORI poll carried out in 2006 for the BBC's *Horizon* programme showed that 41% of those polled thought intelligent design should be taught in science classes (although the UK public's understanding of what ID is may be somewhat flawed).

Many scientists are outraged by this. According to evolutionary biologists Richard Dawkins and Jerry Coyne, intelligent design "no more belongs in a biology class than alchemy belongs in a chemistry class, phlogiston in a physics class or the stork theory in a sex education class". It's not science, they say, because "there simply isn't any ID research to publish". This was one of the reasons why ID lost its recent court battle to be taught in schools in the US. It now appears that the supporters of intelligent design are busy addressing this failing. The Biologic Institute in Seattle is a new centre for "lab science in intelligent design", according to one of its directors, who left the board after giving this quote to *New Scientist* magazine. Whatever was happening behind the scenes, it seems the ID movement

has realised that to contend with evolution it needs to present itself as a genuine scientific theory.

In 2005, the final year of my biology degree, the ID controversy was gathering pace in the US. However there seemed to be little mention of ID in the UK. I was intrigued to discover that a few of my fellow biology students rejected the idea of evolution, and I decided to investigate further. At the time hardly any research into attitudes towards evolution had been done in the UK. My belief was that the religious implications of the theory of evolution were the reason for its controversial nature. But in order to find out why evolution is still controversial today, I needed to understand the history of this most famous idea.

In this way Darwin's idea was perceived by many as a direct challenge to God and religion

Evolution: the early years

According to Stephen Jay Gould, "no scientific revolution can match Darwin's discovery in degree of upset to our previous comforts and certainties" (p.xi), and Mark Ridley expresses a similar sentiment: "few areas – perhaps no area – of human thought has been unaffected by the theory of evolution" (p. 383). This may sound exaggerated, but a quick look at the history of the theory of evolution will show just how far-reaching this theory really is.

Darwin's idea boils down to a logical certainty: if organisms vary, and if they produce too many offspring for all to survive, then the "fitter" individuals will tend to survive and reproduce, passing on their beneficial characteristics (like sharper claws, better eyesight) to their offspring. This is natural selection. Over time natural selection will change organisms – and Darwin believed this process of "descent with modification" could even produce new species.

Darwin's idea was not new. Scientists had long been aware of how organisms could be grouped into hierarchies based on their similarities. Darwin realised that his theory could explain this: if species were related by descent, there would be an obvious reason for their similarities. But the prevailing belief at the time was that the amazing adaptations of organisms were evidence of

God's design. Although the "argument from design" had been well known for centuries, there was opposition to it long before Darwin published *The Origin of Species* in 1859. The philosopher David Hume debates the argument from design in *Dialogues Concerning Natural Religion*, in which one character, Cleanthes, asserts that "the curious adapting of means to ends, throughout all nature, resembles, exactly, though it much exceeds, the productions of human contrivance" (part II). Cleanthes concludes that a designer must exist, and must be possessed of greater abilities than humans. But another character, Philo, disagrees, asking how this designer was created. "We are obliged to mount higher, in order to find the cause of this cause, which you had assigned as satisfactory and conclusive" (part IV, cited in Hume, 1779).

Darwin's theory turned the argument from design on its head. Natural selection became the "blind watchmaker", producing amazing designs without foresight or intelligence. In this way Darwin's idea was perceived by many as a direct challenge to God and religion.

Darwin was well aware of how controversial his theory would seem. In a letter to his friend the botanist Joseph Hooker, he described the idea of suggesting that species could change through evolution as "like confessing a murder" (p. 384, 1905). Many reviewers saw the *Origin* as blasphemous, but at the time of its publication there were already widespread doubts as to the truth of contemporary religious beliefs. The literal interpretation of the Bible had already been challenged by geological discoveries that showed how the landscapes of the world had changed over time, and in fact the work of one famous geologist, Charles Lyell, had inspired Darwin himself during his voyage on the *Beagle*.

Darwin had also anticipated the other main objection to his theory: its implications for the origin of humans. In 1844, fifteen years before the publication of the *Origin*, the Scottish journalist Robert Chambers had anonymously published *Vestiges of the Natural History of Creation*. In the book, Chambers suggested that the creation of life was a result of natural laws. He had noticed the progression from simple to complex in the fossil record, and suggested that some kind of evolution might be taking place, meaning that humans were descended from "lower" animals. The book sold tens of thousands of copies, but critics thought religion and morality were threatened by this idea.

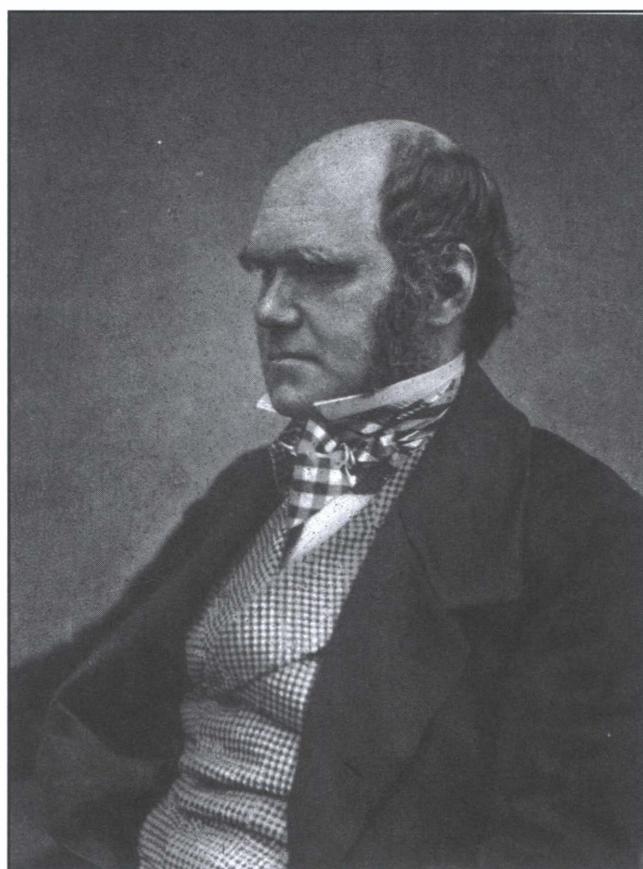
So Darwin was cautious in alluding to humans in *Origin*, saying only that "light will be thrown on the origin of man and his history" (p. 458, 1859). Despite this, it was obvious to many readers what the theory implied for mankind. Perhaps humans had not been created in the image of God, apart from all other animals. If Darwin was right, humans were just a random event in a universe ruled by natural laws. For many this was an abhorrent and blasphemous idea.

The scientific truth of Darwin's theory had become widely accepted by the beginning of the 20th century.

Evolution was a beautifully neat explanation of many aspects of biology – the progression from simple to complex in the fossil record, and the way livestock had changed through selective breeding, for example. But the social and religious controversy was not so quick to fade. Even in the 21st century, the arguments continue.

The theory comes of age

Nowhere are the opponents of evolution more vocal than in America. An article published in the journal *Evolution* in 2001 explained why: "the ongoing creation-evolution controversy has roots in three aspects of American society: widespread scientific illiteracy, a core value of fairness in public discourse, and the prevalence of religious values in American politics" (Antolin &

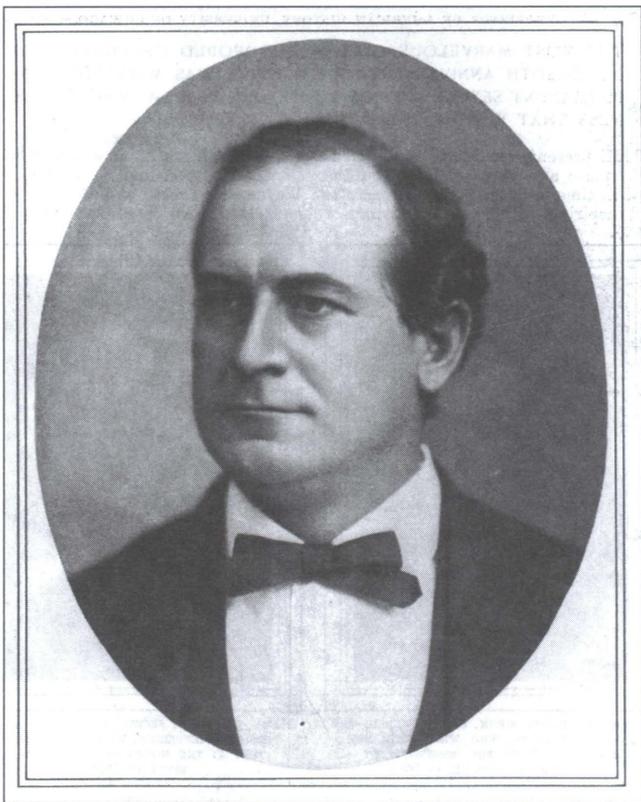


Charles Darwin (1809-1882): His theory of evolution still arouses controversy

Herbers, 2001, p. 2379). Many creationists have argued that it is "only fair" to teach both sides of the debate in American schools.

Creationism, the religious opponent of evolution, has a long history in America. Most scientists do not see it as a scientific theory, because it assumes the existence of a supernatural being. The American Christian fundamentalist statesman William Jennings Bryan wrote in 1909 that "the Darwinian theory represents man as reaching his present perfection by the operation of the law of hate – the merciless law by which the strong crowd out and kill off the weak". This is an often-repeated view of how Darwinism affects morality.

Bryan took it upon himself to bring about a ban on teaching evolution in US schools. He succeeded first in Tennessee in 1925, with this ban leading to the famous Scopes “monkey” trial. The law against teaching evolution remained in Tennessee for more than forty years, finally being overturned in 1968 by the Supreme Court on the grounds that it advanced a religious agenda. This resulted in equal-time laws, and schools taught both “creation science” and evolution. In 1987 the Supreme Court ruled that the equal-time laws “served no secular purpose”, and the teaching of creationism was banned, because it violates the Establishment Clause of the US Constitution, which prevents governments from estab-



William Jennings Bryan (1860-1925) wrote in 1909 that “the Darwinian theory represents man as reaching his present perfection by the operation of the law of hate – the merciless law by which the strong crowd out and kill off the weak”

lishing or restraining religion.

