Parliamentary **Assembly**
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The dangers of creationism in education

Report
Committee on Culture, Science and Education
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Summary

Creationism in any of its forms, such as "intelligent design", is not based on facts, does not use any scientific reasoning and its contents are definitely inappropriate for science classes.

However, some people call for creationist theories to be taught in European schools alongside or even in place of the theory of evolution. From a scientific view point, there is absolutely no doubt that evolution is a central theory for our understanding of life on Earth.

The Assembly calls on education authorities in member states to promote scientific knowledge and the teaching of evolution and to oppose firmly any attempts at teaching creationism as a scientific discipline.

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A. Draft resolution

1. For some people the Creation, as a matter of religious belief, gives a meaning to life. Nevertheless, the Parliamentary Assembly is worried about the possible ill-effects of the spread of creationist ideas within our education systems and about the consequences for our democracies. If we are not careful, creationism could become a threat to human rights which are a key concern of the Council of Europe.

2. Creationism, born of the denial of the evolution of species through natural selection, was for a long time an almost exclusively American phenomenon. Today creationist ideas are tending to find their way into Europe and their spread is affecting quite a few Council of Europe member states.

3. The prime target of present-day creationists, most of whom are Christian or Muslim, is education. Creationists are bent on ensuring that their ideas are included in the school science syllabus. Creationism cannot, however, lay claim to being a scientific discipline.

4. Creationists question the scientific character of certain items of knowledge and argue that the theory of evolution is only one interpretation among others. They accuse scientists of not providing enough evidence to establish the theory of evolution as scientifically valid. On the contrary, they defend their own statements as scientific. None of this stands up to objective analysis.

5. We are witnessing a growth of modes of thought which, the better to impose religious dogma, are attacking the very core of the knowledge that we have patiently built up on nature, evolution, our origins and our place in the universe.

6. There is a real risk of a serious confusion being introduced into our children's minds between what has to do with convictions, beliefs, ideals of all sorts and what has to do with science, and of the advent of an "all things are equal" attitude, which may seem appealing and tolerant but is actually disastrous.

7. Creationism has many contradictory aspects. The "intelligent design" idea, which is the latest, more refined version of creationism, does not deny a certain degree of evolution but claims that this is the work of a superior intelligence. Though more subtle in its presentation, the doctrine of intelligent design is no less dangerous.

8. The Assembly has constantly insisted that science is of fundamental importance. Science has made possible considerable improvements in living and working conditions and is a not insignificant factor in economic, technological and social development. The theory of evolution has nothing to do with divine revelation but is built on facts.

9. Creationism claims to be based on scientific rigour. In actual fact the methods employed by creationists are of three types: purely dogmatic assertions; distorted use of scientific quotations, sometimes illustrated with magnificent photographs; and backing from more or less well-known scientists, most of whom are not specialists in these matters. By these means creationists seek to appeal to non-specialists and sow doubt and confusion in their minds.

10. Evolution is not simply a matter of the evolution of humans and of populations. Denying it could have serious consequences for the development of our societies. Advances in medical research with the aim of effectively combating infectious diseases such as AIDS are impossible if every principle of evolution is denied. One cannot be fully aware of the risks involved in the significant decline in biodiversity and climate change if the mechanisms of evolution are not understood.

11. Our modern world is based on a long history, of which the development of science and technology forms an important part. However, the scientific approach is still not well understood and this is liable to encourage the development of all manner of fundamentalism and extremism. The total rejection of science is definitely one of the most serious threats to human rights and civic rights.

12. The war on the theory of evolution and on its proponents most often originates in forms of religious extremism which are closely allied to extreme right-wing political movements. The creationist movements possess real political power. The fact of the matter, and this has been exposed on several occasions, is that some advocates of strict creationism are out to replace democracy by theocracy.

13. All leading representatives of the main monotheistic religions have adopted a much more moderate attitude. Pope Benedict XVI, for example, as his predecessor Pope John-Paul II, today praises the role of the sciences in the evolution of humanity and recognises that the theory of evolution is “more than a hypothesis”.

14. The teaching of all phenomena concerning evolution as a fundamental scientific theory is therefore crucial to the future of our societies and our democracies. For that reason it must occupy a central position in the curriculum, and especially in the science syllabus. Evolution is present everywhere, from medical overprescription of antibiotics that encourages the emergence of resistant bacteria to agricultural overuse of pesticides that causes insect mutations on which pesticides no longer have any effect.

15. The Council of Europe has highlighted the importance of teaching about culture and religion. In the name of freedom of expression and individual belief, creationist ideas, as any other theological position, could possibly be presented as an addition to cultural and religious education, but they cannot claim scientific respectability.

16. Science provides irreplaceable training in intellectual rigour. It seeks not to explain “why things are” but to understand how they work.

17. Investigation of the creationists’ growing influence shows that the arguments between creationism and evolution go well beyond intellectual debate. If we are not careful, the values that are the very essence of the Council of Europe will be under direct threat from creationist fundamentalists. It is part of the role of the Council’s parliamentarians to react before it is too late.

18. The Parliamentary Assembly therefore urges the member states, and especially their education authorities:

18.1. to defend and promote scientific knowledge;

18.2. strengthen the teaching of the foundations of science, its history, its epistemology and its methods alongside the teaching of objective scientific knowledge;

18.3. to make science more comprehensible, more attractive and closer to the realities of the contemporary world;

18.4. to firmly oppose the teaching of creationism as a scientific discipline on an equal footing with the theory of evolution and in general resist presentation of creationist ideas in any discipline other than religion;

18.5. to promote the teaching of evolution as a fundamental scientific theory in the school curriculum.

19. The Assembly welcomes the fact that 27 Academies of Science of Council of Europe member states signed, in June 2006, a declaration on the teaching of evolution and calls on academies of science that have not yet done so to sign the declaration.

B. Explanatory memorandum
Introductory note by Mrs Anne Brasseur, Luxembourg, ALDE

1. The Committee on Culture, Science and Education approved the report by Mr Guy Lengagne on this subject with one vote against and one abstention on 31 May in St Petersburg. Following a decision by the Assembly Bureau, the report should have been discussed during the Assembly June part-session, together with two other reports by the Committee, in a joint debate on intercultural and inter-religious dialogue.

2. On 25 June, while adopting the order of business for the June part-session, the Assembly approved a proposal to refer this report back to the Committee. On 26 June, the Committee expressed its support for the Rapporteur, Mr Lengagne, and underlined its determination to see this subject on the agenda for the next plenary session in October. As Mr Lengagne was leaving the Parliamentary Assembly of the Council of Europe, the Committee appointed me to succeed him as Rapporteur.

3. The Assembly decision not to discuss this issue in its June session attracted the attention of the media. This showed beyond any doubt that the discussion of the dangers of creationism in education is a politically topical question which should be dealt with by the Council of Europe and most particularly by its Committee on Culture, Science and Education.

4. I make a point of personally thanking Mr Lengagne for his commitment, his competence and his scientific rigour.

5. The aim of this report is not to question or to fight a belief – the right to freedom of belief does not permit that. The aim is to warn against certain tendencies to pass off a belief as science.

6. It is necessary to separate belief from science. It is not a matter of antagonism. Science and belief must be able to coexist. It is not a matter of opposing belief and science, but it is necessary to prevent belief from opposing science.

7. For these reasons I propose that Mr Guy Lengagne's text, to which I have made several changes in order to take into account certain comments, serve as the basis for our debate.

