

## WHY INTELLIGENT DESIGN IS FOR STUPID PEOPLE

**DARWIN** – I am talking to you from Darwin's bunker. That's a fact; but nowadays it has also become a metaphor. This is the site of Macaw Cottage, where he moved just after his marriage (his wife insisted that they remove the dead dog in the back garden first – which is rather what we biologists in the Darwin building feel about the new engineering block which now defiles our back garden).

Here, 1837, Darwin drew the most **important diagram** in biology; why is it not painted in the hall, or the college tie, or used on college crest? Shows descent with modification; genetics plus time - evolution – the grammar of biology. Before that; people working on fossils, plants, animal breeding – did not realise they were doing the same thing. Darwin's **Origin of Species** – turned biology into a science. Now, a determined attempt to turn it back into a myth.

George W Bush himself: "On the issue of evolution, the verdict is still out on how God created the Earth." Darwinian man though well behaved is really but a monkey shaved. Odd – **evidence all around them!** Creationism; life directed by some magical means and began in recent past. Oct 4 4004 bc. Part of a general attack on rationalism. c 100 million Americans believe in creationism (as I said to my publisher I don't mind if they burn my own books as long as they buy them first). Perhaps Bush would be interested in the company in which he finds himself. **Islamic presence.**

Creationists, to use Darwin's own phrase, "look at an organic being as a savage looks at a ship, as at something wholly beyond [their] comprehension". The first Hawaiians to see Europeans were so astonished by their great vessels that they thought their builders to be gods; worshipped captain cook. The ID argument is just the same. It is the logic of ignorance, idleness and incuriosity: I am very smart, even I do not understand this, so why bother to explain it except by bringing in God (if necessary under an alibi)?

Compare with Darwin; **barnacles** – 8 years work; barnacle images; evolution the argument from hard work and intellectual insight; creationism – idleness, ignorance and incuriosity. I like quotation from Darwin – "Ignorance more frequently begets confidence than does knowledge; it is those who know little, and not those who know much, who assert that this or that problem will never be solved by science".

A cunning attempt to insinuate religion into American schools (not, of course, an issue in Britain, where the main problem is trying to keep it out). Creationism; tried the trick of saying that both evolution and creationism – billions versus thousands of years old - are "faith positions" and should both be taught; but that declared unconstitutional.

New and cunning scheme – that there is an alternative scientific model of biology which is an alternative to evolution and should be discussed in science classes

even if in the end it is proved wrong. Idea of intelligent design; Claim is of irreducible complexity that life is so complicated that natural selection could never have produced it; [Michael Behe](#), biochemist: Darwin's black box "...a single system which is composed of several well-matched interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning". In other words – such a system could not have evolved without a designer, who used forethought to ensure that it worked. We are, of course, not allowed to ask who that designer might be (although one anti-creationist group in the USA, the **Church of the Flying Spaghetti Monster** has a very good idea as to who and is trying to get compulsory Spaghetti-monster classes into schools).

Life is indeed very complicated, on many levels. **Coral Fish**. But that's nothing – **biochemical pathways x 2** – extraordinarily complex Michael Behe – they could never evolve, but must have been designed. What use is part of an eye? Or part of a clot - **blood clotting book**. What use is part of a clot? The system is just too complex!

Darwin – knew full well the answer to the question what use is part of an eye; Section called "On organs of extreme perfection" in origin – Part of an eye is a lot more use than no eye at all! And why do we need microscopes or telescopes if the eye was designed. Why do I have to wear glasses?; the designer must be pretty useless!

A rose by any other name smells just as sweet; intelligent design is creationism by another name, and it stinks. Described by American Judge, Jones, as an idea of “breathtaking inanity”; from which I deduce that Britain needs more Joneses.

However, has got into British schools. BBC **Horizon poll** of sixth-formers; 48% opt for evolution, 39% for creationism. Very active attack; Recent activities of Truth in science.com – DVD packs to every biology teacher in Britain. Takes advantage of an **unfortunate phrase** in the national curriculum to suggest that there is a controversy that needs to be taught. Uses **skyscraper** argument. To me rather like starting genetics lectures by discussing the alternative theory that babies are brought by storks.

Have always refused to enter into debate with creationists, as there is no grounds for debate. Rather like mathematicians believing that  $2 + 2 = 4$ ; dissident group who claim that  $2 + 2 = 5$  – but willing to enter into debate and to come to the conclusion that  $2 + 2 = 4.1$  Well  $2 + 2$  does not equal 4.1 and there is no point in considering the possibility that it might. However, we should at least consider the real way that evolution happened.

William Jones, numbers, pater, lang tree.

Natural selection; inherited differences in the ability to reproduce. A factory that makes almost impossible things. And a Boeing 747 is also an almost impossible thing (the second perhaps more than the first) – and that is made by a designer. The results of design and evolution can, I am happy to admit, be very hard to tell apart.

Natural selection does just the same thing. Let us remind ourselves how it works; inherited differences in the chances of reproduction. Can see, ironically enough, most clearly in industry.

Nozzle in soap factor story; original version is very simple; liquid pushed through to make vapour plus powder – very hard to analyse with mathematics; instead use Darwinian approach of descent with modification plus natural selection; take simple nozzle, change at random, test; any one that does better change again at random in several different ways and test again. Soon a complicated but highly efficient nozzle emerges – by natural selection. In this case quite literally a factory that makes almost impossible things.