After the 1987 ban, the creationist movement rebranded their theories as intelligent design. Intelligent design (ID) is a secular version of creationism, stripped of all mention of God and the Bible. According to ID, some biochemical systems are “irreducibly complex”, meaning that none of the possible evolutionary intermediates could have functioned. By this logic, these systems must be the result of the actions of an intelligent designer, and could not have been produced by the blind process of evolution.

Despite attempts to legitimise creationism by repackaging it as ID, a recent court case brought by parents against the board of a school in Dover, Pennsylvania, resulted in defeat for the teachers supporting intelligent design. The parents argued that

teaching intelligent design was the same as teaching creationism, and the judge agreed, saying that ID “cannot uncouple itself from its creationist, and thus religious, antecedents”.

Meanwhile, a more subtle attack against evolution was emerging. Anti-evolution books such as Phillip Johnson’s *Darwin on Trial* and Michael Denton’s *Evolution: A Theory in Crisis* argue that Darwinism has become dogma. The authors believe the theory of evolution has become a paradigm, a concept described by Thomas Kuhn in his book *The Structure of Scientific Revolutions*. Kuhn believed that science progressed through a series of revolutions, during which the old ideas of the past were thrown off and replaced with a new set of concepts, often completely incompatible with what had gone before. Paradigms are a framework in which the work of science is practised, but Kuhn makes the point that “no part of the aim of normal science is to call forth new sorts of phenomena; indeed those that will not fit the box are often not seen at all” (p. 24, 1962). Thus some opposers of evolution feel that contradictory evidence is ignored. Most scientists would counter this by arguing that there is very little, if any, evidence against evolution.

Anti-evolution feeling seemed to be spreading, and I wanted to find out more about the situation in the UK. Was the situation the same as in the US, with a minority against the religious implications of the theory? Or was there some other reason why my fellow students were rebelling against this cornerstone of biology?

Controversy in the UK?

When I started to research the evolution controversy, the only study I could discover was one conducted at the University of Glasgow. It was undertaken by J. Downie and N. Barron to examine the attitudes of Scottish first year biology and medical students to the teaching of evolutionary biology. They found that over a 12-year period, 4-11% of the first year biology class stated that they rejected the occurrence of biological evolution. Only one year of medical students was surveyed, with 10% rejecting evolution. Downie and Barron found that:

acceptance of a literal religious creation account was the principal reason for rejecting evolution, whereas those accepting did so more on grounds of the lack of good alternative explanations, than on the strength of the evidence. Rejection of evolution correlated strongly with religious belief – mainly various sorts of Christianity or Islam.

The biology students had just taken a course on evolution, so it is interesting that only 35% of those who accepted evolution did so because they felt there was good evidence for it. 86% of rejectors were religious, compared to 57% of acceptors. Downie and Barron found that evolution acceptors were significantly less

likely to have a religious belief than the group as a whole, while evolution rejectors were significantly more likely to have a religious belief than the group as a whole.

Downie and Barron were concerned by the rejection of evolution among science students saying, “we should ask what rejection of evolution implies about these young people as potential scientists in any sphere”. They also noted that “rejectors overwhelmingly, especially the medical students, cited acceptance of the literal truth of a religious creation account as the principal reason, and many were prepared to say that no evidence could persuade them that evolution has occurred”. They commented that “this is hardly compatible with the open-mindedness expected of a prospective scientist”. Regarding educational implications, they noted “it is an unusual situation in science education for a part of the subject, viewed by professionals in the field as a fundamental cornerstone, to not be accepted as true by a group of students, and for reasons which are not accessible to normal scientific argument”.

And what about if ID researchers begin to publish in scientific journals? While this is unlikely to win over many scientists, it will make the definition of ID as “not science” less easy to defend

I decided to look at the evolution controversy among Oxford undergraduates. I designed my own questionnaire and analysed the results. I polled 77 undergraduates from various courses, and asked them to indicate whether they accepted or rejected the theory of evolution, and to give reasons for their choice. To assess whether respondents accepted or rejected evolution, I asked them to indicate whether they agreed or disagreed with the following statement: “Evolution by natural selection offers a good explanation of the variety of all life on Earth.”

Seventy students agreed with my statement about evolution, and seven students (9%) disagreed. One respondent outlined the problems that the theory of evolution raises with respect to morality, saying that “if evolution ‘created’ the world and its diversity, how can there be absolute right or wrong?”. Others disagreed for different reasons. One said that she agreed with evolution except for the theory that man is descended from apelike ancestors; another said that she did not think

the theory was falsifiable. 29 respondents who agreed with the theory of evolution were also religious, showing that for some there does not appear to be a conflict between the two.

Summary statistics

	Reject evolution	Accept evolution	Total
Religious	6	29	35
Non-religious	0	22	22
n/a or agnostic	1	19	20
Total	7	70	77

Out of the 70 who agreed with the theory, 41% were religious, 31% were not religious, and 27% did not specify if they were religious or not. 86% of rejectors described themselves as Christian, and 57% disagreed with the theory for religious reasons. So from these results we can see that by a slight majority most of those who disagreed with the theory of evolution did so for religious reasons. 86% of students who rejected evolution were religious, compared to 41% of those who accepted it. 17% of religious students disagreed with my statement.

I analysed these results statistically, with interesting and sometimes surprising outcomes. Firstly, as I predicted, religious students were more likely to reject evolution than non-religious students. I also looked at the difference between scientists and non-scientists, with the interesting result that scientists are no more likely to accept the theory than non-scientists. I had expected scientists to be better acquainted with the theory of evolution and the evidence for it, and thus more likely to accept it. Finally I looked at biologists versus non-biologists, and once again discovered that biology students were no more likely to accept evolution than non-biologists. The proportion of rejectors were exactly the same, 10%, for biologists and non-biologists.

These results raise some interesting questions. Teaching students about evolution seems to make little difference to how many reject the theory. It seems, as Downie and Barron put it, that a low but relatively constant minority of students reject evolution for “reasons which are not accessible to normal scientific argument”. What does this mean for science education and future scientists in the UK? Currently UK schools and universities do not teach intelligent design, but could this change in the future if public opinion sways in favour of “teaching the controversy”? The *Horizon* survey mentioned above found that 41% thought ID should be taught in UK schools. And what about if ID researchers begin to publish in scientific journals? While this is unlikely to win over many scientists, it will make the definition of ID as “not science” less easy to defend.

The evolution controversy is a complex one: it is not a matter of debate among scientists, but an issue that encompasses science, religion, and morals. It is highly polarised, with most scientists denying that a “debate” is even relevant. They would argue that evolution is an almost unassailable scientific theory that has stood the

test of time. For others, this is precisely the problem. Evolution as an over-arching concept is almost never questioned by scientists – has it become dogma, tantamount to a religious belief within the scientific community? Should we be more open to ideas that go against evolution?



John Thomas Scopes (1900-1970), American schoolteacher prosecuted for teaching evolution in Dayton, Tennessee in 1925.

Sociologists of science would certainly argue that this controversy could not be solved by an appeal to science. Evolution is just as much a cultural phenomenon as a scientific one. Those who subscribe to the view of science as being socially constructed, as much a product of the society in which it emerges as it is the conclusion of rational experimentation, would argue that no scientific theory is completely rational. Constructivists believe that theories in science are accepted or rejected in large part because of social causes – and this is certainly something that can be observed in the results both of

Downie and Barron's and my own survey. Those who rejected evolution usually did so not because they did not think there was enough evidence, but because it conflicted with their religious beliefs. Is this a legitimate way to assess a scientific theory? Or is it religious fanaticism gone too far? Whatever the answer, the fact remains that many scientists are religious and have little difficulty squaring their religious beliefs with their scientific ones.

But evolution is not only controversial because of its religious implications. Because the theory seems simple, deceptively so, I believe that many feel more qualified to question it than they would a more complicated and obscure scientific theory, such as string theory. Perhaps this is why, in the words of Daniel Dennett, "Darwinism has always had the unfortunate power to attract the most unwelcome enthusiasts" (p. 264). This idea is supported by the fact that many opponents of

Whatever the answer, the fact remains that many scientists are religious and have little difficulty squaring their religious beliefs with their scientific ones

evolution are not scientists themselves, and also by the fact that few respondents in Downie and Barron's survey were prepared to say that they accepted the theory because it is what "scientists currently believe" (10% of acceptors). Similarly in my own survey only two out of 70 acceptors (approx 3%) gave this reason alone. Clearly people want to make up their own minds about this issue.

The theory of evolution is fascinating because, to paraphrase Darwin, it has shed light on man and his origins. I believe that evolution is the best theory we have to explain the variety of life on Earth, but at the same time it raises huge questions about morality and philosophy. It is a prime example of where science and society overlap, and its path through history proves that science is just as much a human endeavour as it is a rational quest for the truth. At a time when religious beliefs have become increasingly controversial and politicised, it is worth remembering that scientists do not stand apart from politics and religion. Evolution and intelligent design will continue their battle for hearts and minds, in what is not really a war of science against religion, but a conflict of rhetoric.

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Nell Barrie works at the Dana Centre, part of the Science Museum. In her spare time she loves writing about science, and is studying for an MSc in Science Communication at Imperial College

THE PARKING LOT IS FULL

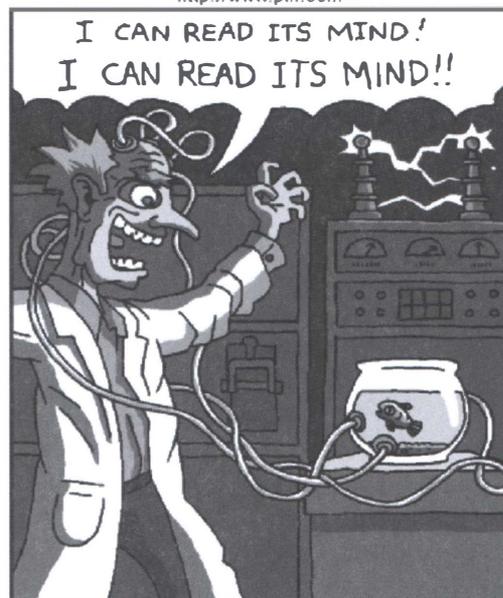
by Jack McLaren and Pat Spacek

<http://www.plif.com>

Brad Palmer once thought of his ESPenis as a miracle, but as time wore on, it became clear that the application of its psychic powers was actually quite limited.

