Intelligent Design v. Intelligent Education

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The acquisition of knowledge is a three-stage process.
The three stages consist of:

- IDEAS & DATA
- HYPOTHESES
- THEORIES

1. IDEAS and DATA
The raw material of 'knowledge'.

2. HYPOTHESES
Hypotheses are systematised collections of ideas that have not yet been fully tested, or are inherently untestable. They are therefore not falsifiable and consequently have little value as current knowledge.

Some perennial examples:

Astrology
Cosmic 'String Theory'
Sustainable Economic Growth
Intelligent Design, Creationism, and all other faith-based systems of belief
Witchcraft and voodoo

3. THEORIES
A theory is "a hypothesis that has been confirmed or established by observation or experiment and is accepted as accounting for known facts" (Shorter Oxford Dictionary).

Examples:

Plate tectonics
Global warming
Evolution*

***A general definition of Evolution is "continuous genetic adaptation of organisms to the environment by the integrating agencies of selection, hybridisation, inbreeding and mutation."** (Macquarie Dictionary)
To this list of agencies we should now add Conjugation (direct gene exchange between bacteria), and Symbiogenesis (the acquisition of other genomes).

It therefore follows that ideas may compete with ideas, hypotheses may compete with hypotheses, and theories may compete with other theories, but being in different categories, ideas, hypotheses and theories cannot compete with each other. Comparing a hypothesis to a theory is like comparing a drawing of an orange with a real orange: it is an unproductive waste of time.

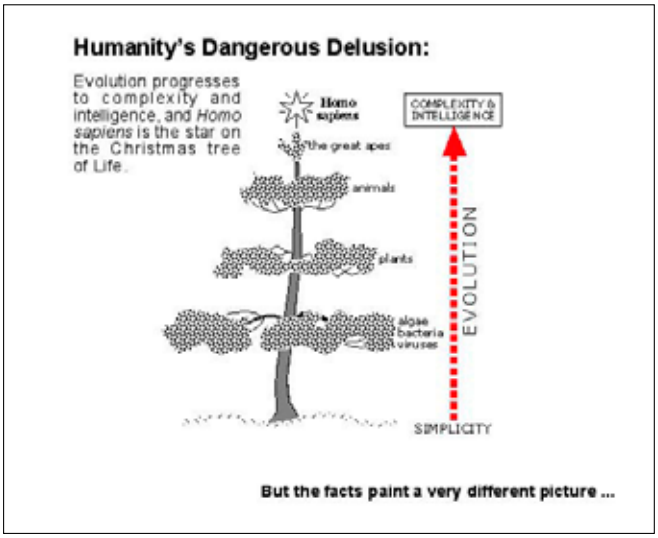
Like witchcraft and astrology, 'Intelligent Design' is not underpinned by testable data. All three belief systems are therefore unfalsifiable, non-predictive and based on nothing more substantial than imagination and wishful thinking. They might entertain, but they don't feed brains that seek reliable information.