Report of Mr Guy Lengagne (revised)

1. Mr McIntosh and eighteen of our colleagues have signed a motion for a recommendation entitled "The dangers of creationism in education". In order to examine the merits of this recommendation, the Assembly decided to ask the Culture Committee to produce a report on this important and difficult issue.

2. As creationism is first of all a reaction to the theory of evolution, it appeared important to describe this theory. Moreover, the most orthodox form of creationism denies the scientific character of the theory of evolution while claiming to be a science itself. This question cannot be considered without employing some basic definitions.

3. This compelled me to discuss in the first part of my report a number of technical matters. These may seem somewhat dry in nature but without taking a brief look at the biological questions involved it is not possible seriously to show that evolution is a real science and that creationism, which falls under religion, cannot lay claim to the status of science – and therefore cannot be taught as such.

Evolution: a genuine scientific theory

4. As far as the origins of the universe, the Earth and species are concerned, several theories clash with one another and a number of questions remain unanswered. In all periods of history, people have wondered about their origins and the origin of the Earth. *Where have we come from?* Religions claim to provide them with answers, including the idea that there is a supreme being, one God that is at the origin of everything – the universe, the Earth and the human race. This belief in an omnipotent "God Creator" is one of the main tenets of the three principal monotheistic religions, Judaism, Christianity and Islam.

5. In 1802, William Paley (1743-1805), an Anglican archdeacon, developed the idea of *natural theology*. He wrote that a person who found a watch on a heath could not deny the existence of a superior intelligence that had designed, made and lost the object. God was no other than the watchmaker of the world and human beings discovered the results of his work in the treasures of nature. Various discussions opposing Paley's idea of natural theology and the Biblical story of Genesis were to arise in the 19th century.

6. The first major upheaval came about as a result of the work of John Baptiste Lamarck (1744-1829), a French biologist. At the beginning of the 19th century, Lamarck presented his basic theory of "transformism" in a work entitled *Philosophie Zoologique*. A few years later, on 29 November 1859, Charles Darwin (1809-1882) published a work entitled "*On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life"*, in which he also put forward the idea that species evolve. Today, it is considered the founding work of the theory of evolution. According to this theory, which contrasts sharply with the knowledge and fears of the time, the biological characteristics of living beings evolve in the course of time and genuine natural selection operates for the survival of species. Through his activities and this work, Darwin proposed to the people of his time a new hypothesis concerning the evolution of species and human beings. His works *mark the end of the agreement between natural history and the Christian tradition,* as well as *the birth of anti-evolutionist movements*[1]*.*

7. From then on, there were two camps that faced one another: those who were convinced that Darwin had to be opposed in order to defend Christian theology and those who thought that the theory of natural selection would enable humankind to put an end once and for all to the theoretical foundations of "religious obscurantism".

8. Creationism thus came about in opposition to Darwin's theory of evolution. Since we are dealing with science here, we must be precise about the subject we are discussing: *What is evolution?*

Evolution

9. It should be pointed out that our genes, from which the word "genetic" derives, carry information about the characteristics of a living organism, whether it be a simple bacterium or a human being. A gene is a "piece" of DNA (deoxyribonucleic acid). DNA carries the genetic information of every living being. Moreover, the study of DNA is being used more and more outside the area of scientific research, for example to disprove or verify parenthood or to clear up certain criminal offences. DNA, as will be seen, is very widely used in the science of evolution.

[1] Jacques Arnoult, *Dieu Versus Darwin*, Albin Michel, February 2007 p. 33.

10. Populations evolve when individuals with certain characteristics (such as tallness) have more descendants than other individuals. The characteristics inherited from the individuals with many descendants become more frequent in the following generations:

- Biological evolution is defined as a modification of the genetic characteristics in the course of time within a group of living beings or a population.
- Adaptation refers to the characteristics of an organism that improve its ability to survive and reproduce in total harmony with its natural environment. Adaptations are the result of natural selection.
- Biodiversity results from the repeated separation of one species into two or more new species (which specialists call “speciation”). When a single species separates into two, the two resulting species share numerous characteristics as they derive from a common ancestor.

11. Evolution thus explains how organisms adapt to their environment (by natural selection), how the diversity of life was formed (by speciation) and why different organisms share characteristics (through a common ancestor). In this connection, it is important to stress that it is wrong to claim that human beings descend from monkeys. They are closely related to monkeys and have a common ancestor but there is no direct line of descent between the two.

12. There is a considerable body of scientific evidence concerning evolution. Scientists have shown that evolution is a fact because of

- the evidence provided by palaeontological data,
- the numerous cases of characteristics shared by organisms with a common ancestor,
- the reality of continental drift,
- direct observations of genetic changes in populations.

13. It should be pointed out that the human being is just one of the links in the long chain of evolution.

14. Scientific advances and discoveries in the field of genetics have made it possible to demonstrate the existence of genetic mutations that come about at random and are not oriented towards a particular goal. It is the modification of genes in the descendence of living beings that defines biological evolution. Among the organisms that reproduce by sexual means, genetic variability increases through crossing over, the independent assortment of chromosomes and fertilisation. These various mutations and any other processes that rearrange the genetic information combine to bring about the evolution of species and populations and tend to reinforce the variability of individuals and species on the planet. Genetic modifications trigger morphological, biochemical and behavioural differences. Natural selection and/or genetic drift have an effect on the differences between individuals or species in order to produce evolutionary changes.

15. Apart from demonstrating the process of evolution, scientists have been able to show the consequences of this process for life on Earth. Three main characteristics define the latter: the adaptation of organisms to their environment, speciation (the repeated separation of one species into two or more new species), which contributes to the diversity of life on Earth, and the existence of common ancestors. Evolution involves these different characteristics of that life.

16. Palaeontological data, such as the fossil record, provide clear proof of the evolution of species and individuals in the course of time. Fossils are the preserved remains of organisms that lived a long time ago. They enable biologists to reconstruct the history of life on earth and, even though a number of uncertainties remain, provide evidence to give weight to the idea that species have evolved in the course of time. Palaeontology also confirms the existence of new groups of organisms on the basis of organisms that existed previously.

17. The fact that these organisms share common characteristics is consistent with the biological blueprints of the evolutionary relations. One of the main propositions of the theory of evolution is that organisms should carry in themselves the evidence of their evolutionary past, and this is indeed the case. The similarities in the models of development can be explained by their descent from a common ancestor. The proteins and DNA of organisms that share a common ancestor are closer than the proteins and DNA of those that do not share a recent common ancestor.

18. Continental drift, which is the result of the splitting up of the Pangea (the old supercontinent comprising almost all the land that emerged from the Carboniferous period at the beginning of the Jurassic) at least 200 million years ago, also enables proof of evolution to be furnished. The fossils of organisms that

evolved when the continents were connected have a wider geographical distribution than those of organisms that have evolved more recently. The effect of continental drift was to separate families of living organisms and thus bring about their development, independently of their descent, as well as the appearance of new species and the extinction of others.

19. Finally, scientists have been able to observe, whether in the laboratory or in nature, genetic changes in the course of time in the populations or species studied. They have also been able to trigger genetic modifications themselves by crossing species. This is called artificial selection. Natural and artificial selection make it possible to provide evidence of evolution.

