Why is it so difficult to accept Darwin’s theory of evolution?

On the popular fallacy that evolution has a predetermined direction, and the development of a responsible worldview based on free will

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Introduction

Most educated people do not understand Darwin’s theory of evolution. This is because the idea that our legs are not made for walking or our eyes for seeing is difficult to grasp. Adepts of intelligent design have it easier. Furthermore, stating that life evolves without a goal and in the absence of finality is shocking for most people because it clashes with their idea of the meaning of life. In fact, the theory of evolution is intellectually satisfying and it can serve as a solid basis for a responsible worldview in the sense of the Enlightenment. It need not come into conflict with transcendental belief. Early teaching of the basic principles of science by qualified teachers, together with the creative involvement of scientists, will help the general public to appreciate what the theory of evolution calls for, namely a worldview based on reality rather than on mysticism and dogma.

Among the many events organized in 2009 for the celebration of Darwin’s 200th birthday and the 150th anniversary of his major work, On the Origin of Species by means of Natural Selection [1], I was one of a group of volunteers willing to respond to requests for talks or discussions with the general public. Taking advantage of these encounters with educated lay people, I proposed a test consisting of one unique question: “Write down in a few words, the essential elements of Darwin’s theory of evolution.” To make things clear, I offered my own answer to a similar question about Newton’s gravitation theory: “The same natural law governs the fall of an apple and the movements of celestial bodies.” The result of the test was telling. Less than 20% of the answers were correct, but all shone light on the encountered obstacles. About half of the participants proposed the simple statement that the theory of evolution is... evolution, which located them close to a zero level of sound understanding. Another 20% referred to transformation, adaptation, shaping, or reaction, implying some Lamarck-type mechanism of evolution. The idea that life tends toward “something”, reminiscent of Théodore de Chardin’s omega point [2] was also frequently expressed. We were surprised that nearly 10% of the participants considered that the driving force of evolution is a flow toward complexity. These observations are similar to what has been reported elsewhere [3–5] (http://www.britishcouncil.org/new/press-office/press-releases/Darwin-survey-shows-international-consensus-on-acceptance-of-evolution/, consulted 09.10.2010). Why this poor understanding? We see two major reasons.

The theory of evolution is counterintuitive

The first reason is simple. The intuitive theory of life is not that of Darwin. It is the one that supposes finality. Who believes that our legs were not made for walking and our eyes for seeing? It appears natural to imagine that the structures we observe in the living world have been expressly designed for their function; an intelligent design, indeed, as was famously expressed by Bishop Paley in his Natural Theology [6], who observed that similarly as a watchmaker, living creatures prove the existence of
a divine power (http://en.wikipedia.org/wiki/Watchmaker_analogy, consulted 09.10.2010). The idea of biological design is so obvious that it constantly appears in discussions on biological matters and even in the scientific literature. Matt Ridley, whose competence in evolutionary biology is not questioned, writes for example: “Reverse transcriptase is a gene that serves no purpose at all as far as the human body is concerned... but it is useful to... the AIDS virus” [7] (p. 124). In fact, it is not surprising to think about an eye – or any biological structure – in terms of its well-adapted function. The finalistic view is ontologically wrong but, epistemologically, it is a convenient shortcut when describing how things work.

The principle of Darwin’s theory of evolution is much more difficult to grasp. One needs first to become familiar with examples that make it credible; Darwin’s finches, the harsh struggle for life in the natural environment, the huge waste of what is possible in contrast to what is realized, to cite just a few. Darwin developed his argument 150 years ago, starting with a description of the diversity of domestic pigeons [1]. Nowadays, we have no better way, even though the gallery of examples has been dramatically broadened, in particular through genetics, molecular biology, and bioinformatics. Nevertheless, even among biologists, few are those who can provide, on the spot, a strong reply to the question that Emma Darwin addressed to her husband and that he tried to answer in the chapter “The difficulties of my theory”. She was ready to accept that transformation-selection can explain a lot about evolution, but how can it account for an eye or a wing since they must first exist before selection can take place? Darwin replied that nothing radically new appears in evolution; everything occurs in a continuous process, even if it is long and tortuous. He offered some hints; for example, the skinny extensions between head and legs of the galeopitheque – a small mammal from Philippino, vaguely resembling a squirrel – suggests a possible path toward a flying mammal. As for the eye, he noticed that, if we start from a primitive photoreceptor, the continuation is not too difficult to imagine. He would have been delighted to learn about our present knowledge of the rhodopsin protein family, closely connecting, over a period of one billion years, the photoreceptor of the human eye and the salt pump of a Dead Sea bacterium.

The confrontation between intuitive understanding and reality is nothing new. The Copernican idea that the Earth revolves, not the Sun, also caused serious trouble in the past but nowadays everybody accepts it as obvious. Will this be the case with the theory of evolution? I have my doubts.

