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ARTÍCULO

Evolution: rationalism versus creationism [1]

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Abstract

The actual neo-Darwinian concepts of human evolution conceive this evolution as a bush, unpredictable and at random. At the beginning of the 20th century, most of the biologists conceived evolution as a linear process oriented to progress, even if Darwin already presented evolution as a bush. It is this point of view, of a process in one dimension, that some Catholics, for instance, still see human evolution. One accepts with more difficulty that human evolution constitutes, as for all animal species, a bush where numerous abortive branches are present. The evolution does not correspond to any creator myths of the different religions: these myths are parts of the memes, from which the "reproductive success" is regularly decreasing, they keep only some allegoric value.

Key words: evolution; creationism; religions.

Résumé

Les concepts néo-Darwiniens actuels de l'évolution humaine conçoivent cette évolution comme un buisson, non-prédictible et aléatoire. Au début du 20ème siècle, beaucoup de biologistes concevaient l'évolution comme un processus linéaire orienté vers le progrès. C'est par ce point de vue, de processus à une dimension, que certains Catholiques, par exemple, voient toujours l'évolution humaine. On accepte avec plus de difficulté que l'évolution humaine constitue, comme pour toutes les espèces animales, un buisson où de nombreuses branches abortives sont présentes. L'évolution ne correspond pas aux mythes créateurs des différentes religions: ces mythes sont des mèmes, dont le "succès reproductif" diminue régulièrement, ils gardent uniquement une valeur allégorique.

Mots-clés: evolution; créationnisme; religions.

"It is Man's destiny to create more and more believable Gods in whom he'll believe less and less."

JEAN ROSTAND

1. Society and origin of religions

Although the concept of evolution is scientifically universally accepted, its application to the human species is accompanied of polemics and debates. A simplistic idea, often expressed, is that a force is existing leading necessarily to the apparition of Man. However, the human fossil rests indicate that the human evolution has not been linear and that, such as for the evolution of other organisms, it has been complex, contains some abortive branches and looks like more as a tree than as a simple ascending ladder (Susanne et al. 2003).

It is important to notice that the debates about evolution are often of religious or political nature, but not more scientific. The majority of religions present histories on the origin of Man and animals. Evolution is opposed to a literal lecture of those histories, and therefore religious leaders were and are sometimes still opposed to evolution. "The religious thinking represents a relation to an eventual next world: at the origin, it corresponds globally to polytheisms where animals occupied often a divine status. In the early stages of religiosity, the animals that people hunted (or by whom humans were hunted), took an important place in the believes and in the symbols. Since the Palaeolithic age, the worship of an animal was organised around the hunting activities. Nature could be friendly as well as unfriendly; it gives life and may take it again. At the Neolithic age, when human beings domesticated animals and started to farm, a good harvest was thought to depend on different conditions, such as meteorology. They considered that supernatural forces and divinities were responsible for a good harvest. The hunter-gatherers settled, animals will loose their holy essence, natural forces are becoming pre-eminent, and human beings are creating divinities to their image" (Susanne, 2003).

Death has always tortured the spirit of human beings, and surely of the first human beings: the incomprehension of this natural fact was total, and human beings have created imaginary solutions to appease their spirit and to give themselves a virtual comfort. Divinities were created as well as funerary cults and initiating rituals. The first human beings have venerated in a shamanist way the natural forces, fire and thunder..., one had to appease the anger of the Gods. Religiosity, in fact a kind of religious sentimentalism of life, gives the hope for a better live. If a God exists, he is there to comfort us for the pain we sometimes have to undergo. One has thus to believe in a God and in a life after death in order not to lose hope in human life.

Even if the religions are largely variable (even life itself is considered or unique by the Judeo-Islamic-Christian tradition, or multiple by Hindus and Buddhists), they all favour some order in the society and give a sense to it. It has been the case all along our history, especially in socially stratified societies, where the elite could invoke the religious authority to control the lower social groups and to maintain economical and political inequalities.

Religious phenomena are universal. Of course, none of these religions are superior or more developed than the other. Anthropologists are, in fact, interested in the functions of the religions and in the way they give sense to human life, reduce social anxiety, control the human destinies, and explain the physical environment.