20. In order to illustrate this point, let us mention a few examples that show the process of evolution:

Research on the fight against AIDS has brought to light new aspects that confirm that evolution has taken place. After developing new treatments for HIV that appeared very promising, researchers discovered that this virus was rapidly evolving in order to keep adapting to its environment. HIV has a particularly elevated mutation rate but that in itself does not make it possible to explain the fact that this virus evolves by considerably increasing its ability to resist clinical therapies. There is often an interval of about ten years between the moment when an individual is afflicted by the virus and when the first AIDS symptoms are triggered. During this period, no appreciable increase in the HIV concentration in the blood is established. However, scientists have shown that the virus has produced millions of viral descendants during this period, which implies that enormous quantities of virus are destroyed very quickly after they have been produced. The body therefore hosts many different strains of HIV that compete with one another and fight to survive against the various clinical therapies. More generally, the recent changes in the AIDS virus are evidence of the ability of any organism to evolve.

21. The resistance of many insects to new pesticides shows they are similarly able to adapt to a new environment in which only those that are most resistant will survive. Resistance to antibiotics also tells us a great deal. Today, many species of bacteria are resistant to all kinds of antibiotics because, as a result of natural selection, only the few bacteria that have resisted have been able to multiply.

22. It is important to note that the number of means of verifying the hypotheses put forward has increased since Darwin. From the form of the fossils discovered to the study of their DNA, the cross-checking of information makes it possible to achieve considerable objectivity.

23. There can be no doubt that evolution is a genuine science.

24. As Guillaume Lecointre, a professor of zoology at the National Natural History Museum in Paris, points out, *science is the totality of operations that produce objective knowledge. A statement on the world can only be described as objective if it has been verified by an independent observer. This verification depends on three factors: scepticism, rationality and logic and, finally, methodological materialism. These three pillars ensure the objectivity of a scientific result.*

25. Scientific research on the subject of evolution has been no exception.

26. At present, scientists from all nations, races and religions agree on the existence of evolution and accordingly no longer try to find out whether it has actually taken place but “how” this has happened. A number of questions remain within the scientific community with regard to understanding all the processes that lead to evolution. In particular this work consists in *revealing the mechanisms that have governed the present structuring of biodiversity*[2]*.* However, no science is ever complete and new discoveries regularly enable progress to be made on understanding “how” things are as they are.

27. In addition, as Hervé Le Guyader emphasises, *evolutionist thinking now pervades all areas of biology and, through the historical dimension of the process of evolution, also affects the sciences of the Earth and the universe*. The advances in evolution research have in fact resulted in broadening the basis of this theory, so that today the evolution of populations, including human populations, is only part of evolution as a whole. Research being done on evolution is still providing more evidence for the truth of the theory of evolution.

28. One of the discoveries that has been made in the study of our planet and has been confirmed many times, is the dating of the major events that have marked its development:

[2] Hervé Le Guyader, biologist, Professor at the University of Paris VI - Pierre and Marie Curie.

- the solar system, which includes the Earth, was formed approximately 4.6 billion years ago;
- life appeared on Earth at least 2.5 billion years ago (in the form of unicellular bacteria);
- about 200 million years ago Pangea began to split up to form the continents we know today;
- homo sapiens, ie human beings, emerged between 100,000 and 200,000 years ago.

It is thus not hard to understand why these discoveries have presented a challenge to those who apply a strict interpretation to the first part of the Bible, ie Genesis.

Creationism

29. These various discoveries and scientific advances concerning evolution led to strong opposition from various so-called "creationist" movements (the word derives from "creation" in the biblical sense of the term).

30. The most intransigent of the supporters of creationism claim that the world was created by God in six days and maintain that the transformist or evolutionist theories that conflict with the *Bible*, according to which God created each plant or animal species individually, can only be lies. They say that science is wrong because, in the strictest possible sense, the Bible says something else – which reminds us, incidentally, of the trial of a man called Galileo.

31. This strict creationism is subdivided into two branches, one that categorically rejects the scientific discourse and another, also called "scientific creationism" or "science of creation", that thinks that the science versus religion conflict is only an illusion.

32. According to "scientific creationism", the author of creation, as described in the Bible, is always present and intervenes in the various processes that bring about evolution. Within scientific creationism, the debate on the Earth's age divides the so-called "young-earth creationists" (YECs) from the "old-earth creationists" (OECs). The first apply a literal interpretation of the first eleven chapters of Genesis, while the second group admit that creation may have taken place over a long period and seek to reconcile the scientific data with the story of Genesis.

33. Alongside these different movements that come together under the heading of strict creationism, we also find so-called progressive creationism, which does not totally reject evolution but argues that creation necessarily involved successive divine interventions.

34. Confrontations between creationists and followers of Darwin's theories took place throughout the 19th and 20th centuries, especially in the United States. In 1925, at the so-called "Monkey Trial", John Scopes, a teacher in Dayton, Ohio, was convicted for teaching his pupils the theory of evolution. However, as a result of scientific discoveries and advances, especially in the filed of biology, the theory of evolution gradually gained acceptance. In 1968, the United States Supreme Court declared the anti-evolutionist laws in force in several states unconstitutional.

35. The last quarter of the 20th century was marked by an appreciable resurgence of creationist ideas. In the light of the setbacks they had sustained against the supporters of the theory of evolution, the creationists tried to adapt, and did so to such an extent that in the current statements of the "neocreationists" references to God and the Bible are, or at least it would appear, totally absent. There is no longer any question of divine creation. The neocreationist movement, which mainly consists of the advocates of "intelligent design", defends the hypothesis of the intervention of a so-called superior intelligence. Describing it as scientific, the supporters of intelligent design demand that their ideas be taught in biology classes alongside the theory of evolution.

36. However, in 2005 the intelligent design creationists also suffered a setback when the Pennsylvania judge John Jones declared that the teaching of intelligent design in schools violated the constitutional separation of church and state.

37. Nevertheless, creationism (or neocreationism) is still well-developed in the English-speaking countries, especially the United States and Australia. While most curricula in Europe today unashamedly teach evolution as a recognised scientific theory, the same does not apply to the United States. In July 2005, the Pew Research Center conducted a poll that showed that 64% of Americans favoured the teaching of intelligent design alongside the theory of evolution and that 38% would support the total abandonment of the teaching of evolution in publicly owned schools. The American President George W. Bush supports the principle of teaching both intelligent design and the theory of evolution. At the moment, 20 of the 50 American states are facing potential adjustments of their school curricula in favour of intelligent design.

Creationism in Europe

38. Many people think that this phenomenon only affects the United States and that, even if it is not possible to be indifferent to what is happening on the other side of the Atlantic, it is not the Council of Europe's role to deal with this issue. That, however, is not the case. On the contrary, it would seem crucial for us to take the appropriate precautions in our 47 member states.

39. Alongside Christian creationism there is now Muslim creationism: the creationist arguments of Christian origin became popular among the Muslims with the rise of the Islamist movements at the beginning of the 1980s.

40. Today, creationists of several faiths are trying to get their ideas accepted in Europe. As a result, we have seen several initiatives from these various movements on the Eurasian continent in the last few years, with schools apparently the main target. The beginning of 2007 saw an offensive by the Turkish creationist Harun Yahya, who sent his last and very lavish work, entitled "The Atlas of Creation", which claims to denounce the deception of the theory of evolution, to a large number of French, Belgian, Spanish and Swiss schools. In France, the Ministry of Education, after consulting specialists, immediately reacted by expressly calling for this work to be removed from the resource centres of the schools concerned as the book met none of the quality requirements laid down for classroom teaching.