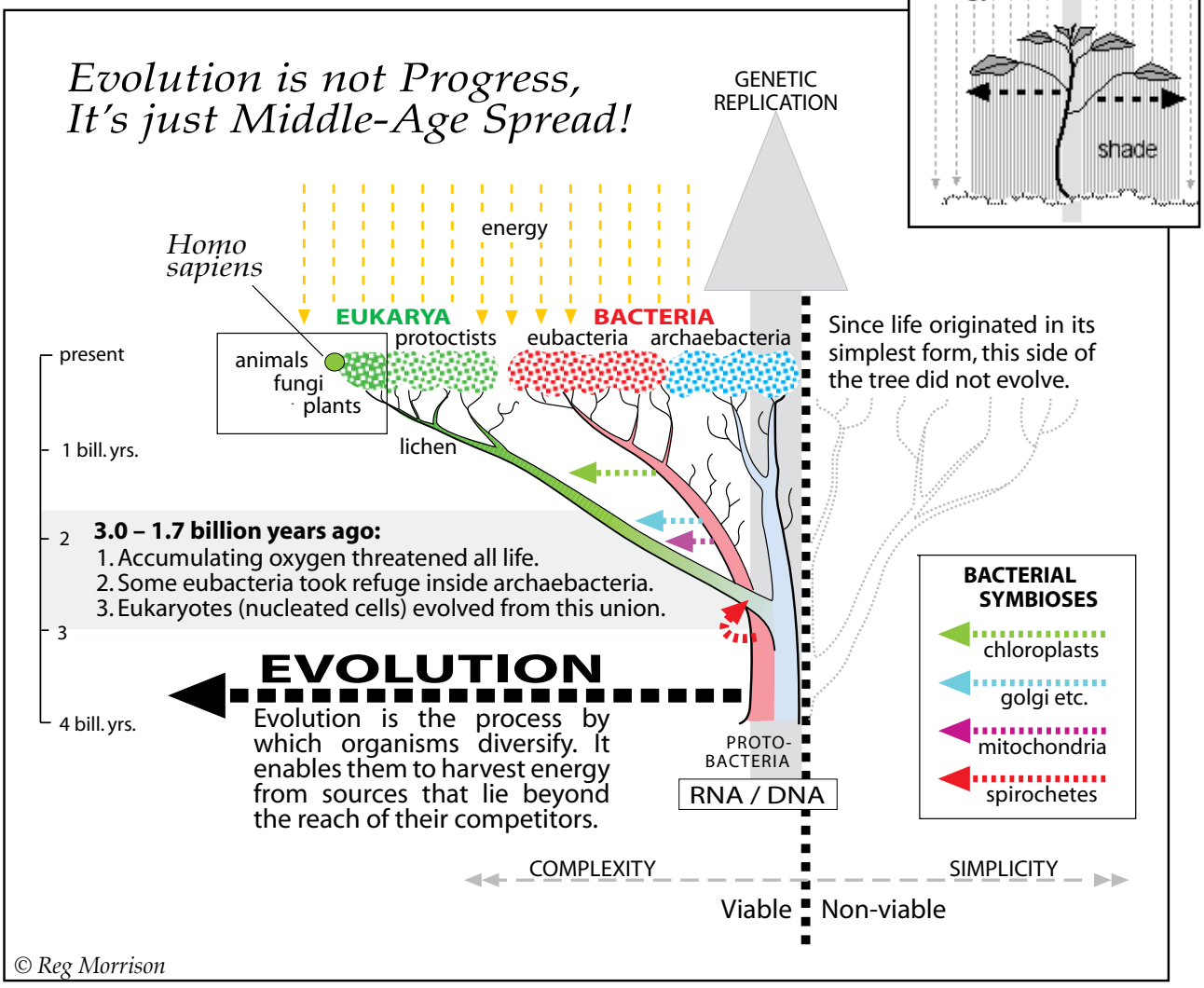
Conversely, Plate Tectonics, Global Warming, and the general theory of evolution are the very real fruits of a century of painstaking experimentation, assiduous data collection and continual re-testing.

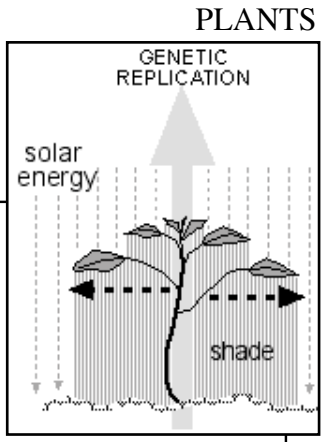
To summarise the distinctions:
Science pivots upon research data that is testable, falsifiable and predictive.
Intelligent Design hinges upon the many gaps that exist in the currently accepted evolutionary narrative, both Darwinian and genetic. Consequently it is neither testable, falsifiable nor predictive.

Here are a few examples:
1. We now know a good deal about the workings of a normal human brain. We know far less about the nature and origin of dysfunction in an incompetent, damaged or 'diseased' brain.
According to ID reasoning therefore, divine intelligence is best expressed in mental derangement.

2. Intelligent Design assumes that biological complexity represents evolutionary 'Progress'. In fact, complexity represents increased energy requirements and a greater vulnerability to environmental change. When the next comet hits this planet, the only survivors may be 'lower' life such as insects and a few marine invertebrates, or perhaps only bacteria.







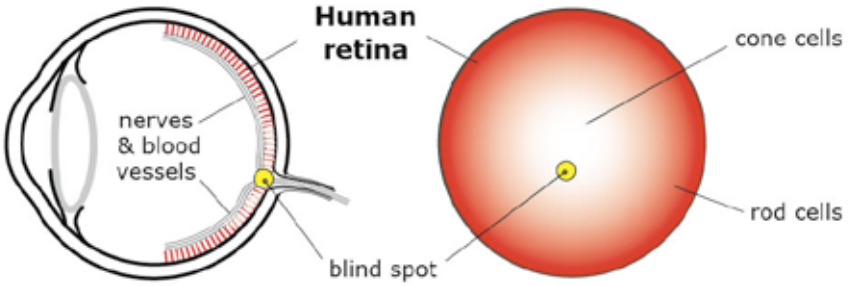
In short: Complexity is NOT Progress, it's just a sign of life's middle-age spread on this opulently fertile planet. In fact, the idea that evolution 'Progresses' is one of our species' most dangerous delusions.