Religions are proposing a cosmology: whole of principles and believes on the nature of life and death, the creation of the universe, the origin of society, the relation between human beings and nature.

2. Humanism versus fundamentalism

If genes are the units of biological information, other units of cultural information are the memes. They diffuse through cultural vectors, natural selection, migrations and cultural drifts. "Providing easy explanations to existential questions, softening the fear of death, and keeping social webs compact through the provision of various sets of rules and practices, religions crucially contributed to the survival success of populations" (Simitopoulou and Xirotiris, 2004).

Although religious memes can have success, religions began to weaken when scientific discoveries developed. All religions were obliged to follow profound adaptations, sometimes far from the founder principles. Only fundamentalists try to keep these principles, very often in a violent way.

The secular humanism, which wants to develop the qualities of human beings, is central to the actual cultural and moral challenge; it is a philosophy that can be of use above our cultural barriers and our religions. The moral rules must no longer be based on revealed truths, but on universal rules democratically elaborated. It is particularly the case in terms of human evolution where rules must be established beyond the different kinds of fundamentalism. For all kinds of fundamentalism, human beings are condemned to make a bad use of their freedom; therefore, one must enclose himself in constraints and in restrictive laws. Humanism is seen as the instrument of the devil by all fundamentalists, Christian, Jewish and Muslim.

The methods applied in sciences are based on material explanations, without transcendental implications. Scientists, whatever their metaphysical or religious believes are, reject all supernatural explanations. Scientific knowledge is a part of the common heritage of humanity.

From a scientific point of view, a dialogue with the religions does not impose itself; science and religion must be separated (as State and Religion). Shouldn't we be alarmed when some Islamic tendencies are refusing the teaching of biology, when fundamentalism manifests itself in the United States, Australia, Russia..., when the actual pope urges the Catholic scientists to elaborate scientific projects, which always allows "the divine presence"? One has to insist on the freedom of transmission of knowledge and the freedom to develop oneself without the cover of religious authorities. Religions and sects may not interfere with the teaching of sciences.

One has also to remember that the secularisation of the political power, the modern values claiming the light of reason, the rationality, the tolerance, the freedom of expression, the rights of Man, the democracy are conquests slowly reached at the detriment of churches (Joly, 2003).

3. Evolution

The scientific discoveries are sometimes accompanied by worrying messages for the social order and often for the religions. Since the Renaissance (XVI and XVII centuries) and the Enlightenment (XVIIIth century), Europe is no longer the centre of the world, nor is the earth the centre of the universe. Human beings have evolved as the rest of the living world; all living organisms have the same genetic code; our "so specific" human genome is for more than 99% similar to that of the chimpanzee and for more than 90% to that of the mouse, more than 80% to that of the cows.

Evolution in scientific terms suggests that human beings are animals submitted to the same laws of evolution. The fact that human beings have no more a particular statute is already, for some believers, an attack to the morale values human beings are guarantee as representative of God on earth. All along the last century, the Darwinian theory of evolution became therefore a symbol of a scientific materialism to knock down.

Since Darwin biology became scientific, building hypotheses, controlling it, verifying it, modifying it as necessary. Indeed, the concept of evolution is really scientific, using notions as variable than anatomy and compared embryology, palaeontology, biogeography, anatomical but also biochemical and genetical phylogenesis. The mechanisms of evolution, utilised by the synthetic theory, imply the genetics of populations, which allows to model and quantify the influence of factors such as natural selection but also mutations or genetic drift in populations of reduced dimensions. The molecular biology, and all its recent results, brought us to a dissection of the «mysteries» of life and thus to a better comprehension of life. In terms of evolution, the molecular biology has also confirmed the palaeontological data, and has demonstrated that human evolution answers to the same rules as the whole living world.

It is probably more difficult to accept that Man is a species just like all other species and that Man is not fundamentally different from other animal species; a species representing only a few hundreds of thousands of years compared to the almost 5 billion years of age of the earth. Indeed, it is difficult to modify the image that we have had of ourselves all around our history.

Resistances, defensive, conservative or reactionary opinions continue to exist against the concept of evolution, and surely against its consequences. It is to say that Man belongs to Nature, and that human beings are random products of a very long evolution.