The theory of evolution opposes most people’s worldview

Not all of us are scientists but we are all philosophers. Everyone wonders about the meaning of life. On this matter also, Darwin has something to say.

A possible start is the classical statement: Science deals with the question “how?”. While philosophy deals with the question “why?”. Both affirmations rely on heavy presuppositions. The first implies causality. It embodies the hope that things can be understood and eventually mastered, thereby providing a basis for the philosophy of the Enlightenment [8].

The second affirmation assumes finality. Why? What for? For which goal? For these questions, Darwin has an answer: in life, there is no finality, so the question “why?” makes no sense, full stop! Here is where the shoe pinches. During discussions with non-specialists, signs of tensions are frequently observed. The instant they understand that biological evolution does not lead anywhere. They formulate their disagreement, generally arguing that they, themselves, know why they are here and where they want to go; that is why life makes sense.

That’s right! With humans, something major took place in evolution: a dramatic increase of the capability for apprehending a complex environment and acting on it. Darwinian evolution is bowing out. Humans have their future in their hands.

The subjective impression that every action is performed with a goal in mind came with this evolutionary leap. Be it the snap of the finger on a tickling flea, or an analysis of the most elaborate scientific argument, we hate to think that anything escapes our conscious mind. Reality is different. Freud constructed psychoanalysis on this error [9]. Modern neurobiology shows its extent and diversity [10]. My preferred citation comes from the last sentence of the appendix to War and Peace by Tolstoy [11]: “… this physiological law, which forces a man performing the least free act to imagine, afterwards, a number of reasons proving that he acted freely” (my translation). It is easy to imagine the evolutionary advantage that this interpretative bias conforms to Max Frisch’s Homo faber.

The human desire for finality extends further: it includes transcendence. Religiosity is, in fact, one more trait of our human nature as is made evident by ethnology [12, 13], evolutionary biology [14], population genetics [15], or the science of religion [16]. Where does this come from? It has been suggested that it offers a sufficient advantage to be selected by evolution [17]. Others think it is a necessary corollary to the development of human intelligence when faced with the fear of death [18]. Still others see religion as a by-product of some other naturally selected function. In all cases, the consequence for us is that “Some form of religious thinking seems to be the path of least resistance for our cognitive systems. In contrast, disbelief is generally the result of deliberate, effortful work against our natural cognitive dispositions – hardly the easiest ideology to propagate” [13]. This conclusion holds unchanged for a finalistic worldview as opposed to the theory of evolution.

All these considerations lead us to reevaluate the results of the test performed on my listeners. Twenty percent of Swiss people are able to write down the fundamentals of Darwin’s theory; this is really not so bad. How to improve it even further?

Some solid assets support the task of presenting the theory of evolution in such a way that it can be understood and accepted by the general public. One is that it is intellectually satisfying; the other is that it points toward a responsible worldview, devoid of metaphysical torments.

The theory of evolution is intellectually satisfying

As scientists, we know the deep pleasure of understanding. We are not alone,
address the general public would certainly improve the scarce scientific culture of our fellow citizens.

**The theory of evolution sets the ground for a responsible worldview**

The philosophical aspects of the theory of evolution extend beyond the scope of the present article. They must, nevertheless, be kept in mind, since they are a determinant for the public acceptance of Darwin’s ideas. We will only consider the two following points.

The theory of evolution discards finality from the realm of the living world. In the absence of a transcendental answer or dogma, human beings, who can elaborate complex representations and act intentionally (the word “conscience” could find its place here) are responsible for their future and are left with the difficult task of finding out what they should do with their own life. Fortunately, nobody faces a blank slate. Every human civilization has grappled with the question of “self-made destiny”. The recurring solution is generally close to The Golden Rule of Moral Philosophy (http://en.wikipedia.org/wiki/The_Golden_Rule, consulted 9.10.2010), embodied in the sentence: “So in everything, do to others what you would have them do to you” (The Bible, Matthew, 7:12). There are plenty of variations on the theme but the fundamental idea has remained the same for a few thousand years. It is a good start for constructing one’s own moral and political posture in life.

Even if the theory of evolution describes life without involving divine action, it does not prove the absence of transcendence or the non-existence of God. The blameless Darwinians who declared their indisputable religiosity [20] prove that a peaceful collaboration is possible. In my view, it should be valued.

**Is the goal worth the effort?**

Convincing the public at large that Darwin’s theory of evolution is correct will be long and difficult. Is it really necessary? Is it even useful?

Considered in a global context, the question calls for a positive answer. In fact, it is nothing short of the democratic, free, egalitarian quest that the Enlightenment initiated nearly 400 years ago in a Europe ravaged by religious conflicts [21]. The goal was a world based on shared reason and knowledge rather than on dogma, mysticism, and incidental emotions. The fight is not over.

**References**