THE PARKING LOT IS FULL

by Jack McLaren and Pat Spacek

<http://www.plif.com>

In 1953, eminent scientist Viktor Von Klaus managed to stimulate telepathy in himself. Tragically, Dr. Von Klaus went insane soon after and drowned while attempting to breathe underwater. (The goldfish went on to win the Nobel Prize for Physics.)

Skeptical Stats

1. Percentage of Kellogg's Frosties sold that are eaten by men over 18: **65**
2. Percentage of the UK working age population that is disabled: **20**
3. Number of her children that Ada Mason, who died Britain's oldest woman at 111 in February 2007, outlived: **5 out of 5**
4. Average number of deaths in Britain annually that are attributable to vending machines: **12**
5. Profits made, per second, by Tesco supermarkets: **£77**
6. In January 2007, number of Papua New Guinea women tortured into confessing they were witches and then murdered: **4**
7. Number of spybots embedded in the official Web site for the 2007 Superbowl: **1**
8. Number of different types of tools made by chimpanzees observed in Senegal: **26**
9. According to a recent study from the Wrexham Maelor Hospital, number of women in Britain ever sexually assaulted after their drinks were spiked with Rohypnol or GHB: **none**
10. Annual income received by the Howard de Walden Estate from its 92 acres of real estate in Marylebone, including Harley Street, from which the Estate has banned abortions and cosmetic surgery: **£47 million**
11. Percentage differential between men's and women's prize money on the pro tennis tours despite Wimbledon's move to parity: **22**
12. Number of people registered for surveillance in the first few years of the US National Security Entry-Exit Registration System created after the 2001 attacks: **80,000**
13. Number of those investigated under NSEERS who were detained and/or sent for deportation hearings: **more than 13,000**
14. Date when MIT Media Lab head Nicholas Negroponte predicted the Internet would have one billion users: **by the end of the 20th century**
15. Date when the Internet actually had a billion users: **late 2005**
16. Number of tapes of angels singing placed online by Florida retired Air Force officer Jim Bramlett: **4**
17. Number of UFO sightings added to an online database run by police officers over the last five years: **more than 200**
18. Amount of the Challenge Prize offered by Sir Richard Branson to anyone who can come up with a way of removing one billion tonnes of carbon per year from the atmosphere: **\$25 million**
19. Cost of equipment including an infrared laser thermometer used by Alabama's South-Eastern Paranormal Society to detect cold spots left by ghosts: **\$2,100**
20. Number of children in China orphaned by AIDS: **75,000**
21. Number of former US vice-presidents who have won an Oscar: **1**
22. Year in which swallowing live goldfish was a fad: **1939**
23. The record number of goldfish swallowed: **300**
24. Cost of the LawnBott Evolution, which can mow up to 33,000 square feet of lawn on a single battery charge: **\$2,500**
25. Annual cost, per capita, of the Queen (or a minute's attendance at the World Cup England versus Portugal game), in 2006: **62p**

Sources

1 Kellogg (quoted in *The Guardian*); 2 Disability Rights Commission 2006 briefing; 3 *Guardian*; 4 www.cherwell.org; 5 *Evening Standard*; 6 CNN 7 *The Register*; 8 *Current Biology*; 9 *Evening Standard*; 10 BBC; 11 *Daily Tennis*; 12,13 *Illusions of Security*, by Maureen Webb; 14 personal interview; 15 Jakob Nielsen's Alertbox; 16. www.choicesforliving.com; 17 *News Shopper*; 18 www.virginearth.com; 19 *Times Daily*; 20 *The Blood of Yingzhou District*; 21 Academy Awards ceremony 2007; 22, 23 *The Worst Case Scenario Almanac - History*; 24 *Business Week*; 25 the Queen's accountants (via the *Guardian*)

Both *Hits & Misses* and *Skeptical Stats* depend heavily on reader contributions of clippings, story leads, and odd statistics. Please send contributions to news@skeptic.org.uk or via post to the address on the masthead (p. 3).

Skeptical Stats is compiled by **Wendy M Grossman**.

An Open Letter to the Public about Young Earth Creationism

Julian W. Kirchherr, a German exchange student in the USA, battles the ideology of Young Earth Creationism

THE UNITED STATES of America, I have always imagined as a country of tolerance, justice and progressiveness. My name is Julian Kirchherr, I am sixteen years old, and I have been living for over nine months now in Colorado Springs as a foreign exchange student from Germany. As a son of two biology teachers and a citizen of the quite liberal heart of Europe, I was stunned when I realized the rapid dispersion of a new ultra-right life style, a new extreme right ideology in this area.

The beautiful Colorado Springs is confronted with an attack of ultra-conservative churches attempting to convince educated 21st century Americans of their ridiculously abstruse beliefs they call “scientifically proven”. This is nothing but pseudo-knowledge exercised as a tactic to verify and sell depressingly narrow-minded and fanatic opinions.

You might not know exactly what Young Earth Creationism is all about. Maybe you have read about people who believe the theory of evolution should not be taught in school anymore. You probably, and hopefully, shook your head upon hearing about Creationism.

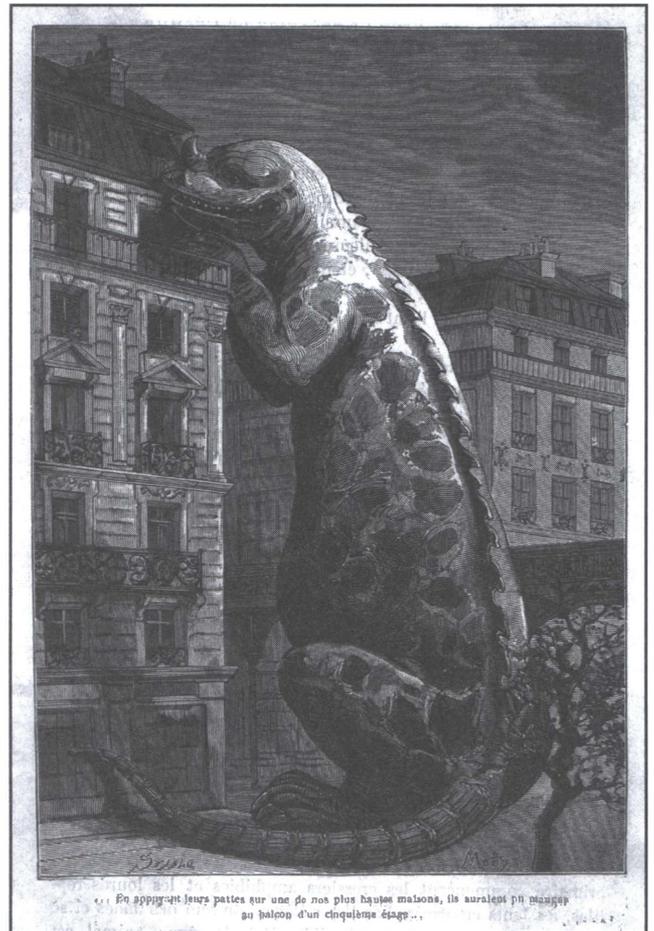
Archbishop James Ussher attempted to solve the mystery about the real age of earth by adding all the generations of the Bible together

Allow me to refresh your knowledge about this movement with some more than interesting and of course “scientifically proven” rhetorical questions: Did you know that the earth is not older than six thousand years? Did you know that lions used to be vegetarians and soon they will be again? Did you know that fossils are all around the world just because of the Great Flood? Did you know that dinosaurs still exist? Did you know that the theory of evolution caused abortion and homosexuality, lawlessness, immorality, impurity, euthanasia, humanism and racism? And last but not least, did you know that evolution is a religion?

The Young Earth Creationists, especially strong in Colorado Springs, attempt to base all their beliefs on the Bible. They take the word of God as literal; at least this is what they tell us. They believe that there are no symbols in this book, everything happened just as it is written down.

A Young Earth Creationist cannot accept the scientific age of the earth, because the Bible does not teach it in the same way science does. Genesis tells us that God made the

earth in seven days; first He made some light, and *after that* God decided to make the sun, added some animals, created Adam, and then Eve. Logical, isn't it? The earth has to be approximately six thousand years old; here the Young Earth Creationists are referring to the Ussher-Lightfoot Calendar published in 1650. Back then, Archbishop James Ussher attempted to solve the mystery about the real age of earth by adding all the generations of the bible together, and he concluded that God created the



Young Earth Creationists believe that dinosaurs still exist. Let's hope they are wrong...

Earth 4004 years BC. Well, let me remind you: That was in 1650! Today more and more people believe it again. According to recent polls, already forty-seven percent of the American Protestant churches brainwash their followers with James Ussher.

The fact that we can see stars in the sky, which are much more than six thousand lightyears away from us, does not bother the Young Earth Creationist. Isometric, radiometric, ice core and tree dating are rejected. We have the obligation to alter the superstition about the age of earth into a scientific idea, because lying about the age of earth begins a fatal vicious circle. Let me tell you more:

Genesis mentions that God called his creation “good”.

This is the reason for the probably most abstruse, yes, quite tragicomic belief of the Young Earth Creationists: Since everything was “good”, there was no death when God created the paradise. Well, a sophisticated scientist might ask, *if there was no death, how could there possibly have been a carnivore in the paradise?* Like, a lion? Smart creationists like Ken Ham or “Dr.” Kent Hovind, who calls himself “Dr. Dino” (more about that later) have an answer: Everybody in the good old paradise used to be a vegetarian. Take this: “What we should say is that the lion’s sharp teeth are now good for ripping up other animals would also be good for ripping up plants. Lions were

Creation”. Of course Ken Ham has even more evidence for his vegetarian theory: “The flying fox and fruit bat have comparable teeth to a lion”. Therefore they *prove* that the lion used to be a vegetarian. The alimentary system of an animal does not play a role to my buddy Ham.