Evolution is of course no longer a theory. It is absolutely non-sense to compare it, and to put it at equal level, with scriptures, considered by some as "holy". In the way of thinking of these people, these scriptures have to be taken literally, thus, the living species are considered as immutable since their creation. In other words, for some it is easier to keep the old myths and to consider Man as being at the top of the living world, and at the geographical centre of the universe.

In terms of human palaeontology and in terms of human evolution, only the knowledge can be considered as having a value, and the only oppositions are coming from those considering this knowledge as “dangerous”. Negative consequences, such as mysticism and racist behaviour, find their origin in the absence of knowledge of

human biology. Thus, the quality of our democracies depends on this better knowledge of sciences in general, biology and human evolution in particular.

4. Cosmological conceptions

Let us consider the many kinds of expressions of creationism.

Young-Earth Creationism: Young-Earth Creationists (YEC) claim a literal interpretation of the Bible as a basis for their beliefs. They believe that the earth is 6.000 to 10.000 years old, that all life was created in six literal days.

Old-Earth Creationism: Old-Earth Creationist accept the evidence for an ancient earth, but still believe that life was specially created by God, they still base their beliefs on the Bible, and they interpret each day of creation as a long period of time.

Intelligent design: nature is so complex that it must be explained by an intelligent cause

Theistic Evolution: Theistic Evolution says that God creates through evolution. It accepts most of modern science, but it invokes God for some things outside the realm of science, such as the creation of the human soul.

Faith in creation: they pretend not to be creationist, they admit the principles of evolution but the human mind would be the work of a divine breath.

As one can see, the creationist positions can be largely opposed. Often, believers will take different creationist positions in function one is speaking of the animal world or of human beings.

Creationism has dominated our history till the beginning of the 19th century: the bible was interpreted literally. The European society remained for a long time creationist and conceived the species as being created as such in an immutable way. Even the greatest naturalists, as Linné (1707-1778), Buffon (1707-1788), Cuvier (1769-1832) were fixist. To see the appearance of ideas of evolution, one had to wait till Jean-Baptiste de Monet, Chevalier de Lamarck (1744-1829) and of course Charles Darwin (1809-1882).

Before Darwin, there was almost no reason to doubt about the biblical scriptures on the origin of Man. The Bible was considered as the historical book of reference of a "sublime philosophy" (Bossuet, 1681).

Let us come back to Darwin and the "Origin of Species" (1859)[2]. This book has been published in a period where almost all persons were vehemently opposed to the theory of evolution: considered by many Christians as insulting and in direct conflict with the creation described in the genesis. The Christians considered that if human beings were related to animals or if they had a common ancestor with great apes, it was challenging the existence of God himself.

[2] It is only in 1871 that Darwin will develop his ideas on the evolution of Man (The descent of man and selection in relation to sex). As he wrote to Wallace, it is for tactical reasons that he did not do it in 1859, this way he wanted to avoid too virulent criticisms.

What are the actual situations in Europe? In Europe, we are clearly under influence of the American and African evangelists, of Islam and of a more and more conservative catholic church.

4.1. Catholicism

Concerning evolution, it is only recently that the Vatican admits that evolution must be considered.

It is indeed only in 1996 that Pope Jean Paul II mentioned to the pontifical academy of Sciences that "fresh knowledge leads to recognition of the theory of evolution as more than just a hypothesis" (fresh?)[3]. But, in fact, in 1998 the new encyclical letter *Fides et Ratio* does not mention this letter of 1996 and comes back to the encyclical letter of 1950 *Humani generis:* the theology is above the scientific knowledge in terms of evolution. Moreover, the catechism of 1994 continues to say that the genesis is expressing the reality of the Creation and its divine goals.

In any way, the letter of 1996 remains prudent, is never citing Darwin and continues to consider that the human presence cannot be explained without a divine intervention. The Roman Catholic Church does not accept natural evolution, the human spirit cannot emerge from the material evolution of the living material; evolution is not under control of natural forces but under control of God.

It seems evident following the observers of the Vatican that Benoist XVI is taking more conservative positions and is nearer thoughts of intelligent design. As often in its history, the catholic church hesitates to maintain its position of conciliation of reason and faith, it is tempted to regain the lost ground abandoning a too rationalised content for the “common believer” and thus to come back to mythical values.