41. The creationists are attacking on two fronts: they either deny the scientific nature of evolution or try to put the lack of certainty at the centre of the debate that pits them against the supporters of the theory of evolution. To this end, they rely on the fact that the science of evolution, like any science, is not "closed", ie it casts doubt on certain elements or describes others in greater detail (without this calling into question the foundations on which it is based).

42. For the creationists of all persuasions, the element of uncertainty that surrounds scientific work on the subject of creation and evolution is much too large to give this theory sufficient credence. Do they need to be reminded that this applies to all science? It is only necessary to cite the example of the atom, which was considered indivisible and was then split into its nucleus and electrons, after which quarks were discovered. However, these scientific discoveries have never challenged the basis of atomic theory! A scientific theory produces new knowledge that it tries to interpret according to the prevailing paradigms, which forces the theory to evolve in order to take account of these new data.[3] However, reviewing and evolving a theory does not mean calling into question its basic principle, and the same applies to the theory of evolution.

43. While the most radical creationists adhere to a crude denialism by completely denying the scientific advances and discoveries concerning the evolution of species, other creationist movements proclaim themselves scientific, a claim that is completely contradictory. So-called scientific creationism is in fact the desire to place the narrative of the holy books on a scientific basis. However, as Guillaume Lecointre emphasises, *just as the construction of a myth has nothing in common with the construction of a scientific assertion, the statements made in the context of the two theories have very little chance of tying up with one another.* Other movements promote the idea that evolution has indeed taken place but is the result of the act of a transcendent will, an *"intelligent design"*.

44. In the light of these assertions and other claims of scientific legitimacy emanating from various creationist movements, it is justified to ask: *How can the creationists claim to be able to provide scientific proof for what they are saying?* The scientific nature of an assertion depends to a large extent on the ability to verify its objectivity by reproducing experiments or observations. As we shall show, the scientific character of the alternative ideas put forward by the creationists can be seriously called into question, indeed totally refuted.

45. *While the evolution sciences have evolved considerably since Darwin, the creationists have not gone beyond their pitiful level of quibbling*[4]*.* Evolution has not stopped "evolving" since Darwin theorised it. Science is a body of knowledge constantly being built and rebuilt. The scientific approach consists in continually questioning models, which remain true unless and until they have been refuted. The creationist arguments have never evolved and are not based on any scientific proof. Facts are presented without theory, or theoretical arguments are put forward without any facts to confirm or refute them. Creationism appears more dogmatic than scientific.

[3] Pascal Picq*, Lucy et l'Obscurantisme*, Odile Jacob, April 2007, p. 166
[4] Pascal Picq*, op. cit.*, p.98.

46. Guillaume Lecointre has shown that they have been somewhat cavalier with regard to elementary rules of science. The first breach of these rules is their lack of scepticism. In every creationist experiment, *faith imposes a preconceived idea of the expected result*. Faith does not permit them objectively to accept the result of a scientific experiment if it does not correspond to their beliefs, so it would seem impossible to reconcile faith and science. The second breach noted concerns the fact that even if the creationists seem to comply with the principles of logic, that logic is based on false premises, indeed on *a tendentious selection of facts*. Finally, mention may be made of a large number of breaches of the principles of methodological materialism and experimentation. As G. Lecointre emphasises, scientific creationism is *by definition the very opposite of science because it denies the need for recourse […] to material realities […] in order to establish truths.* However, let us repeat: it is not possible to establish knowledge without scientific evidence and without verifying its objectivity and scientific character by the reproduction of experiments and/or observations. The creationists make a number of claims that cannot be scientifically tested and are thus not provable. It is therefore easy to see through the deception of the creationists who claim to follow scientific principles. This deception is all the greater as, being aware that it is impossible for them to prove scientifically what their dogma advocates, some creationists even go so far as to fabricate facts and evidence. Thus, apart from the absurd interpretations put forward by some creationists, it would seem that others do not hesitate to fabricate "pseudo" evidence to try to prove the scientific nature of their statements.

47. Thus the Turkish preacher Harun Yahya seems to employ both these methods. In his numerous anti-Darwin works, he tries to prove the absurdity and unscientific nature of the theory of evolution, which is for him only one of Satan's greatest deceptions. However, the pseudo-scientific method he uses in his work *The Atlas of Creation* cannot in any way be considered scientific. The author tries to prove the non-scientific nature of the theory of evolution by taking and challenging the evidence of evolution. He does not mention any prior questioning. Moreover, as he only compares photographs of fossils to photographs of current species he provides no scientific proof for these statements. Even better, as Pascal Picq mentions by way of example, on page 60 of this work we see a superb photograph of a fossil of a perch with a claim in the caption that this fish has not evolved over millions of years. That, however, is wrong: a detailed study of the fossil and perches living today shows that, on the contrary, they have evolved a great deal. Unfortunately, Yahya's book is full of this type of falsehood. None of the arguments in this work are based on any scientific evidence, and the book appears more like a primitive theological treatise that the scientific refutation of the theory of evolution. It may be noted that Yahya says he has the support of major scientists. They would also have to be specialists in the biology of evolution!

48. Similar criticism can be made about the "pseudo"-scientific character of the intelligent design ideas. Its supporters present the Darwinian theory of evolution not as a scientific theory but as an ideology or a "natural philosophy" and therefore think it either cannot be taught in schools as a "science" or that the intelligent design ideas must be taught at the same time. There is consequently a tendency to justify the inclusion of the intelligent design ideas, which are presented as scientific because of the total lack of any reference to the Bible and God, in the school curricula. However, as G. Lecointre has shown, the intelligent design ideas are anti-science: *any activity involving blatant scientific fraud, intellectual deception or communication that blurs the nature, objectives and limits of science may be called anti-science.* The intelligent design movement would seem to be anti-science for several reasons. Firstly, *the nature of the science is distorted.* Secondly, *the objectives of the science are distorted. The writings of the leaders of this movement show that their motivations and objectives are not scientific but religious.*

49. The intelligent design ideas annihilate any research process. It identifies difficulties and immediately jumps to the conclusion that the only way to resolve them is to resort to an intelligent cause without looking for other explanations. It is thus unacceptable to want to teach it in science courses. It is not enough to present it as an alternative theory in order to have it included in the science syllabus. In order to claim to be scientific, it is only necessary to refer to *natural causes in one's explanations. The intelligent design ideas, however, only refers to supernatural causes*.

50. In addition, the failure to publish the work done by the various creationist movements is merely a reflection of their non-acceptance by the scientific community. Harun Yahya has his own publishing house, which enables him to publish his works in large quantities. Without this, it would never have been possible to disseminate them to the same extent. Moreover, there is no consensus on one creationist theory in particular. Each of the numerous creationist movements is convinced it possesses the truth. The fact is that the theory of evolution is accepted virtually throughout the scientific world, and the international scientific community's lack of recognition of the alternative ideas proves that the creationist movements, whatever they may say, remain marginal and can accordingly not be given sufficient weight for them to be included in the school curricula.

51. It therefore cannot be acceptable to teach alternative theories as science. That would constitute a danger in itself and involve the risk of witnessing the development of many different theories, each as absurd as the next. Moreover, it would only sow discord among pupils and students.