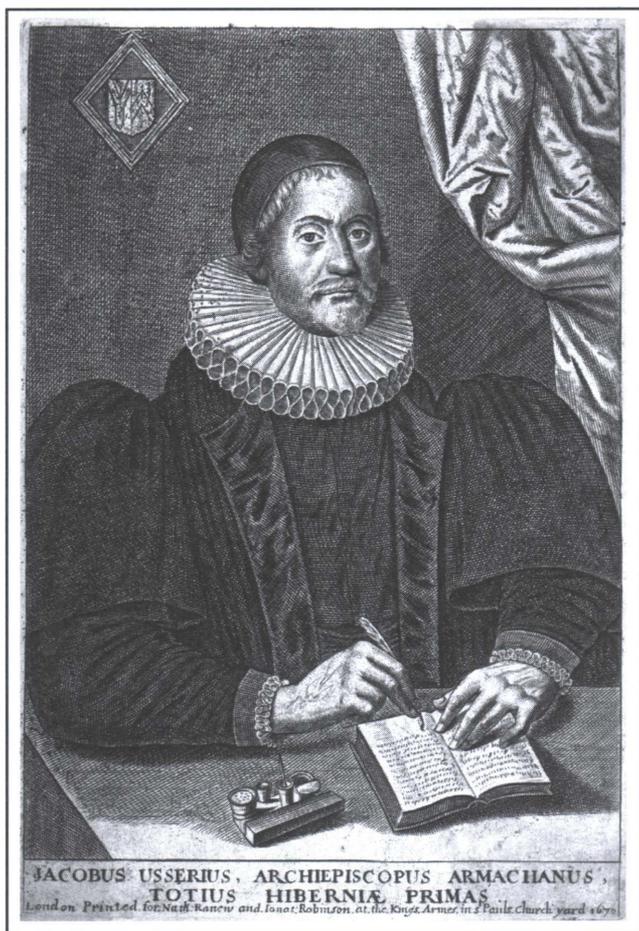
These people walk around preaching these views. Well, I am absolutely fine with that; the American Constitution gives everyone the right to do so. But people actually believe this stuff! Even worse, President George W. Bush walks around and takes a stance favouring the teaching of intelligent design alongside evolution in science class, *after* the Supreme Court previously found that the teaching of creationism in public schools is unconstitutional on the grounds that it violates the separation of state and church.

The self-styled “Dr. Dino”, officially “Dr.” Kent Hovind, is probably one of the most controversial Young Earth Creationists. First, some background information about his life: He claims three degrees in Christian education from “unaccredited institutions of higher learning”. No scientific education at all. But he offers two hundred and fifty thousand dollars to anyone who can provide “proof” for evolution. A spurious challenge. According to Dr. Dino, the Grand Canyon developed in just about a year during the Great Flood. In 2005, Hovind claimed that “Spanish conquistadors” in 1571 found drawings of dinosaurs on stones, and “on them you will see people doing brain and heart surgery, as well as every known dinosaur clearly depicted. Several hundred of them show humans and dinosaurs together”. Hovind ignores fossil evidence in that “no fossils can count as evidence for evolution” because “all we know about that animal is that it died [we do not know whether it] had any offspring”.

Hovind also believes and teaches that the US government is suppressing a cure for cancer and that there are serious health risks associated with immunizations. For some reason, Young Earth Creationist churches sell his books and people believe in what he says. Especially here in, yes, Colorado Springs. The dinosaur idea is extremely popular among several leading Young Earth Creationists and unfortunately even among “regular people”. I was shocked when several of my class mates in school told me that they honestly believe that *real, actual* dinosaurs still exist, they are “just a little smaller”. And when I asked for scientific proof, they replied immediately, “Julian, have you never heard about Loch Ness?”

If there is one thing the YECs do not have to lie about, it is that their number of members is exploding. Attending a Young Earth Creationist church is an event. First, they lull you with modern music. You see colossal monitors with PowerPoint presentations on, so you can follow the text of the songs. The likeable pastor is relaxed, wearing jeans and a nice shirt. He makes some jokes, and everyone laughs. But then the likeable pastor starts talking and it becomes quiet – he tells stories about evil homosexuals and the awesome Loch Ness. The pastor makes a joke again, laughing, and they play some nice rock music to finish the lecture.

Remember the story of Uncle Noah in the Bible? Yes,



On the basis of the Bible, Archbishop James Ussher (1581-1656) calculated that God had created the Earth in 4004 BC.

vegetarian before the fall and will be once again in the future paradise.” This is a quote from Ken Ham’s masterpiece *The Lie: Evolution*. Several YEC churches in Colorado Springs, which I attended, advise to read his books “together with your entire family”. Of course Ken Ham is worth reading for a Christian family, because he gives us ‘scientific proof’ for everything, everywhere.

Coming back to his ‘vegetarians in paradise’ again: later in the book Ham seriously claims that if you put your cat or dog on a balanced non-meat diet your pet will survive, because originally your pet used to be a vegetarian. Let me emphasize again that this is what the Young Earth Creationists call “overwhelming scientific proof for

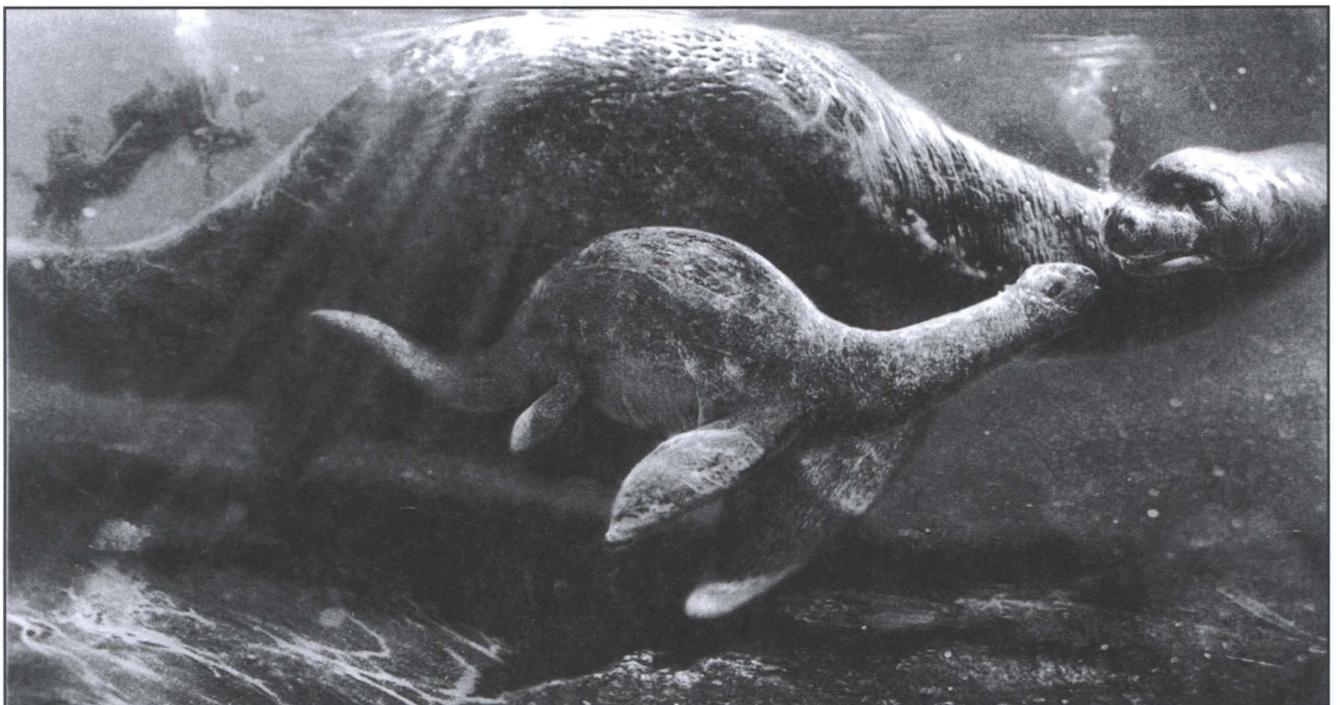
right, God was mad because nobody cared about him anymore, so he flooded the entire earth. Only Noah and all the animals he took on the ark survived. Why? Because they were *good*. Young Earth Creationists take stories like this literally. And they use this story to explain why the humans according to the Bible suddenly did not become as old after the flood as they used to before. Remember, Methuselah supposedly was over nine hundred years old, and after the flood nobody lived as long as Methuselah ever again.

The favourite hobby of every Young Earth Creationist I have met up to now is to tell everyone that evolution is a religion, Satan's religion, and that science is "only biased, not objective". The theory of evolution supposedly explains the existence of all the misery in the world which is, according to my Young Earth Creationist friends, abor-

from public schools, or at least do not let them participate in a reasonable biology class, so your innocent offspring cannot become "biased" by Satan's theory of Evolution.

A quotation from Ken Ham again: "Homosexual behaviour and desire is an evil, perverse and unnatural deviation." Ham again: "There are two factors which destroyed Christianity in Western Europe: Evolution and liberal theology, liberal theology is just evolution applied to the Bible and our Faith." Young Earth Creationism is nothing but an extreme form of a political ideology.

I believe Young Earth Creationism propagates hate, hate against homosexuals, hate against women who decide to abort, hate against women who attempt to reach the same goals men do, hate against a liberal-, freedom- and justice-loving ideology, hate against humanism, at heart hate against every single intelligent, tolerant and inde-



The Loch Ness monster with young. What further proof could you need?

tion, homosexuality, lawlessness, immorality, impurity, euthanasia, humanism and racism. A Young Earth Creationist believes his woman should be "submissive"; she does not have the option to be a pastor. A woman should stay at home and take care of the children. Equality in a really progressive way, isn't it? A Young Earth Creationist believes that you are damned if you are not a Christian, that you are damned if you are a theistic evolutionist (that means you accept evolution and believe in God at the same time), that you are damned if you don't believe in everything they do. Young Earth Creationist churches will tell you that you should isolate your children

pendent 21st century individual. As a German citizen, I am familiar with this ultra-right ideology. The last century has displayed more than enough of what the consequences of such a creed can be.

I had the great fortune to experience the YEC first hand in numerous different churches in Colorado Springs, and I read several different books written by the world's leading Young Earth Creationists. The fight commences with the debate about Creationism versus Evolution; I just put forward to you where it might go.

Sincerely
Julian W. Kirchherr



Julian W. Kirchherr, now 17, has spent the past year in Colorado Springs, United States of America, as a foreign exchange student from Germany. He was stunned realizing the immense influence of fundamentalist Young Earth Creationist churches and the negative effect their ideology had on the attitudes of his friends, teachers and host-family.