4.2. The protestant religion(s): largely opposed theologies

The evangelist tendencies are known as "conservators" or fundamentalist and are opposed to the principles of evolution. They consider that to reject the genesis, in its sense of strictly 6 days, is destroying the foundations of Christianity. On the contrary, "liberal Protestantism" has a free and critical approach of the Bible and dogmatic positions are rejected. They consider creation as a myth amongst many other myths[4]. Thus, Protestantism can vary from a sectarianism refusing all ideas of evolution to liberalism accepting without any problems human evolution.

[3] This is at least the French translation; the English translations says “evolution is one of the hypotheses”, which gives a totally other meaning.

[4] Th. Monod (2004) contests, "as liberal protestant, the pretension of orthodoxy to have the right to precise and to fix for the eternity some intellectual affirmation. It is the reason that liberal Protestantism often gives more importance to eupraxis (good behaviour) than to the adhesion to a catalogue of dogmatic propositions considered as eternal and as representative of Christianity.

After the First World War (1914-1918), conservative Christians in the United States, in a search to revival of what they considered traditional values, proposed to ban any mention of evolution in public schools. As a result, the Butler Act passed in 1925 in Tennessee banning the teaching of evolution. Different laws were, only in 1958) abolished by the supreme court of the USA because they violated the separation of church and state.

The story is still actual, because religious fundamentalists, known as creationists, have persisted in their attempts to forbid evolution from public schools and/or to introduce anti-evolutionary material. It is in fact also a political attitude: the website of the Institute for Creation Research mentions, in a paper of Morris (1982) that teaching of evolution is indeed estimated to be at the origin of atheism, communism, Nazism, racism, economical imperialism, militarism, anarchy and of all system of anti-Christian believes (not more?). "America is attacked by the devil's forces in an effort to undermine America". You will think that this debate is surprising, it is indeed in scientific terms, however, the goal is not to convince scientists but a large public badly informed in sciences.

It has an impact on the teaching of biology and on education in the USA because many public school teachers, seeking to avoid controversy, simply do not cover evolution in their teaching. In other cases, evolution is only an option because it is suppressed from the knowledge required for examination.

In a recent publication on the quality of teaching in the USA, Lerner (2000) evaluates the average quality of education of evolution as relatively bad, and a critical mind is rather absent: this teaching is evaluated as good in only 10 states, satisfying in 21, unsatisfying in 6 and bad or absent in 13 other states (such as Alabama, Florida, Georgia, Kansas, Mississippi, Ohio, Tennessee).

Since 1990, the same American conservative creationist movements changed of tactics and pretend to develop « scientific » anti-darwinian theories. They recognize that the scientific advances do not allow any more an adhesion to a literal version of creationism. They pretend nowadays to demonstrate that the nature is so extraordinary complex and that the forms cannot be the result of a gradual evolution through accumulation of at random mutations. Randomness is (for all religions in fact) a central problem. Human beings can not be an at random fruit. The process of evolution is eventually not rejected, but this process is the product of an intelligence (a God) who has as purpose the apparition of the human beings. It is the theory of the ID or intelligent design. The partisans of the ID try again to convince politicians that the two theories must be taught in an equal way, as two hypotheses equally valuable. However, they reject the mechanisms of evolution as scientifically established by the neodarwinism and propose supernatural explanations conform to their fundamentalist ideas.

In fact, the debate is probably religious but has again a political origin, since the Discovery Institute (“scientific” responsible of the ID) has a political plan to defeat the scientific materialism and to replace it by a « science » more conform to Christian convictions and to the reality of God.

4.3. Orthodox churches: national and free

The orthodox churches are said "autocephalous", they are national and autonomous from all "foreign" ecclesiastic authority. Thus, it is impossible to view the Orthodox Church as a whole, they are independent and subject to their synods of bishops and their respective states.

In Greece, the Orthodox Church is a State's church. Officially, 97% of Greek citizens are orthodox because till 2000 the national identity card was obligatory mentioning the religion. Following the orthodox rules, the "father" is the creator of the sky and of the earth, as well as of all visible and invisible things. Human beings have been created at the image of God. Evolution is eventually not rejected if God remains in control of this evolution, the 6 days of the creation may also be considered as periods of time.