The nozzle emerges from design without a designer – a series of successful mistakes; trial and error; inherited differences in reproductive success. Approach much used in computing, engineering. Soon develop complicated structures which are very effective. Both work, and have same effect

**Also** of course, much design – eg the skyscrapers. Most successful industry in Britain – the drug industry. Massive

Success against eg HIV: **Eg Sequinovir** against AIDS virus; that and others

**Dramatic decrease in incidence.** There are intelligent designers out there, but they work in pharmaceutical companies!

But, natural selection does even better. HIV – from chimps; but do not have symptoms. Due to natural selection – can see at work – CCL3C 1 story.

Differences in survival, patterns in Europeans, Africans and Chimpanzees.

Why is the virus harmless to apes? A result of natural selection; not on the virus but on hosts. Virus uses a variety of attachment sites to attack cell; one is (like many cell surface variants, ABO, mine B +) highly polymorphic. **Attachment site.** Gene in immune system associated with this process; CCL3L locus, has allele called CCL3L1. Some populations – have duplications; ie individuals may have 0, 1, 2, 3, 4, or more copies.

**Striking differences in survival**, the more copies of CCL3L1 one has the better one survives. True for both Africans and Europeans – but notable that many

**Africans have duplicated the locus, chimps even more.** Africa as a whole is 6; Europe – mean no of 2. Notable that AIDS is an African disease – ie Africans have responded to selection – chimps mean is 10, and some have 17! ie chimps

have lived through the crucible of natural selection which Africans have suffered for some time, and the rest of the world has just begun to experience. If epidemic becomes pandemic, only they will survive – and AIDS will be in 1000 yrs no worse than flu. Chimps – harmless; shows that natural selection can do a much better job than we can. Also uses other genes eg ccr5 – whole series of resistances.

In fact many other genes also protect against AIDS: eg **CCR5**; **variety of genes in HLA system**. Now; using Hapmap to search out others – expect to find many (eg malaria resistance has at least 20 mechanisms, HIV probably just as many).

Evolution works with what it has got to work with; A tinkerer not an engineer. you can't get there from here!

Truth in science – uses **skyscraper** argument, but in fact evolution is much more like a **slum** – pick up and use what is available, even if very inefficient.

Means that it is slow and incremental; can't get there from here! Starts in very different places to get to same end. Familiar claim – evolution is like Whirlwind through junkyard trying to build a **747**; could never happen; needs a designer. But, flight; many animals far more effective than a 747 – and they have done it without design, and their solutions are inelegant, even slummy, but they work.

Intelligent design bird

albatross

Bird wing a modified arm

Bat wing a modified hand

Pterosaur wing a giant finger

Gliding lizards – modified ribs

Webs, fins and feet

Squids and ants

And even a flying snake!

They are a mess but they work; although admittedly I would not like to cross the atlantic on the back of a flying snake!

So it's a story of complicated, messy and inefficient solutions; and, ironically, perhaps the most complicated inefficient and messy systems of all is one of those most used by intelligent designers to support their views; **blood clotting**. ID classics, clotting. Will end by talking about this.

Certainly complicated – cut sets of chain reaction which ends with fibrin strands and clot. Looks like a perfectly designed and complex solution to a major problem.

The clotting machinery is an icon of just how complex life may be. Designers love it: for to staunch the flow needs a cascade of a dozen or more enzymes that work

like a row of toppling dominos. **4x complex** Two interacting pathways meet at a crucial junction point. One is set off by a change in acidity after a cut, while the other acts when it picks up chemical cues from damaged cells. An injury sets off a chain reaction until the job is done, and if any step goes wrong the whole system collapses. How could such a complicated machine evolve from simple beginnings? What use is part of a clot?

Certainly **complex**. Works as **two-part cascade**; one by physical damage, one by cellular signals. Often **complex interaction** between various parts of molecule – molecular model. Worked out the pathway from errors – **hemophilia very nasty disease**. Various symptoms eg leaks.

Famous family – British royals. Queen Victoria, in an early tilt towards evolution, saw orang-utans as “frightful, and painfully and disagreeably human”. Victoria once announced to her startled Prime Minister that there were three things she could not stand: flies, turtle soup, and Tories. All play a part in the science of clotting. Conservative blood ran through royalty, while turtles and flies each tell part of the tale of how the cascade evolved.

Victoria and albert

Queen Victoria family

August testicles of Edward VII

Haemophilia – alexis

What use is part of a clot

Sea turtles split from our own line long ago. After a cut, their blood clots, slowly – blood pressure is low. Victoria's descendants lacked factor VIII. When turtle plasma is mixed with their deficient blood, a clot forms – proof that turtles make at least one of the proteins used in our own system. Other patients, though, gain nothing, for they have a fault in the second branch of the clotting cascade. In fact, turtles manage without that whole pathway; proof that part of a clotting system works perfectly well.

Can track down where some of the genes came from. Flies – no clotting; lack fibrinogen, the protein that makes our own solid plug. They have another protein that looks much like it – but that does a different task, forming a solid lump around an invader. At some time, it was hijacked to become part of our own body machine – and some human clotting proteins are still involved in immunity. Others, too, hold on to their previous jobs. One helps stop cancer cells from spreading while Victoria's own damaged gene descends from another that maintains the blood's iron balance. Yet another is related to an enzyme that cuts up food. The gene doubled up and the second copy took up a related task in the clotting cascade. Our plumbing is a complicated mess, like that in the slums, but it works just as well as it needs to.

Now – evidence that fibrin has been taken up recently for another function; myelin in vertebrate nerves; fibrin involved in laying it down.

In other words, when we no longer look at life as a savage looks at a ship, but with some comprehension, we see it not as a beautiful design, but as a squalid mess. It works, but only just; and shows just the simulacrum of design.

Intelligent design really is for stupid people, but fortunately the clots have proved them wrong!