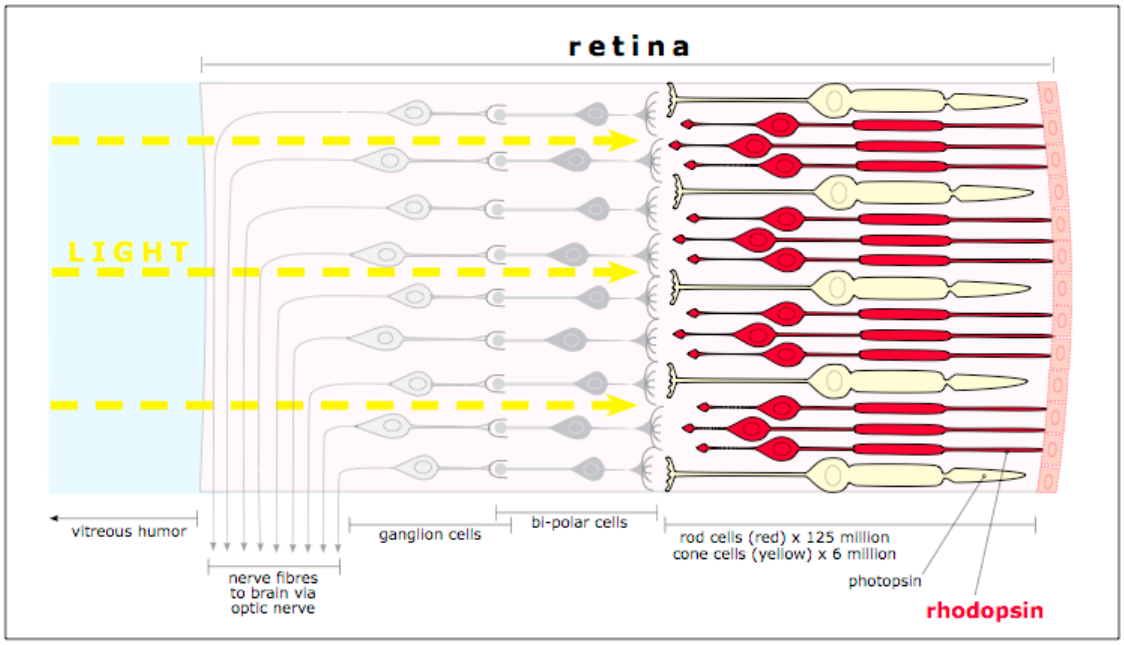
3. Intelligent Design also assumes that existing life forms and their biological structures represent 'irreducible complexity' of such perfection that it points unequivocally to the existence of an Intelligent Designer.

Here too, the facts tell a very different story.

A favourite ID argument for 'divine design' and 'irreducible complexity' is the human eye, yet it is sadly inefficient when compared to an octopus eye. All the light-sensitive cells (rods and cones) that form our retina face *away* from the incoming light, meanwhile our retinal blood vessels and optical nerves emerge within the eye cavity, traverse the backward-facing rods and cones, and then exit through a single, relatively large 'blind spot' near the centre of the retina.

In an octopus eye, the light receptors face the incoming light and all nerves and blood vessels exit directly through the back of the retina, so they enjoy perfect vision, with no blind spots.