The Russian Orthodox Church does not have a literal interpretation of the creation and the concept of evolution is not considered as incompatible with religion, if this evolution remains under God's direction. In 1991, the Moscow Creation Society has been created, their members in collaboration with the Russian minister of teaching (!) edited a creationist pamphlet of use in Russian schools.

In Serbia, the press agency AFP of September 9 2004 mentions that the Serb minister of education, Ljiljana Colic, suppressed the study of evolution in the 8th year of study. Following the newspaper Glas Javnosti, mrs Colic should have proposed that Darwinism and the conception of Man created by God would both be teached in parallel.

4.4. Islam

By all Muslims, the Koran is considered as the direct message of Allah. Man has been created to the image of God and the evolution of other non-human species can be accepted, excepted if the transformations are due to ad random mutations and natural selection, as independent causes of Allah's will. Even Dalil Boubakeur (rector of the Muslim institute of the mosque of Paris) mentions in a speech of 1994 that “Islam grants to reason a primordial importance” but further on he says also “that the philosophical reason cannot bring us to conclusions contrary to the divine revelation”.

Only after the 2nd World War, sciences were introduced in the educational system in the Arabic countries but it is based on theoretical aspects without taking into account critical and ethical thinking (Abd-El-Wahed, 1996). The exception is the Turkish republic created in 1923 by Mustafa Kemal Atatürk, who forces laicisation of the Turkish society, liberating the State of religion, emancipating woman, suppressing the sharia. Evolution is present on the school programme, even with religious accents. However, creationism is coming strongly back nowadays and an "Islamic Scientific Creationists and Science Research Foundation" (BAV) exists. The most active author of the BAV is Harun Yahya who is for some a whole of different persons.

Actually, Islam wants to privilege the rights of the community instead than the rights of the individuals, in their own countries and even in the host countries. Without to want to impose our western customs, and without to amalgamate racism and critics of Islam, we must maintain the secularisation of the society and to maintain the philosophical ideas to the private domain.

The reports of the PNUD (programme des Nations Unies pour le développement) (2003) and of the FADES (fonds arabe pour le développement économique et social) (2003) are overwhelming: insufficient access to knowledge, lack of freedom, regrettable feminine condition.

Let us be attentive to the fact that certain Arab thinkers and certain scientists hesitate to express themselves (in Egypt, Nawaf El Saadawi for example, in Turkey Turan Dursun, Cetin Emec or Ugur Mumcu, not to cite those who were murdered such as Frag Foda in Egypt, Sadok Melallah in Saudi Arabia, Mahmoud Mohamed Taha in Sudan). Indeed, let us be attentive to the fact that the Islamic movements want to impose the Koran as a scientific book what it is naturally not (as the Koran wants to impose itself as a juridical book what it is also not). The Islamic politics is essentially turned to citizens of arabo-muslim culture who would like to emancipate themselves from obscurantism.

4.5. And Europe?

Some can have the impression that the creationist actions and the obscurantist attacks against the concepts of evolution are essentially of American and of Islamic origin. But, Europe is unluckily not saved and recently numerous political decisions were taken to forbid the teaching of evolution.

It was the case in countries of catholic origin such as Lithuania and Cyprus. In Italy (on 19 February 2004, where the government of Berlusconi proposed to abolish the teaching of evolution in the secondary school programmes; a proposal of the minister of education, Letizia Moratti, member of Forza Italia). Poland, before the elections of October 2007, is also opposed to the teaching of evolution (following the minister of education, Miroslaw Orzechowski —member of the league of Polish families, ultra catholic extreme right party— the theory of evolution is a lie « Human beings have been created by God as all animals nad were living with the dinosaurs. Evolution is a conspiracy against God and the Truth brought by the Catholic religion »).