Do 17 percent of people in Britain really believe in “intelligent design”?

Adam Buick is doubtful that Britons had a fair chance to respond to the BBC’s questions on the origins of life

ON 26 JANUARY 2006, BBC2 broadcast a programme in the *Horizon* series entitled *A War on Science*, which dealt with the challenge to scientific explanations and particularly the theory of evolution from the partisans of ‘intelligent design’ (ID). The latter was defined on the BBC website as “the concept that certain features of living things are so complex that their existence is better explained by an ‘intelligent process’ than natural selection” (*Britons unconvinced on evolution*).

To coincide with the programme (and to publicise it) the BBC commissioned an opinion poll in which people were asked which theory best described their view of the origin and development of life. The result was 48 percent for evolution, 22 percent for creationism and 17 percent for intelligent design; the rest didn’t know.

Horizon’s director, Andrew Cohen, was quoted as claiming that “most people would have expected the public to go for evolution theory, but it seems that there are lots of people who appear to believe in an alternative theory of life’s origins”.

Are things really that bad? Do only 48 percent accept evolution by natural selection while 39 percent believe in creationism and/or ID? It’s not so simple.

Cohen talked about a theory of “life’s origins” and the poll, conducted by MORI, was called a “survey on the origins of life” looking at “beliefs amongst the British public on how life started in (sic) earth” (Mori Website). But neither evolution through natural selection, nor ID, are theories about the origins of life; they are theories about the development of life. Darwinism is a theory about the origin of the various different forms of life. Hence the title of Darwin’s major work, *On The Origin of Species*. Darwin said nothing about the origin of life.

The 2112 people questioned were asked two questions, the first of which was:

Q1 I am going to read out three different theories or explanations about the origin and development of life on earth. Can you tell me which of the following theories best describes your view?

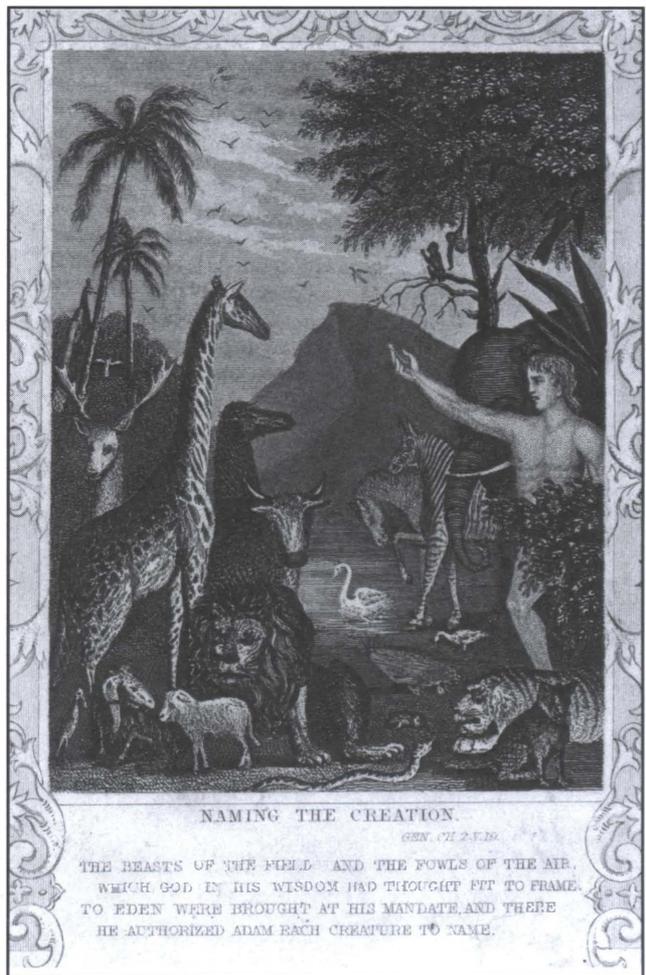
(a) The ‘evolution theory’ says that human kind has developed over millions of years from less advanced forms of life. God had no part in this process.

(b) The ‘creationism theory’ says that God created human kind pretty much in his/her present form at one time within the last 10,000 years.

(c) The ‘intelligent design theory’ says that certain features of living things are best explained by the intervention of a supernatural being, e.g. God.

(The second question was about whether these three theories should be taught in school science classes.)

The ambiguity whether the survey was about the origin of life or about the evolution of life forms is clearly evident here. While the introduction to the options speaks about “the origin and development of life on earth”, the options themselves only mention the development of life, particularly of humans.



Adam names the animals in the Garden of Eden

On a strict interpretation of the first option – taking the introduction and option together – no Christian could choose it, because they would be committing themselves to the view that “God played no part in” the origin of life. But both Darwin and mainstream Christians see no incompatibility between the theory of evolution through natural selection and belief in God.

Darwin approved the following statement in 1879 in answer to a question from a German student: “Mr.

Darwin . . . considers that the theory of Evolution is quite compatible with the belief in a God" (Appendix on "The Religion of Charles Darwin" to *Autobiography of Charles Darwin*, Thinkers Library, 1929). Somewhat later, in 1996, a Vatican spokesman declared, "it is possible to accept evolution as a theory, while affirming that the spiritual and philosophical elements must remain outside the competence of science" (see <http://www.catholic.net/RCC/Periodicals/Inside/01-97/creation.html>).

Given the way the "evolution theory" option was presented, a mainstream Christian would have to choose between option (b) and option (c). Option (b) would be out since being a mainstream Christian means (these days) that you don't interpret Genesis literally. So only the "intelligent design theory" remained.

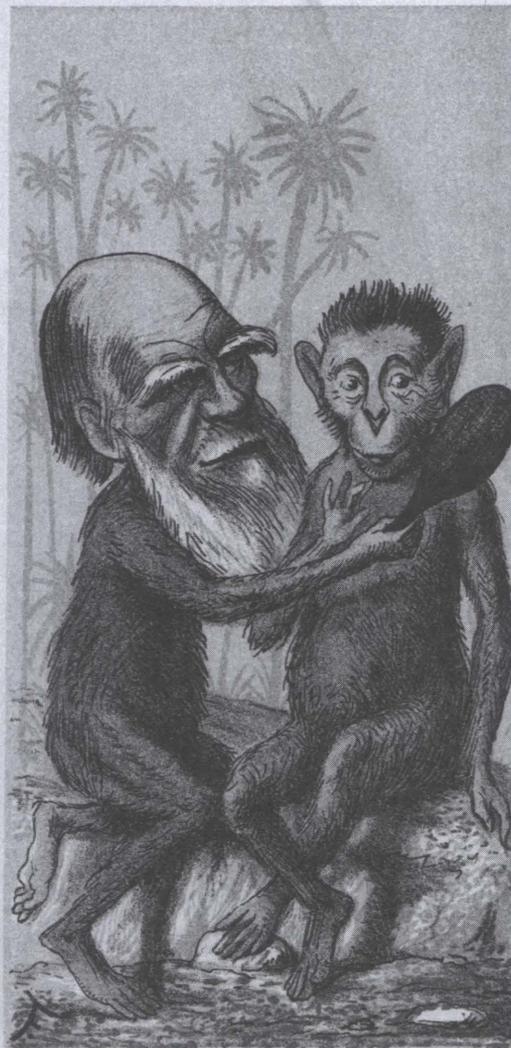
The problem here is that "intelligent design theory", as generally understood by those familiar with the term (advocates as well as opponents), claims a lot more than that "certain features of living things are best explained by the intervention of a supernatural being". ID is a view thought up by creationists in America as a way of trying to get round the provision in the US

**But neither evolution through
natural selection, nor ID,
are theories about the origins of life;
they are theories about
the development of life**

Constitution stipulating the separation of religion and the state, and which purports to be an alternative scientific explanation of "the origin of species" to natural selection. It is essentially an American phenomenon that is largely unknown, not to say irrelevant, in Britain. Indeed, it can be doubted how many of the 2112 people questioned had heard of it, still less knew what it says; to them, the term "intelligent design" would probably have meant no more than that God played some part in the origin and development of life.

That their God did so is in fact the mainstream Christian doctrine. In October 1996 the then-Pope (John Paul II) sent a message to the members of the Pontifical Academy of Science in which he said, among other things, that the theory of evolution through natural selection had received considerable scientific confirmation. Naturally, he rejected any atheist or materialist interpretation of the theory, declaring, "even if the human body originates from pre-existent living matters, the spiritual soul is spontaneously created by God". In other words, while the human body may well have evolved through natural selection along the lines set out

THE LONDON SKETCH BOOK.



PROF. DARWIN.

This is the ape of form.

Love's Labor Lost, act 5, scene 2.

Some four or five descents since.

All's Well that Ends Well, act 3, sc. 7.

Charles Darwin shows an ape how alike the pair of them are

by Darwin, God still intervened at some point to infuse that body with a soul, Christians believing that the soul is a "feature" of the "living things" that humans are.

Interviewed on an official Catholic website at the time, a Vatican expert on the matter, Father Vittorio Marcozzi, explained:

To admit evolution does not necessarily signify denying God's intervention. There are at least three

'moments' when divine intervention is necessary and evident: the appearance of life, that is of the first living organisms; the evolutionary possibilities with which God imbues these organisms; and, finally, the coming of man, whose spiritual qualities implicate God's special intervention.

This is not the same as what is called "intelligent design theory" as it does not reject the evolution of different life-forms through natural selection, but merely says that God set it in motion and then let things develop naturally until humans evolved (when he gave them a soul, which is not a biological feature anyway). But, given only the three options, mainstream Christians would have had to go for (c) as they do say that a supernatural being intervened in the development of life, at least of humans.

In this way, ID received 17 percent of the responses. But it can be seriously doubted if more than a handful, if any, of the 359 (17 percent of 2112) who chose this option would have been partisans of ID as understood in America (and, indeed, as summarised above on the BBC website). I would suggest that most of them did accept the theory of evolution through natural selection but were not prepared to commit themselves to the view, as they would have been in choosing option (a), that "God played no part" whatsoever in this process.

On this interpretation, what the poll could be said to show was that only 22 percent committed themselves to saying (but not necessarily really believing) that the Genesis account was literally true (this would be the one they would all have heard of, and they may well not have understood what either evolution theory or ID meant), with up to 65 percent accepting evolution through natural selection.