52. In this connection, in accordance with the principle of an open attitude to the alternative theories advocated by the scientific creationists, and in order to show the illogicality of teaching intelligent design alongside the theory of evolution, a movement has, ironically, developed in the United States. The so-called *Pastafarian* movement supports the theory of the *Flying Spaghetti Monster.* Pastafarianism is a parody on religion created in response to the decision of the Kansas State Board of Education to permit the teaching of intelligent design in science courses on an equal footing with the theory of evolution. According to Pastafarianism, an invisible and omniscient being called the Flying Spaghetti Monster created the universe in one day. The supporters of Pastafarianism are demanding the same place in the school curricula as intelligent design. Full of irony, this pseudo-religion is setting a trend and the cult is spreading.

Creationism and Education: The main creationist initiatives in Europe, overviews and reactions of the scientific and religious communities

In Turkey:

53. Turkey, which has been one of the few officially secular Muslim countries since the republic was established by Mustafa Kemal Atatürk in 1923, seems to be one of the main cradles of Islamic scientific creationism. As Jacques Arnoult[5] has emphasised, "*Turkey appears to be one of the most active and most highly structured centres of this fundamentalist school of thought".*

54. The Turkish Islamist preacher Harun Yahya, whose real name is Adnan Oktar, is one of the most symbolic figures of this movement. He is around fifty years old and has been publishing works on creation or religion for about twenty years. He also has his own publishing house, *Global*, the head office of which is in Istanbul. In 1991, Oktar set up the science and research foundation Bilim Arastirma Vakfi (BAV). Since its establishment, BAV has been very active in trying to have any reference to evolution removed from Turkish education. It also organises many conferences on creationism in the principal Turkish towns and cities. It would seem that BAV has close links to the American Institute for Creation Research (ICR).

55. The latest work by Harun Yahya appeared in December 2006 and is entitled "*The Atlas of Creation*". It is a large book and is the first volume of a series of seven. It attempts to refute Darwin and the theory of evolution in 772 richly illustrated pages. Its conclusion is clear: *"creation is a fact"* and *"evolution is a deception".* Moreover, the author sharply condemns "*the secret links between Darwinism and the ideologies with blood on their hands, such as fascism and communism".* At the beginning of 2007 Yahya launched an offensive aimed at the mass distribution of his work in Europe and throughout the world.

56. It should also be noted that the creationist ideas are already to be found in some Turkish school textbooks, and 75% of Turkish secondary school students do not believe the theory of evolution. However, protest movements have been set up in Turkey. A commission was created in 1998 to respond to the criticism and the creationist attacks on evolutionist ideas and to try to warn the public. TÜBA, the Turkish Academy of Sciences, and TÜBITAK, the Turkish Scientific and Technological Research Council, have also taken up a stance in favour of evolution.

In France:

57. *The Harun Yahya offensive*: In early 2007, the Turkish creationist Harun Yahya sent his work entitled "*The Atlas of Creation*" to a very large number of French schools and resource centres. In response, the Minister of Education, Gilles de Robien, called on chief education officers to ensure that this book *"which does not correspond to the content of the curricula drawn up by the Ministry, is not available at school resource centres".* Hervé Le Guyader, Professor of Evolutionary Biology at the University of Paris VI, was tasked by the General National Education Inspectorate with producing a detailed analysis of this atlas. He considers the book to be *"Much more dangerous than the previous creationist initiatives, which were often of Anglo-Saxon origin"*. He believes that the lavishness of the work and the method employed by the author could *"prove highly effective in the case of an uninformed public.* He also finds that the scientific content of this book is *"pathetically inadequate"*. "*The Atlas of Creation*" has also been sent to many journalists.

[5] Jacques Arnoult, *op. cit.*, p. 135

58. *The Interdisciplinary University of Paris* (UIP)*:* The UIP, an association set up under the Law of 1901, was established in 1995 to replace the European University of Paris, which was founded in 1989 to succeed the Popular University of Paris. Supported at the beginning by a number of prestigious companies, it has gradually been abandoned by its sponsors owing to the suspicions of neocreationism raised against it. It is actively working on the introduction of spirituality into the sciences and society and is also said to be very closely allied to the American intelligent design movement. The transmission on ARTE in October 2005 of the Thomas Johnson documentary *Homo sapiens, a new history of Man* was, incidentally, very controversial in France. It seems to have been very largely inspired by the work of Anne Dambricourt-Malassé, who is responsible for research at the National Scientific Research Centre CNRS, is attached to the Paris Natural History Museum and was at that time a member of the UIP's scientific council. The documentary was accused of conveying a neocreationist message and helping the UIP's cause.

In Switzerland:

59. *The activities of Harun Yahya in French-speaking Switzerland:* In March 2007, a very large number of schools in French-speaking Switzerland also received Harun Yahya's work "*The Atlas of Creation*". Georges Schürch, Director General of the Orientation Cycles in the Canton of Geneva, said that the company responsible for distributing this work in French-speaking Switzerland had given him a thousand copies to distribute. He pointed out on that occasion that no new work could be authorised for use in schools without a prior examination.

60. Jacqueline Horneffer, Deputy Public Education Secretary in the Canton of Geneva, called on educational establishments to refuse to take delivery of this work, which they did. According to her, *"the book does not correspond to current scientific theories and does not comply with the principle of the separation of secular and religious education".* In Switzerland, "*The Atlas of Creation*" has also been sent to journalists and scientists.

61. *The European Biblical Centre:* The creationists are also represented in Switzerland by the European Biblical Centre and its facilitator Daniel Mathez. The Centre is a creationist publisher that has already published around fifteen works.

62. *The ProGenesis group:* The small Swiss creationist group ProGenesis is working for the rehabilitation of the Book of Genesis. Its aim is to assert creationism over evolutionism and to do so by means of media or play. In this connection, it has set up a project called Genesis-Land, which is a leisure park that might be constructed in northern Switzerland and would aim *"to disseminate the Christian message as a counterweight to the Darwin's omnipresent theory of evolution".*

In Belgium:

63. *Creationist attempt at infiltration into Belgian schools:* After France, and parallel to the offensive conducted in Switzerland, Harun Yahya launched the distribution of his *Atlas of Creation* in Belgium in March 2007. In a circular letter dated 22 March 2007, Marie Arena, the Minister in charge of compulsory education and social development, warned *"all education staff against the values promoted by this document"* and went on to say that she was *"counting on everyone being vigilant [...] to ensure that it (could) in no way constitute an educational tool for the pupils' use"*

64. *Mobilisation of the Brussels university community:* Since early 2007, Belgian academics at the Free University of Brussels, have held a series of lectures on "God or Darwin?". Among the various works there is a study by Laurence Perbal, a university lecturer, on *"the evaluation of the opinion of secondary and higher education students in Brussels concerning the concepts of evolution"*. This study shows in particular *"that a large proportion of the individuals questioned seem to think that the Darwinian theory of evolution only concerns the physical aspect of human beings and not their soul or conscience".* At the same time, "*a large proportion of the students say they have never heard of the Darwinian theory of evolution even though it is part of the biology curriculum for the last year of secondary school".*

In Poland:

65. The theory of evolution and Darwin were publicly called into question in the autumn of 2006 by the Polish Deputy Minister of Education and Lodz MP, Mirosław Orzechowski, a member of the League of Polish Families (LPR, an extreme right-wing, ultra-Catholic party). He said that *"the theory of evolution is a lie, a mistake that has been legalised as a common truth*, adding that *"We must not teach lies, just as we must not teach evil in the place of good and ugliness in the place of beauty."* Finally, according to him the evolutionist theory is only "*a story, a piece of literature that could be used as a background for a science fiction film".* Just

before that, in early October 2006, Maciej Giertych, an LPR member of the European Parliament and father of the Polish Minister of Education Roman Giertych, had called for the withdrawal of the Darwinian theory from school curricula, arguing that it was not *"supported by evidence"*.