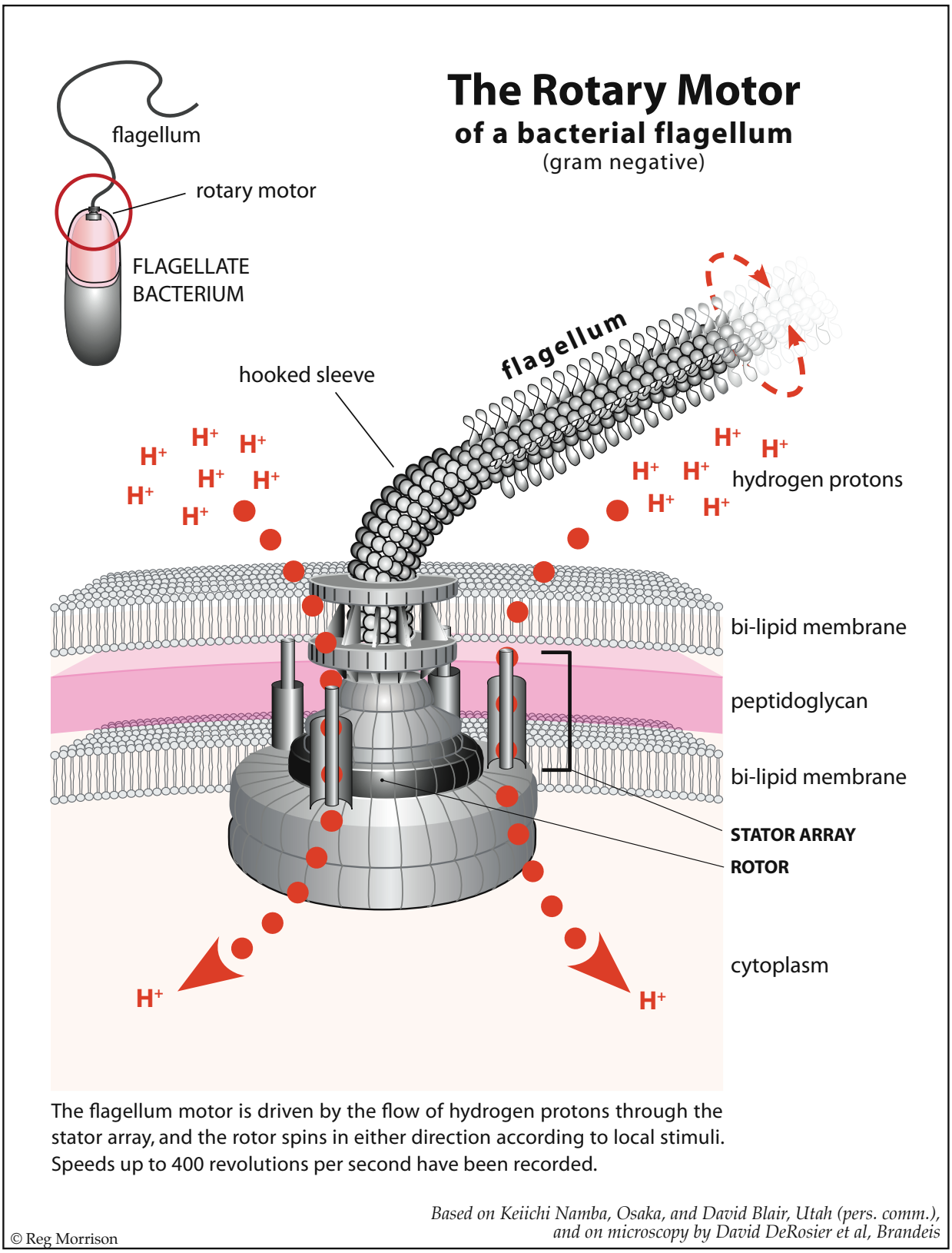
In other words, the two types of eye represent similar sensory assets that have been derived from two very different evolutionary starting points, but display a similar clarity of vision due to convergent evolution.

Similarly, design weaknesses inherent in the human backbone contribute to such ailments as sciatica, hernias and the prolapsed uterus. Most structural engineers could build a far more practical spine if they could redesign it from the coccyx up. This clearly points to the fact that evolution is without intent and simply 'makes do' with whatever evolutionary equipment is readily available at the time. Flawed designs like the human eye and spine reappear throughout the biota. If indeed they were divinely conceived, then their designer is a bungling amateur.

The rotary motor at the base of a bacterial flagellum is usually offered by proponents of ID as the ultimate example of 'irreducible complexity'. According to this argument the design of the flagellar motor is so unique and complex that it must have been intentionally designed by a 'super-natural intelligence'. Remove any part of any component and it loses all operational validity, the argument runs. The motor cannot therefore have evolved in stages and must have been designed and assembled during a single divine intervention.

But as is usual with ID arguments, this too, is founded on ignorance of current science. Very similar molecular structures do, in fact, exist and serve useful purposes in some other bacteria. One of these, known as the Type III secretion system, allows some Gram negative bacteria to interact with their eukaryotic host cells in plants and animals—including humans.

The flagellum's extraordinary rotary motor is shown below. It generates a torque which, if scaled up would equate to that of an 8 h.p. electric motor, and it drives much of the bacterial world in its daily search for nutrient and survival.