It would be nice to think that the 48 percent who chose option (a) really were the atheists and material-

ists, with regard to both the origin and the development of life, which, strictly speaking, this implied. If so, this would be a surprisingly high figure. However, it is possible that some Christians, not having taken in the introduction properly, would have chosen this.

As for Darwin, who was a stickler for detail, since he had no view – or rather, no verified evidence on which to form an opinion – on the origin (as opposed to the evolution) of life, he may well have registered a "don't [yet] know" – as, for the time being, we would all have to.

The lesson of this episode is that the survey was seriously flawed and so led to misleading results, which are being bandied about as facts in the debate on whether creationism should be taught in schools (see, for instance, Jackson, 2006). Things are probably not as bad as the *Horizon* programme-makers suggested.

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Adam Buick is doubtful that Britons had a fair chance to respond to the BBC's questions on the origins of life

SKEPTICS IN THE PUB

Skeptics in the Pub is an evening held once a month (in a pub, strangely enough) for anybody who has an interest in, or is sceptical about, the paranormal. Each month an invited speaker gives a talk on their chosen specialisation. The talk is followed by an informal discussion in a relaxed and friendly pub atmosphere. You can find out more about the meetings on *The Skeptic* website: <http://www.skeptic.org.uk/pub>. This includes directions and maps to the Old Kings Head pub in Borough, where we meet. Alternatively, please contact Sid Rodrigues: 07818 443 735, pub@skeptic.org.uk. The meeting begins at 7:30 pm and there is a suggested donation of £2.00.

Rhyme and Reason

Steve Donnelly



I HAVE PROBABLY mentioned previously that, despite having quite firm views on many aspects of pseudoscience and the paranormal, the one area that always gives me problems is complementary medicine. The difficult aspects for me are the therapies that lie between the extremes of homeopathy (unacceptable to physicists) and herbal treatments (of which some clearly work). In between are some treatments that one can see might logically be able to address specific medical problems but where the theoretical basis of the therapy is nonsense. In particular, both osteopathy and chiropractic involve manipulation of various parts of the body and, as such, share aspects in common with conventional physiotherapy but they are based on theories that have little or no grounding in science.

The end of the 19th century was a fertile period for the invention of new (pseudo-)medical techniques. Chiropractic was invented in the 1890s by Daniel David Palmer, a Canadian working as a grocer in Iowa, who discovered his “great secret” – that most disease was caused by “subluxations”, misalignments of the spine that supposedly interfere with nerve signals from the brain to various parts of the body. Osteopathy was independently invented, during the same period, by Andrew Taylor Still from Missouri. Unlike Palmer, Still studied conventional medicine and worked as a surgeon during the American Civil War and (perhaps due to the deaths of three of his children from spinal meningitis) came to the conclusion that many medical conditions could not be treated by drugs and were due to a mechanical interference with both nerves and blood vessels which could be alleviated by appropriate manipulation of the musculoskeletal system.

These approaches might have seemed reasonable at the time but, 125 years later, there is still no experimental evidence to support the idea that various medical conditions result from subluxations or other mechanical interference in blood flow and nerve signals. This seems not to worry the majority of practitioners but one or two sensibly seek to redress the problem through clinical research. For instance in a recent article in the *Journal of Chiropractic & Osteopathy*, Joseph C Keating Jr writes:

Subluxation syndrome is a legitimate, potentially testable, theoretical construct for which there is little experimental evidence. Acceptable as hypothesis, the widespread assertion of the clinical meaningfulness of this notion brings ridicule from the scientific and health care communities and confusion within the chiropractic profession. We believe that an evidence-orientation among chiropractors requires that we distinguish

between subluxation dogma vs. subluxation as the potential focus of clinical research (Keating, 2005).

So we have two somewhat similar complementary therapies that claim to provide relief from a number of medical conditions. Is there any evidence that (whilst awaiting evidence from the approach recommended by Keating) either chiropractic or osteopathy is effective in dealing with clinical symptoms? In fact, the answer to this is “yes” for some specific conditions. For instance, studies published in respectable medical journals found that chiropractic was more effective in treating lower back pain, headaches and shoulder pain than conventional treatments (Dixon, 1998). Similarly, clinical trials of osteopathy in the treatment of lower back pain indicated that it worked significantly better than placebo or sham techniques and indeed yielded a degree of pain relief comparable to that of non-steroidal anti-inflammatory drugs (Licciardone, 2007). But, not all of the research has yielded such positive findings. A Canadian neurologist who studied 156 young stroke victims, found that, in 63% of cases, trauma of some kind caused the stroke, and in 39% of cases the trauma was apparently caused by neck manipulation (Young, 2002). And on a more general level, research by Edzard Ernst of Exeter University showed that over 20% of people who had used complementary therapies subsequently experienced adverse side effects (Carter, 1996).

So, on the basis of this evidence, would I personally consult an osteopath or a chiropractor if I had problems with back or neck pain?

Well, I recently had a rather painful “frozen shoulder” condition (supposedly due to a trapped nerve in my neck) for which I had several sessions with a physiotherapist. I would have to admit that the physiotherapy did not seem to provide much (or any) relief and the condition slowly improved itself, possibly independently of any of the recommended exercises. If the condition came back would I contemplate consulting an osteopath or a chiropractor instead of a physiotherapist? I’m not sure – but I think I would steer clear of the chiropractor as his/her manipulations can be quite forceful, as I understand it. Perhaps, I *would* consider consulting a (gentler) osteopath; however, the one thing that did bring me relief for my neck and shoulder condition (to the amusement of my neighbours) was suspending myself, by my arms, from a tree branch or similar elevated object. Perhaps what I should really do is develop a theory of gravitational compaction of the musculoskeletal system and offer my own “Suspension-Therapy™” to the world.

Steve Donnelly is a physics professor at the University of Salford.



Philosopher's Corner

Julian Baggini

I HAVE FLIRTED with academia, made a casual pass at her even, but have yet seriously to try and woo her. Like many people, I finished my PhD unconvinced that academic life was attractive enough a prospect for me to give my all to entering it.

In this I am not alone. One could offer many explanations for why academia does not excite people like me more. One could point to the increased bureaucracy, the relatively meagre pay or the increasing teaching loads. But these are complaints which are made about many careers. They don't explain what is particularly unattractive about academic life right now.

I think for the humanities, one deep-rooted problem lies in the pretence, which no-one seriously believes, that our higher education institutions are at the vanguard of human knowledge. The humanities have modelled their practices on the sciences, where the idea of a "cutting edge" makes some sense. In this paradigm, new discoveries are constantly being made, new theories formulated, new evidence uncovered.

Except, of course, that in the humanities it doesn't seem like that at all. For every genuinely pioneering general there are thousands more foot soldiers, whose insignificant skirmishes sometimes fail to excite even themselves.

There is a trivial sense in which almost every academic is at the vanguard. Our system is such that nearly everyone is compelled to produce "original research". My field, philosophy, was once famously described by A N Whitehead as consisting of "footnotes to Plato". If that is the case, then most "research" consists of footnotes to footnotes to Plato. Ours is a subject where very few major works are produced in any generation. It is slow moving. In this kind of environment, the only way most academics can push out the boundaries of their discipline is by finding ever more obscure and insignificant areas where they can advance the debate.

But what does it matter if few people care what you do or if your work is very abstract and specialised? Surely the satisfaction one gains is in being at the forefront of whatever specialist field you choose to enter? If only this were so. The problem is that much academic work is not just obscure and technical, it's also extremely boring. Many colleagues have echoed the observation of Ray Monk, biographer of Wittgenstein and Russell, that a philosophy student is trained to examine and construct arguments with proficiency, but "we don't encourage them very much to consider the question of whether the argument is interesting or not."

This isn't the complaint that journal papers are not of interest to more people. It's the complaint that most journal papers are boring even to those in the same

field. They have to be, because in most of the humanities, and many social sciences, little of real interest is produced in any given generation, yet endless research has to be produced in order to fulfil the obligations of being an academic.

If all this were not dispiriting enough, it also seems to be the case that academic life has become so compartmentalised that it can even appear that someone is truly at the vanguard only because no-one knows what's going on in the next field. For instance, in true pioneering style, the eminent American philosopher John Searle told me he wanted to "invent a new branch of philosophy, which I want to call the philosophy of society." The basic subject matter of this would be "the ontology and logical structure of social reality". He had even written a book, *The Construction of Social Reality*, which heralded the arrival of this brave new discipline.

If academics did not move in such narrow circles, Searle might not have been so confident that he was indeed standing at the threshold of a new philosophical world. A sociologist reading that interview may wonder why Searle hasn't read *The Social Construction of Reality* by Peter L Berger and Thomas Luckmann. Published in 1966, it deals with many of the same issues and questions Searle includes in his "new branch of philosophy". Even within philosophy, we are constantly discovering that the new is really the old, because there are different philosophical traditions and schools, and they often don't read each other's work.

Getting people to go through the pretence of creating valuable, original work is a terrible waste of intellectual resource and it needn't be so. An academic who can write a really good textbook or popular work is ultimately of more use than one who can produce a steady stream of mediocre journal articles, yet the system as it stands rewards only the latter. One could be the best lecturer in the subject, yet promotion will elude you unless you get the right publications on your CV. One could write a book which brings your subject to a wide, new audience, yet it is worth less in British academia than a turgid tome destined to sell a few hundred copies to libraries.

Academia operates according to the myth that its members are the pioneers at the threshold of knowledge's next dawn. We need to recognise this is a myth, and a pernicious one at that. No one who reflects on it for one moment could agree that it presents an accurate vision of what most academic life is really like. Yet with our emphasis on new research, the system plays into the myth, rewarding anything that resembles, however palely, work at the vanguard, and ignoring all the other good and valuable work academics could and should do.