In Russia:

66. In Russia in February 2007, a young 16-year-old girl and her father brought an action against the Ministry of Education and Science because they did not accept the fact that the school biology textbooks only offer one theory, that of evolution, which, they said, was incompatible with their beliefs. The plaintiffs were supported by members of the Russian Orthodox Church. It would seem that the teaching of the theory of evolution in Russia today is being increasingly called into question by pupils and their parents, who want access to teaching that is closer to their religious and personal convictions. Father Vsevolod Chaplin, deputy head of the Department of External Relations of the Moscow Patriarchate, deplores the ideological character of the theory of evolution, which has been the only theory taught in Russian schools since the Soviet era. He is appealing for the right of pupils and their parents to education that does not run counter to their faith, a right, he says, that is guaranteed by international legislation.

In Italy:

67. Letizia Moratti, at the time Italian Minister of Education and Research in the Berlusconi government, proposed in February 2004, in the context of educational reforms, and especially changes to the school curricula, a decree aimed at abolishing the teaching of the theory of evolution in primary and secondary schools. There were no longer any courses on the theory of evolution in the school curricula. The Italian scientific and journalistic communities then took action. A commission was charged with considering this issue in April 2004 and submitted its report in February 2005, in which it pointed out that the study of evolution was crucial for an overall view of life and noted the importance of the natural sciences in our modern culture. At the same time, it emphasised that the teaching of the Darwinian theories makes it possible to prevent racism and eugenics. Since then, no new decree has been published. The reforms are said to be still in progress but are not likely to permit the removal of the Darwinian theories from the school curricula.

In Greece:

68. Without actually being banned from the school curriculum, the theory of evolution is often relegated to the final part of the course, ie the end of the school year. As a result, it is rarely studied at secondary school owing to a lack of time.

In the United Kingdom:

69. In the United Kingdom, creationists hold lectures at state schools and the universities. In the summer of 2006, England hosted the largest international creationist symposium over a period of three days. The UK's biggest teaching union, the National Union of Teachers (NUT) sounded the alarm bell and called for legislation to combat the growing influence of religious groups in the British education system, According to the NUT, giving more power to the religious groups would probably damage social and intercultural cohesion. The Royal Society and the Archbishop of Canterbury have spoken out against the teaching of creationism at British schools and various organisations, such as the British Centre for Science Education, have condemned attempts to introduce this.

In Serbia:

70. In 2004, the Minister of Education, Liliana Colić, was forced to resign after ordering schools to stop teaching the Darwinian theory of evolution if the creationist ideas were not also part of the school curricula. The Academy of Sciences and Arts and around forty associations then condemned this danger, which they described as a theocratic deviation.

In the Netherlands:

71. In 2005, the then Dutch Minister of Education, Maria Van der Hoeven, caused a stir by proposing the organisation of a debate on the teaching of the theories of evolution in the country's schools. However, six years earlier a truce had been concluded between the various political parties with the result that evolution is part of the curriculum of all Dutch schools, including faith schools, which the state funds without exercising any ideological control. In an interview, Ms Van der Hoeven said that Charles Darwin's theories were incomplete and that new things had been discovered since, especially by the proponents of the intelligent

design ideas. However, she announced that she did not intend to introduce the creationist ideas into the school curricula but only wanted to confront their adherents with the supporters of the theory of evolution. Ms Van der Hoeven's initiative only met with a weak response, including in her own party, the Christian Democratic Alliance (CDA). D66, a centre-left party and an ally of the CDA, is totally opposed to creationism and evolution being placed on an equal footing. The VVD, a liberal right-wing party, is of the same opinion.

In Sweden:

72. In Sweden, the first creationist museum was opened in Umeå in 1996.

In Germany:

73. In a university town in the *Land* of Hesse, Germany, creationist ideas seem to have already been disseminated at a number of schools. Teachers of life and earth sciences at a state-approved private upper secondary school teach their pupils that a creator is the origin of the various "main types" of animals. After being alerted about this, some of the pupils' parents approached the Hessian Ministry of Education, which thought there had been no direct infringement of the school curricula and said it was not competent to deal with such issues. Some parents then removed their children from this school.

In Spain:

74. One month after France, Mr Yahya's *Atlas of Creation* was received by some professors in the biology faculty of the University of Barcelona and by the university library.

Positions adopted by the religious authorities

The position of the Vatican and the Christian religious movements

75. For a long time, the Catholic Church was opposed to transformism and then to evolutionism. However, this opposition has to be understood in the context of the more general mistrust of science prevailing at the time, given the international climate of socialism, which it saw as a consequence of evolutionism. Thus, for a long time there were clashes between the positivist revolutionaries and the Catholics who supported the restoration of the monarchy. The Catholic Church has clearly demonstrated for a very long time that it is creationist. After the Second Vatican Council the Catholic Church was more discreet and almost remained aloof on this issue. This was until 1996, when, on 23 October, Pope John-Paul II recognised that Darwin's theories were *"more than a hypothesis"*. However, the debate on evolution is still taking place within the Catholic Church today. Several movements still defend creationism as a dogma. In July 2005, Christoph Schönborn, the Archbishop of Vienna, published an article in the *New York Times* stating that the declarations made by Pope John-Paul II could not be interpreted as recognising evolution. At the same time, he repeated arguments put forward by the supporters of the intelligent design ideas. However, it is important to note that the majority of contemporary Catholics now accept the neutrality of science.

76. In the tradition of his predecessor, Pope Benedict XVI now welcomes the role of the sciences in the evolution of humanity: *Science has opened up large dimensions of reason that have been closed up to now and thus brought us new insights.* In early September 2006, he brought together a group of former students and colleagues at Castel Gandolfo for a seminar on the evolutionism versus creationism debate. He published the conclusions of this seminar in mid-April 2007 in German under the title "*Schöpfung und Evolution"* (Creation and Evolution). He does not support the ideas of creationism: *the creationist position is based on an interpretation of the Bible that the Catholic Church does not share.* The Pope rejects both *a creationism that categorically excludes science and the theory of evolution, which hides its own weaknesses and does not want to see the questions that arise beyond the methodological capacities of science.* The theory of evolution is considered *too pervasive* by the Catholic Church, which seems above all to be worried about the influence of "social Darwinism" and the evolutionist theories concerning economic matters and medical ethics.

77. In Switzerland, the Council of Christian Churches in the canton of Vaud has declared that it does not see its own views reflected in the statements and actions of the European Biblical Centre movement run by Daniel Mathez.