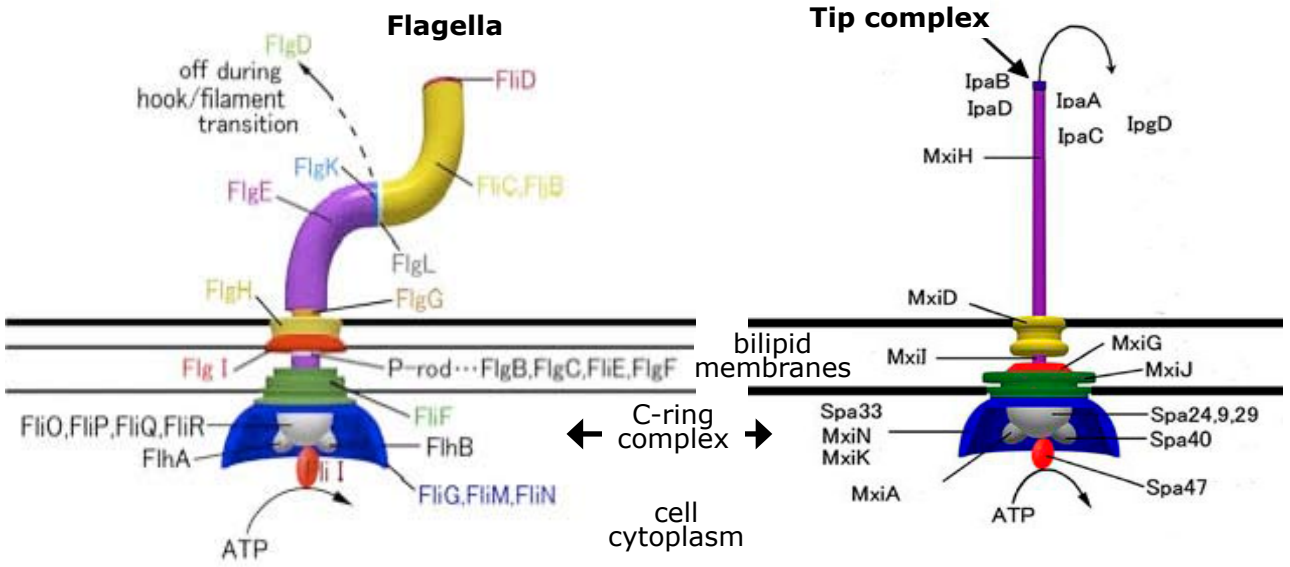


The flagellum motor is driven by the flow of hydrogen protons through the stator array, and the rotor spins in either direction according to local stimuli. Speeds up to 400 revolutions per second have been recorded.

Based on Keiichi Namba, Osaka, and David Blair, Utah (pers. comm.), and on microscopy by David DeRosier et al, Brandeis

It is now time to compare the two structures side by side …

The bacterial flagellum shares many components with bacteria's Type III Injection system. This either suggests that it preceded or evolved from the flagellar motor; but it now uses the protein-export motor to inject proteins into host cells during direct physical contact between the two cells types.



LEFT: Each component of the apparatus is represented by a specific colour, with labels indicating the particular protein it contains. The major part of the rotary motor, and also the protein-export motor required for the structure, are located in the cytoplasm and inner membrane. The curved purple section is the hook or universal joint, and the yellow curved portion is the flexible filament that acts as a helical propeller. Hydrogen ions (protons) flow through the outer membrane and then through a channel in the inner membrane. This proton flow makes the C-ring turn and leads to rotation of the entire structure all the way out to the filament.

RIGHT: Genetic, functional and structural features of the System III Secretion apparatus that are shared with the bacterial flagellar motor are indicated by similar colouring. The two structures are almost identical up to the termination of the needle and its tip complex. This tip complex is equivalent to the hook-filament junction proteins in the flagellum but serves here for host-cell sensing and protein injection.

(Courtesy of the Blocker laboratory, University of Bristol, UK)

Here too, Intelligent Design relies heavily of the average reader's ignorance of the biological details, and the 'Irreducible Complexity' proposition displays the same combination of ignorance and purposeful error that characterises all Intelligent Design argument.

Like its parent concept, Creationism, ID is just another untestable hypothesis stitched together by the wishful thinking of religious extremists. Australian students should not be fed such mystical pap in place of real science.

We should, instead, do everything we can to ensure that our children are properly aware of the glittering web of life that the processes of genetic and Darwinian evolution have woven on this cosmic Camelot during the past four billion years. Each one of them should fully understand that they too are expressions of that painstaking process, and that thanks to their unique and unfathomable genetic code, each has an inner life that no outsider can comprehend, manipulate or compromise.

Indeed, it is our secretive genes that make each of us unique, untameable and truly 'free' in the only sense that matters.