Julian Baggini is editor of *The Philosophers' Magazine* (www.philosophers.co.uk) and author of *The Pig that Wants to be Eaten and 99 Other Thought Experiments* (Granta), *Making Sense: Philosophy Behind the Headlines* (Oxford University Press) and *The Meaning of Life* (Granta). Julian's latest book is *Welcome to Everytown: A Journey into the English Mind* (Granta). See www.julianbaggini.com. Comments welcome to julian@julianbaggini.com

ASKE News

From the chairman of the Association for Skeptical Enquiry, Michael Heap



IN THE LATEST issue of the ASKE magazine, the *Skeptical Intelligencer*, Brian Robinson, a retired psychiatrist, takes to task Richard Dawkins' use of the term 'delusion' in his best-selling book *The God Delusion*. The gist of Brian's criticism is that if you want to help patients who have delusional belief systems (e.g. that they are under surveillance by MI5) you do not assault them with the kind of intellectual battering ram that characterises Dawkins' approach to religious beliefs. You do not even refer to the term 'delusion'. In Brian's words, "If I dealt with my deluded patients in the way Dawkins deals with his deluded believers, I wouldn't be surprised if they didn't even stick around long enough to prove to me that I couldn't cure them".

People often express beliefs for which there is little or no evidence or which are clearly contradicted by the evidence. Common sense predicts that such beliefs would only be weakly held and that it would be easy to dissuade the believer. What is intriguing, and what requires explaining, is when the opposite is the case. This happens in everyday life when someone, often in a state of high emotion, refuses to accept "the evidence of his or her own eyes" and instead "is prepared to argue that black is white". It is characteristic of adherents of religious beliefs (cf. creationism), occult practices (e.g. astrology), fringe medicine (e.g. homeopathy), and various extraordinary claims (e.g. alien visitations). It is also a defining attribute of psychiatric delusions.

The attribute I am referring to is not the *refusal* to change one's mind but the unwillingness or incapacity even to consider that evidence suggests the belief may be questionable. One does not hear a Christian utter the sentence, "On balance I believe in the risen Christ but I admit that there is evidence that it could all be a myth". Likewise astrologers don't habitually announce, "There are no data to support our ideas but we think we could be right". A deluded patient does not usually say, for example, "I think the neighbours are poisoning my drinking water but I have no real reason to believe this".

The refusal to give due acknowledgement to the evidence is easier to address when the belief is an explanation or interpretation of an observed event. One can then ask the believer to suggest more commonplace explanations. This can be a constructive approach to helping deluded patients whose mental state is suffi-

ciently stable for them to engage in therapy. Even so, one meets with considerable resistance, as is often the case with unusual explanations in general.

A woman once rang me for advice on a photograph that she had taken of her young son. There appeared to be the shadow of a hand coming from the top of his head. I suggested that the best person to speak to about this was a photographer. She sounded very disappointed, saying that she had hoped that I would provide a spiritual explanation for the photograph. She then said that her friend had taken some photographs in which little balls of light had appeared. Again I advised her to consult a photographer and again it was apparent that I had failed to please.

Who is the sceptic in this encounter? You could argue we both are! I am sceptical of *unusual* interpretations and the enquirer is sceptical about *everyday* interpretations. So, next time you are engaged in such a dialogue, before the other person has time to accuse you of being a narrow-minded sceptic, gently say something like, "You seem to be very sceptical about ordinary explanations".

It is sometimes not too difficult to hypothesise why people have a need to be so rigid and uncompromising about questionable beliefs. This is obviously so with religious believers and with practitioners of unproven medicine. Also, the world would be a more exciting or comforting place if many unusual claims and ideas were true, such as alien visitations and reincarnation. Likewise, certain delusional belief systems can appear to be valued by patients. It is less easy to understand why someone, when all reasonable evidence is put to him, remains so resistant to questioning the notion that he is dying of AIDS, being poisoned by MI5, or having his mind controlled by his television set.

It is hard to define 'psychiatric delusion' in a way that enables it to be clearly distinguished from firmly held beliefs in paranormal and occult phenomena and from religious beliefs. Despite this, it is not, in my experience, all that difficult to recognise someone who is *suffering* from a pathological delusion; I can see where problems may arise in certain grey areas, but save for the odd instance of malingering, I can't recall a clear case of, for the want of a better word, 'misclassification'. For examples of these you might look at the history of Soviet Russia.

Michael Heap is the Chairman of ASKE and a clinical and forensic psychologist in Sheffield. ASKE email address = general@aske.org.uk
ASKE website = <http://www.aske.org>

Reviews



BACK TO REALITY

Fear of Knowledge: Against Relativism and Constructivism

by Paul Boghossian

Oxford University Press, £14.99 (hb), ISBN 0-19-928718-X

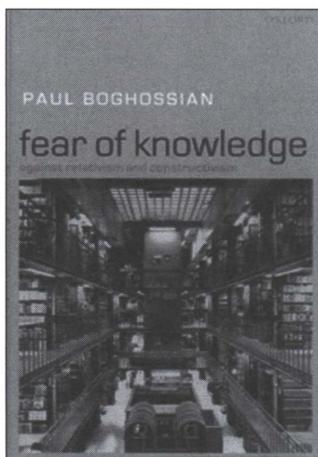
The glorious Sokal booby-trap of 1996 seems to have done sadly little to lessen the attraction and durability of that intellectual plague known variously as relativism, constructivism or constructionism. The view that there is no such thing as objective reality, that truth is only relative to a society, conceptual framework or even personal perspective, is entrenched in a range of “disciplines” (if they still merit the term) taught at colleges worldwide, from sociology, psychology and history to music and media studies.

The laborious, intricate, principled, collective effort to find out how the world is, known as science, enjoys no support from fellow academics in thrall to a fashionable ideology that sees the theories and findings of science as merely socially-constructed texts devoid of literal reference to causal processes in a material world. How many thousands of graduates per year promote and apply this approach in their work and social interactions?

Mainstream Anglophone philosophy departments have not, reports Boghossian, Professor of Philosophy at New York University, succumbed to the exotic charms of postmodernism, and this concise book neatly explores the deep flaws in the view that facts are only social constructs, or that theory choice in science is caused by social factors rather than by empirical evidence. Boghossian analyses the work of historian Thomas Kuhn, philosopher Richard Rorty and sociologist David Bloor, among others, concluding that, “on the negative side, there look to be severe objections to each and every version of a constructivism about knowledge that we have examined. A constructivism about truth is incoherent. A constructivism about justification is scarcely any better. And there seem to be decisive objections to the idea that we cannot explain belief through epistemic reasons alone. On the positive side, we failed to find any good arguments for constructivist views.”

The taste for supernatural fancies often draws support from theories undermining appeals to factual evidence. This book is another contribution to the defence of the view, underpinning science, that there is a way the world is, independent of human opinion.

Paul Taylor



BIG MAN, SMALL BOOK

Newton: A Very Short Introduction

by Rob Liffie

Oxford University Press, £6.99, ISBN 978 0 19 929803 7

Rob Liffie is well placed to analyse the life and work of Sir Isaac Newton (or SIN as Astronomer Royal John Flamsteed dubbed him in view of his overbearing manner) as editorial director of the Newton Project, which aims to make the great scientist’s complete works available online.

Liffie has made a brave stab in catering to the non-specialist. Unfortunately he had two obstacles: the first is the small space available, a problem when dealing with someone active in as many fields as Newton, and the second is that the magnitude of Newton’s achievements are difficult for the layperson to grasp, even without the mathematics, which are mercifully absent.

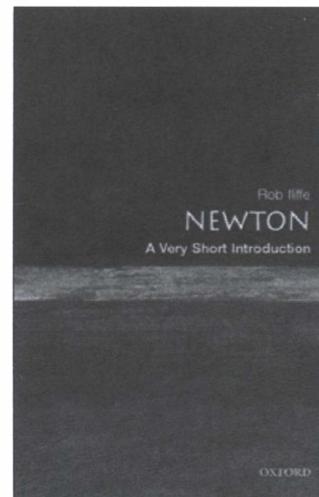
So Liffie tries to sketch the context — Kepler, Galileo, Bacon, Descartes — in just a few pages. We skip through Newton’s career, from his childhood which showed early promise, through the Fellowship at Trinity Cambridge, occupation of the Lucasian Chair, his time at the Royal Mint, and Presidency of the Royal Society.

Against this career progression we are given goblets about his researches on optics, celestial mechanics and mathematics, as well as his work in theology, astrology and chronology. Then there are the feuds in which he engaged and an overview of how he has been treated by previous biographers to squeeze in.

Unfortunately, if the reader does not have some grounding already, the descriptions are often too brief to be of much use. Terminology is left unexplained, and while Liffie conveys Newton’s range of interests, topics are skimmed over with little detail.

This is not Liffie’s fault. The problem is that Newton just cannot be squeezed into such a small compass. Despite its tag as an introduction, some prior knowledge helps enormously. Fortunately for those who come away puzzled, the literature on Newton is a huge one, and the interested reader has plenty of choice when delving further into the accomplishments of this fascinating polymath.

Tom Ruffles



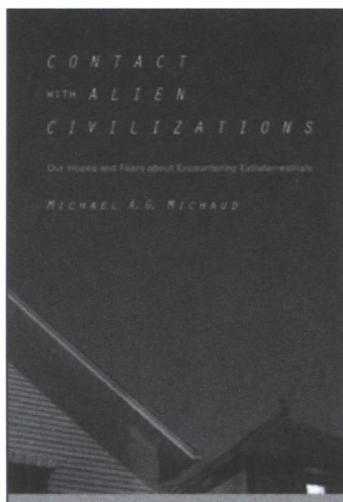
IS ANYBODY THERE?

Contact With Alien Civilizations: Our Hopes and Fears About Encountering Extraterrestrials

By Michael A G Michaud
Copernicus Books (Springer Science + Business Media),
£17.50 (hb), ISBN 0-387-28598-9

Probably. Or possibly. We don't know. But it is worth thinking about it. That in essence is the message of this 460-page book. The author is a scientific administrator and investigator in various American government agencies.

In the absence of any direct evidence, the Search for Extraterrestrial Intelligence (SETI) rests ultimately on two observations, which have so far been consistent. The first is that, as Lucretius pointed out two thousand years ago, nature does not produce singularities. The second is that there has always turned out to be far more in existence than appeared at any point. We have not reached the limits of our unimaginably vast universe, and cosmologists are thinking seriously about multiple universes.



Beyond that, all is speculation. The author reviews comprehensively and dispassionately the attempts to calculate probabilities. All involve numerous variables, to most of which we cannot attribute firm values. For example, how many Earth-like planets may exist, how necessary or sufficient Earth conditions are for life or intelligence, what forms such might take, how possible or likely communication might be, etc. And there is what one might call the Jim problem: if life exists "but not as we know it", how shall we know it?