Reactions of the Muslim organisations

78. As far as the Muslim organisations are concerned, they condemn the grotesque proselytising practised by Harun Yahya. When questioned after the mass mailing to French schools of Yahya's book *The Atlas of Creation,* Dalil Boubakeur, President of the French Council of Muslims replied that the theory of evolution *"does not conflict with the Koran"*. He also considers Yahya's initiative *"pernicious"*: *"He tries to show that species have remained immutable, with photographs to support his claim, but he fails to explain the disappearance of certain species or the emergence of others".* Boubakeur says he is *"convinced that evolution is a scientific fact"* adding that some verses of the Koran explicitly mention *"a cyclical evolution"* of the human race. In an interview with Le Monde in February 2007, the sociologist Malek Chebel said that *"Islam has never been afraid of science … Islam does not need to be afraid of Darwinism … Islam does not fear the story of evolutions and of the mutations of the human race".* He points out that the Koran addresses the question of the creation of human beings by God but not that of the mutations of species. According to him, *"The Atlas of Creation is the product of a sectarian organisation close to the Turkish extreme right, which disseminates "truths" on glossy paper that have nothing to do with Islam".* Finally, he expects there to be *"future confrontations on this issue between fundamental Islam and the Islam of the Enlightenment".* For the Swiss Association of Muslims for Secularism, founded by Ali Benouari, *"religion must not challenge science"*.

Stance adopted by the international scientific community

79. On 21 June 2006, a declaration by the InterAcademy Panel (IAP) on the teaching of evolution was signed by the academies of sciences of 67 states, 27 of them member states of the Council of Europe. They called on *"decision makers, teachers, and parents to educate all children about the methods and discoveries of science and to foster an understanding of the science of nature. Knowledge of the natural world in which they live empowers people to meet human needs and protect the planet"*. The scientific community recognises that *"there are still many open questions about the precise details of evolutionary change"* but refuses to challenge some of the results of its research.

Conclusion: the denial of evolution is particularly harmful to children's education

80. Prohibiting the teaching of key theories, such as evolution, is totally against children's educational interests. Education has a duty to be a means of enabling children, young people and adults to become important players in the transformation of societies, whereas adopting a denialist stance on scientifically proven theories constitutes a brake on education and the intellectual and personal development of thousands of children. *Science is a prominent player and plays a big and active role in this process of the evolution and transformation of societies.*

81. The knowledge it provides cannot be arbitrarily challenged. By denying proven facts, the creationist ideas do not contribute to the transformation of societies but to making them become archaic. *The creationists are in fact supporters of a radical return to the past, which could prove particularly harmful in the long term for all our societies. This is therefore a crucial issue.*

82. As we have seen, evolution is not simply a matter of the evolution of humans and populations. It now pervades the whole of science and is one of its fundamental principles, so it appears legitimate to consider the consequences that denying evolution could have on the development of our societies. How, for example, can advances be made in medical research with the aim of effectively combating diseases like AIDS if every principle of evolution is denied? Basically, evolution pervades all medical research. How can we consider living in a world without medicine? That appears absurd, but removing the teaching of evolution from the curriculum, as advocated by the creationists, could result in a considerable reduction in, if not the end of, medical research.

83. In addition, the "scientific" approach adopted by the creationists to put forward and support their ideas is itself a particularly dangerous instrument of mental manipulation: presenting a thesis as a scientific theory without providing any evidence can be compared to an attempt to manipulate minds for purposes that are, moreover, scarcely virtuous. As Charles Otis Whitman, an American zoologist (1842-1910) wrote, *"Facts without theory is chaos, but theory without facts is fantasy".* Accordingly, as G. Lecointre notes, *any clever manipulator relies on "facts" alone.*

84. By only presenting facts without any theory or proof, Harun Yahya abuses the credulity of individuals who listen to him or read his works. Moreover, as Jacques Arnoult emphasises[6], the BAV and Harun Yahya in Turkey, just like the American Institute for Creation Research, *resort to partial, indeed erroneous, references* to develop their creationist arguments. *The authors do not hesitate to quote magazine articles that defend evolution but they succeed in turning the meaning round by shortening the quotations.* This is nothing less than intellectual dishonesty, which is particularly harmful.

85. Harun Yahya refutes the theory of evolution by systematically referring to the Koran. However, as Malek Chebel has stressed, the Koran does not mention evolution directly but only creation.

86. The science of evolution, like any science, does not claim to answer the question "why things are" but simply seeks to consider how they work.

87. Some creationist fundamentalists attack "Darwinism" and materialism by accusing them of being the *"real ideological source of terrorism". "Darwinism is the basis of several violent ideologies that brought disaster to the human race in the 20th century".* Is it necessary to point out that human beings did not await the publication in 1859 of Darwin's work *The Origin of Species* to indulge in a large number of massacres? How many people have died in the name of religious wars? The use of religion, like the reference to "social Darwinism" by some dictatorial regimes, is insufficient and cannot in any way call into question the theory of evolution or religion. *Social Darwinism is an ideology that claims to have been inspired by Darwin but it has nothing to do with the Darwinian theory of evolution*[7]. Moreover, it is impossible to ascribe all the evils on Earth to Darwin and his theory of evolution. *He is not responsible for the deviations from his theory after his death*. It is absolutely scandalous to present Darwin as the father of terrorism, and that may sow doubt and bewilderment in the minds of many young and inexperienced individuals.

88. Finally, there are, especially in the United States, a number of aberrations inherent in the denialism practised against evolution and in the accompanying proselytising. A documentary film by Heidi Ewing and Rachel Grady, entitled *Jesus Camp* and released in the United States in autumn 2006, provides evidence of them. It shows a Pentecostal minister, Becky Fisher, who has opened in a North Dakota forest a holiday camp overtly devoted to the indoctrination of children. In front of the camera, she explains that from the age of 7 to 9 a human being can be made to believe anything and that that remains engraved in their brain for life. Fisher says she found her model among the Muslim fundamentalists. This documentary reveals all the violence and fanaticism of the most radical of the creationist movements and the effectiveness with which they succeed in manipulating human beings.

89. The creationists claim that evolution is only one interpretation of the world among others, but that is not the case. The scientific nature of evolution remains irrefutable today. However, it must be repeated that the science of evolution cannot claim to give an explanation as to "why things are" but tries to explain how things are happening or have happened. The theory of evolution constitutes a body of knowledge fundamental for the future of our democracies and cannot be arbitrarily challenged.

90. It is important to point out that the theory of evolution has had a profound effect on science in general, philosophy, religion and many other aspects of human society (for example, agriculture). Evolution has also entered the field of psychology: evolutionist psychology is a field of psychology that aims to explain the mechanisms of human thought on the basis of the theory of biological evolution. It is based on the fundamental hypothesis that the brain, like all the other organs, is the result of evolution and thus constitutes an adaptation to specific environmental constraints, to which the ancestors of the Hominidae were forced to respond.

91. With creationism today, we are witnessing a growth of modes of thought which, the better to impose religious dogma, are attacking the very core of the knowledge that we have built up little by little concerning nature, evolution, our origins and our place in the universe. There can be no doubt that this is a serious attack on human rights.

92. There is a great risk of a serious confusion being introduced into our children's minds between what has to do with convictions, beliefs and ideals and what has to do with science, and of the advent of an "all things are equal" attitude, which may seem appealing and tolerant but is actually extremely harmful[8].

[6] Jacques Arnoult, *op. cit*., p. 142.
[7] Pascal Picq, *op. cit*., pp. 152-153.
[8] Pascal Picq, *op. cit.,* pp.10-12.

93. Creationism has many contradictory aspects. “Intelligent design”, which is the latest, more refined version of creationism, does not completely deny a degree of evolution. However, this school of thought has hardly provided any fuel for the scientific debate up to now[9]. Though more subtle in its presentation, the doctrine of intelligent design is no less dangerous.