Nevertheless, systematic speculation is a step towards preparedness, which could turn out to be vital. And it gives us valuable new perspectives on ourselves. Michaud discusses the relationships of SETI with politics, law, mythology, religion, science fiction (a prime source of much serious and original thinking) and much else.

The text is stimulating and very readable. A serious criticism, however, is that there is no bibliography, and the 71 pages of references are organized in the most unhelpful way I have ever met. This mars an otherwise excellent book.

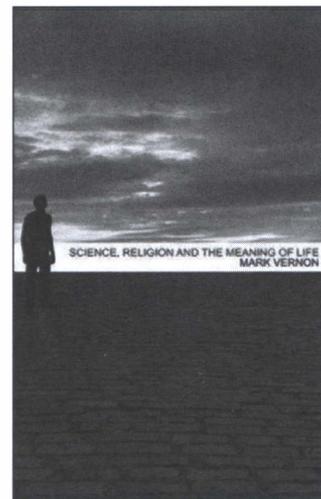
John Radford

WHAT DO YOU MEAN, YOU DON'T KNOW?

Science, Religion and the Meaning of Life

By Mark Vernon
Palgrave Macmillan £18.99 ISBN 0230013414

It is a shame that Mark Vernon and his version of agnosticism is not as well-known or as controversial as Richard Dawkins and his version of atheism. But then, if Vernon was well-known or controversial, he would not have written the book he has written. The book starts from a place of not knowing, and ends in a place of not knowing, but brings the message along the way that uncertainty is just fine. There is truth and beauty in silence, according to Vernon – silence is what brings us to wisdom, and wisdom, in true Socratic fashion, is dependent upon how much you understand what you don't know.



This is a truly delightful book, written with wit, humility and poetry, but more importantly than that, it is a book full of enquiry. He pays homage to wise men across the ages, whatever their discipline, and claims that as an agnostic he is in pretty good company: Socrates, Einstein, Thomas Aquinas, Anthony Kenny to name but a few. However, and here is where you may be lost or converted, Vernon describes himself as a "Christian agnostic", not, as I originally thought, an agnostic who appreciates Christian worship as an art form, but someone who starts from a place of "learned ignorance" (Vernon was a vicar, then an atheist, before coming to rest somewhere in the middle). Christian agnosticism is a difficult concept to get your head round – surely if you are agnostic you don't know whether any gods exist, not just the Christian one? Vernon likens it to the belief system he claims underpinned Socrates' arguments – Socrates started his quest at the oracle of Delphi, and ended by sending sacrifice to the gods after drinking hemlock. Rather than this being a version of Pascal's Wager, it is an acknowledgment that Socrates (and therefore Vernon) did not know and would never know why and how we are here. This in itself demands enormous respect for something, respect that Vernon clearly also feels. *Science, Religion and the Meaning of Life* is a title that takes some living up to, even if it is meant ironically. Vernon does live up to it, in a gentle, probing way that leaves the reader wanting more.

Sally Marlow

OF MICE AND MENTALISTS

Spook: Science Tackles the Afterlife

by Mary Roach

Norton Paperback, £12.69, ISBN 978-0-393-32912-4

Is there life after death and, if so, how can we find out? One way is to sort the wheat from the chaff, discarding any 'mystery' that can be scientifically explained to see what, if anything, is left.

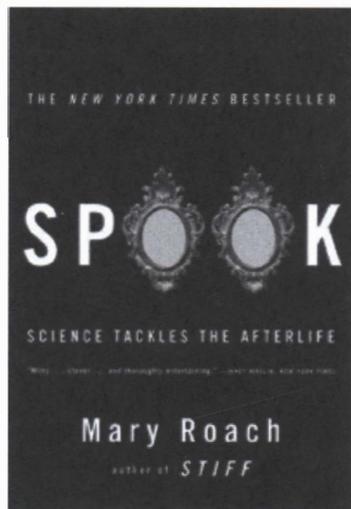
Roach looks at attempts past and present to explore the Big Sleep in a chatty, often jokey style underpinned by solid research and historical detail. She interviews scientists and believers as she looks at (among other things) reincarnation, the search for the soul, spiritualism, EVP, EMF, infrasound and near-death experiences. She also tries some things out for herself – a mediumship course, recording spirit voices and meeting reincarnated people in India. She is not convinced.

She says that, "for millions of people, religion will turn out to have been a bum steer as regards the hereafter. Science seemed a better bet". As a good sceptic, she keeps an open mind and readily admits what science has yet to prove or disprove.

The book is full of fascinating stories and findings, from attempts to weigh the souls of mice and early theories about sperm to solid recent work on how EMF and infrasound can cause hallucinations, a racing heart, sensations of a presence and other 'spooky' reactions in certain people. While this can explain some experiences, she also considers the possibility that EMF, for example, simply opens receptive people up to something that is really there. She points out that many good scientists in the past were fooled or came to the wrong conclusions with the best of intentions. After meeting would-be mediums, she also decides that many are fooling themselves about their abilities rather than deliberately trying to con the punters.

Roach's conclusion is that, while science has so far cleared a lot of mud from the waters, there is still a big "Who knows?" to be resolved in many areas. The book is a good introduction to the subject of the afterlife and a useful source of research findings that debunk many claims. Don't be put off by the title.

Tessa Kendall



EXTRAPOLATE!

A Teaspoon and an Open Mind

by Michael White

Penguin Books, £8.99 (pb), ISBN 0-141-02481-X

Although the book claims to look at "intergalactic conundrums from the world of Doctor Who", there are only brief references to the show; the author is really just cashing in on the revival.

There is a glance at Tardis technology in the Epilogue but most of the sci-fi technology could equally be taken from Star Trek, which he often mentions.

This is mostly a review of the current state of technology and recent discoveries, with some speculation about the future. White does use solid science, keeping an open mind where this is the scientific thing to do.

He debunks Atlantis but is open to alien life and cautiously open to telepathy, for example.

The chapters are loosely themed around Dr Who ideas – time travel, aliens, teleportation, robots and so on, concluding that we do not currently have the technology to make these possible but in some cases may do in the future.

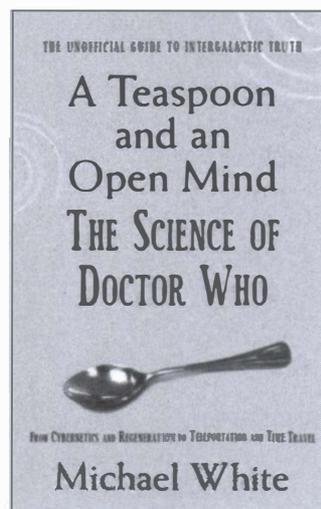
Teleportation, time travel and galaxy-hopping would take vast amounts of energy, quite apart from minor considerations like the known laws of the universe.

There are the usual fears about sentient robots and extending human life indefinitely, although White does embrace the idea that imagination can lead from fiction to fact. As he says, it is the ability to develop that separates science from "mere belief systems".

He speculates about what aliens might look like, based on sound evolutionary and environmental principles. But if they do exist, would they want to visit us, given what they may have picked up from TV and radio emissions?

For any sci-fi nerd (sorry, expert), the book covers very familiar ground adding little new, and Dr Who fans will be disappointed. That said, this is an intelligent, readable introduction to ideas like wormholes, cyborgs, antimatter, temporal paradoxes and the laws of physics, that make science fiction staples possible, impossible or just very unlikely to become science fact.

Tessa Kendall





LETTERS

Group Prayer Time

In *The Skeptic* (19.3, p. 6), you report that the *New York Times* has discovered that no one has yet come up with a way to control the biggest problem in such research: knowing how much extraneous prayer is being given to patients by friends, families and prayer groups around the world. You provide no comment on this, and I can only hope that this is so that the sheer monstrous nonsense of this statement can be appreciated more by the reader.

Just think for a moment, if we test a substance by giving it as a pill to a treatment group, while the control group receives an equal looking empty pill, how is it that we can claim that this is a test of the effectiveness of the substance? After all, what do we really know about the metabolism of our subjects? Normally not much. So how do we know that some don't have a sort of bodily chemistry which can do just as well without the drug? How can we control such unknown variables? As long as we can't be absolutely sure that no such difference exists, we cannot assume that a difference between the treatment group and the control group is due to the substance. We might just have more people who do better anyway in the treatment group. On the other hand, if we find no difference this might just be because a real difference is cancelled out by having more people do better with or without the substance in the control group. Of course, unless we have good reasons to assume such an unequal distribution, we assume neither. We simply trust that there is random assignment

of patients in both groups. This is just what we also can do in the prayer experiment.

Think for a second moment. What if patients who are prayed for would significantly do better? What if this would turn out to be a stable effect which can be reproduced? It wouldn't help much to attribute the success to the prayers of friends and families instead, because these are still prayers. So the effectiveness of prayer would be proved one way or the other.

Let me add a third thing: Is this study an empirical test of the existence of God? Well, this surely depends on your exact definition of God. It might not be a good test for the God of Jewish Orthodoxy. But if the effect is real, it would not be badly described by saying that The Universe, Nature, whatever can be influenced in a very anthropomorphic way, previously unthought-of and in sharp contrast with the usual naturalistic picture of the world science provides everywhere else. This, however, is a definition of God which seems to be in good accordance with what many wishy-washy Christians and other very liberal creeds hope for. Their God is proved to exist. Others may need more research.

Now does the fact that we do not get such repeatable positive results prove the non-existence of God? Sure. As long as any empirical study can possibly disprove anything at all, and for all Gods who require such prayers to work.

Gerald Huber
Germany

Rhyme and Reason

(continued from pg. 21)

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Errata: We would like to apologise to readers for wrongly labelling issue 20.1 of *The Skeptic* as *Winter 2006*. It should, of course, have read *Spring 2007*. Also, the caption under the photograph in Stuart Campbell's article *Making up History* (p. 17) should have read *The real Inspector Campbell is pictured here on the left in plain clothes*.

— Editors

Please send your letters to: **The Anomalistic Psychology Research Unit, Department of Psychology, Goldsmiths College, University of London, New Cross, London, SE14 6NW** or e-mail edit@skeptic.org.uk. Email communication is preferred. We reserve the right to edit letters for publication.

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