94. The teaching of evolution by natural selection as a fundamental scientific theory is therefore crucial to the future of our societies and our democracies. For that reason *evolution must occupy a central position in the curriculum, and especially in the science syllabus.* If we prevent our students from accessing scientific knowledge, we run the risk of their being unable to compete effectively with other students who are being educated in states where science has a key status.

95. Evolution is not simply a matter of the evolution of humans and of populations. Denying it could have serious consequences for the development of our societies. How can advances be made in medical research with the aim of effectively combating diseases like AIDS if every principle of evolution is denied? How can one be fully aware of the risks involved in the significant decline in biodiversity and climate change if the mechanisms of evolution are not understood? Evolution is present everywhere, from medical overprescription of antibiotics that encourages the emergence of resistant bacteria to agricultural overuse of pesticides that causes insect mutations on which pesticides no longer have any effect.

96. Our modern world is based on a long history, of which the development of science and technology forms an important part. However, the scientific approach is still not well understood and this is liable to encourage the development of all manner of fundamentalism and extremism, synonymous with attacks of utmost virulence on human rights. The rejection of all science is definitely one of the most serious threats to human rights and civic rights.

97. The teaching of alternative theories can only be considered if they provide sufficient guarantees as to the scientific nature and truth of the ideas put forward.

98. The alternative ideas currently presented by the creationists cannot claim to offer these guarantees, so it is inconceivable that they can be allowed to be taught within the scientific disciplines, either alongside or instead of the theory of evolution.

99. *The creationist ideas could, however, be presented in an educational context other than that of a scientific discipline*. The Council of Europe has highlighted the importance of teaching culture and religion. In the name of freedom of expression and individual belief, creationist ideas, like any other theological position, could possibly be described in the context of giving more space to cultural and religious education.

100. At the same time, it is necessary to consider the causes of such a challenge to the theory of evolution. This theory leaves itself open to many attacks but that could perhaps be explained by the poor way in which it is taught, especially from the epistemological point of view.

101. These reflections lead us to conclude that better teaching or the more appropriate teaching of the sciences and evolution might enable the dissemination of alternative pseudo-theories such as those of the creationists to be combated effectively. This importance of quality science teaching that is better suited to the realities of daily life was highlighted in the report on students’ declining interest in scientific studies.

102. Science provides irreplaceable training in intellectual rigour. It seeks not to explain “why things are” but to understand how they work.

103. Jacques Arnoult[10], a research scientist but also a Dominican monk wrote: “I confine belief to religion, human relations, indeed intelligence, but not science. Science is a matter of reason, observation and hypothesis, theory and testing. It has its rules and its areas of application”.

104. A detailed study of the growing influence of the creationists shows that the discussions between creationism and evolutionism go well beyond intellectual disputes. If we are not careful, the values that are the very essence of the Council of Europe will be in danger of being directly threatened by the creationist fundamentalists. It is part of the role of the Council’s parliamentarians to react before it is too late.

[9] Jacques Arnoult, *op. cit.*, p. 256.
[10] Jacques Arnoult,*op. cit,* pp.272-273.

105. In order to produce this rapport, I mainly consulted the various works by Jacques Arnoult, a researcher at the French National Centre of Space Studies (CNES); Hervé LeGuyader, Professor of Evolutionary Biology at the University of Paris VI - Pierre and Marie Curie; Pascal Picq, a palaeoanthropologist at the Collège de France, with all of whom I had some very rewarding discussions; and Guillaume Lecointre, a professor of zoology at the National Natural History Museum in Paris. I also consulted the collective work entitled *Découvrir la Biologie* by Michael Cain, Hans Damman, Robert Lue and Carol Kaesuk Yoon, published by DeBoeck (English title: *Discover Biology*, Sunderland, Mass., Sinauer Associates, 2002) and *Schöpfung und Evolution*, a report, published by Sankt Ulrich Verlag, of a seminar held at Castel Gandolfo in September 2006 under the chairmanship of Pope Benedict XVI. In addition to the book by Harun Yahya already mentioned, a number of articles on creationism as seen by its supporters were found on the Internet.

Reporting Committee: Committee on Culture, Science and Education

Reference to Committee: Doc. 11065, Reference No. 3287 of 22 January 2007, referred back to the Committee by the Assembly on 25 June 2007

Draft Resolution adopted unanimously by the Committee on 14 September 2007

Members of the Committee: Mr Jacques **Legendre** (Chairman), Baroness Hooper, (Alternate: Lord **Russell-Johnston)**, Mr Wolfgang Wodarg, Mrs Anne **Brasseur**, (Vice-Chairpersons), Mr Hans Ager, Mr Kornél Almássy, Mrs Donka Banović, Mr Lars Barfoed, Mr Rony Bargetze, Mr Lars Bartos, Mrs Marie-Louise Bemelmans-Videc, Mr Radu Mircea Berceanu, Mr Levan Berdzenishvili, Mrs Oksana Bilozir, Mrs Guofinna Bjarnadóttir, Mrs Maria Luisia Boccia, Mrs Margherita Boniver, Mr Ioannis Bougas, Mr Osman Coşkunoğlu, Mr Vlad Cubreacov, Mr Ivica **Dačić**, Mrs Maria Damanaki, Mr Joseph Debono Grech, Mr Stepan Demirchyan, Mr Ferdinand Devinski, Mrs Åse Gunhild Woie **Duesund**, Mr Detlef Dzembritzki, Mrs Anke Eymer, Mr Relu Fenechiu, Mrs Blanca Fernández-Capel, Mrs Maria Emelina Fernández-Soriano, Mr Axel Fischer, Mr José Freire Antunes, (Alternate; Mr José Luis **Arnaut**), Mr Eamon Gilmore, Mr Stefan Glăvan, Mr Luc Goutry, Mr Vladimir Grachev, Mr Andreas Gross, Mr Jean-Pol Henry, Mr Rafael Huseynov, Mr Fazail Ibrahimli, Mrs Halide İncekara, Mrs Evguenia Jivkova, Mr Morgan **Johansson**, Mr Ali Rashid Khalil, Mr József Kozma, Mr Jean-Pierre Kucheida, (Alternate; Mr Jean-Marie **Geveaux)**, Mr Markku Laukkanen, Mr Guy **Lengagne**, Mrs Jagoda Majska-Martinčević, Mrs Milica Marković, Mr Tomasz Markowski, Mr Andrew **McIntosh**, Mr Ivan Melnikov, Mrs Maria Manuela **Melo**, Mrs Assunta Meloni, Mr Paskal Milo, Mrs Christine Muttonen, Mrs Miroslava Němcová, Mr Edward **O'Hara**, Mr Kent Olsson, Mr Andrey Pantev, Mrs Antigoni Pericleous Papadopoulos, Mr Azis **Pollozhani**, Mrs Majda Potrata, Mr Lluis Maria **de Puig**, Mr Zbigniew Rau, Mrs Anta Rugāte, Mr Indrek Saar, Mr André **Schneider**, Mr Urs Schweitzer, Mr Vitaliy Shybko, Mrs Geraldine Smith, Mrs Albertina Soliani, Mr Yury Solonin, Mr Christophe Spiliotis-Saquet, Mr Valeriy Sudarenkov, Mr Petro Symonenko, Mr Mehmet Tekelioğlu, Mr Ed van Thijn, Mr Piotr Wach, Mr Emanuelis Zingeris

N.B : The names of the members who took part in the meeting are printed in **bold**

Head of the Secretariat: Mr Grayson

Secretaries to the Committee: Mr Ary, Mr Dossow