Also in some protestant countries, such as in The Netherlands, evolution does not figure in the teaching contents to examine and the previous minister of education Maria van der Hoeven (CDA) said to be charmed by the ID. In Germany, in the land of Hesse, a private school recognised by the State is teaching creationism without any reactions of the minister. In the United Kingdom, Tony Blair approved in 2006 a creationist teaching in some schools. Indeed, on initiative of Tony Blair, rich benefactors may create a school, with the right to control the ethics of the school and the nomination of the teachers. This is the case of the creationist school Emmanuel College, in Gateshead, created with 2 millions of pounds private money, but with an allowance of 20 millions of pounds by the British State, as well as the functioning costs and the salaries of the teachers. In this school, sciences are taught in a biblical perspective, and the same « benefactor » is now director of a network schools.

Problems are also existing in countries of orthodox origin, Greece does not have teaching of evolution in its programme and Russia edited a creationist pamphlet distributed in the Russian schools (collaboration between a « Moscow Creation society » and the Russian office of education). In Serbia also, the Serbian minister of education, Ljiljana Colic, suppressed the study of evolution in secondary schools. Following the journal Glas Javnosti, Ljiljana Colic would have declared that the concept of evolution and the dogma of the creation of human beings by God has both to be taught.

At Muslim level, movements such as the « Islamic Scientific Creationist and Science Research Foundation » (BAV, abbreviation in Turkish language of this movement) are clearly creationist. The most active author of this

BAV is Harun Yahya. In Turkey, the creationist ideas are present in school books since 1985, and the evolution is even not more taught.

In France, with the financial help of American creationist, creationist structures were built up such as the Cercle d'études historiques et scientifiques in 1980, and the Université interdisciplinaire de Paris in 1997. This fictive university is leaded by Anne Dambricourt-Malassé, of the CNRS, and of the Museum d'histoire naturelle.

In Belgium, different studies established the level of creationism at the end of secondary schools. So, Perbal et al. (2008) evaluated in a study in Brussels schools that 14% of the students of catholic confession are estimated as creationist, 61% of the students of Jewish confession and 94% of the students of Muslim confession.

Let us not be astonished that the Parliamentary Assembly of the Council of Europe has adopted a resolution (1580/2007) named « The dangers of creationism in the education ». This resolution is very moderated mentioning « to be firmly opposed to the teaching of creationism as a scientific discipline", or saying «The objective of the present resolution is to put in doubt or to combat faith [...] one has to separate faith and science. It is not about antagonism. Science and faith must be able to coexist». The resolution says only that creationism is not a scientific course, has not to be taught in scientific courses and makes clearly the distinction between science and faith, and their respective teachings. One is astonished that this resolution was adopted only by 48 votes against 25, 25 essentially of Christian tendency. It has been established that letters of the Vatican to some members of the Parlement influenced the vote indeed.

5. Discussion

Anthropologists agree to admit that the notions of race, the concept of superiority-inferiority is without foundations. Actually, some politicians try to use the cultural differences to justify a so-called superiority of a culture.

A multicultural society is an enrichment but it cannot result, in the name of the right to difference, in the freedom of any behaviour. The respect of the rights of Man, the freedom of self-consciousness, the equality of women and men, the separation of State and church, must remain fundamental principles. It is in this way that our society must declare itself anticlerical (opposed to the influence of priests in public affairs), but not antireligious, that our societies must respect the differences and must become multicultural but without becoming an addition of autonomous communities from which the rights would be different and contradictory.

Secular humanism is antagonistic to established traditions and religious commitment.

"Man is only great in the consciousness he has from his poverty. He is human only when he is renouncing to the divinity. Man, for example, is nor master nor owner of nature: if humanism is not a subgroup of ecologism, it cannot justify a kind of indifference to the environment or to other living species. Nature is not God, Man is not God: there is no God at all, and it is this way that humanity is in charge of itself, of nature and of the spirits" (A. Comte-Sponville, 1994).

"With the collapse of traditional belief structures, there has also been a dramatic transformation of the ways in which the world, society and the authority of political and social structures are regarded. Probably for the first time in history, the religious legitimizations of the world have lost their plausibility not only for a few intellectuals but for broad masses of entire societies" (Engelhardt Jr., 1991).

Being humanist is to cultivate the tolerance, it is to have confidence in the reason of Man, to respect him, to claim from the other the same tolerance and the same respect. Humanism proposes freedom of expression and the right to difference. Humanism remains in the actuality in Western Europe, because it conciliates living together and the diversity of human beings, without neglecting the differences. But, humanism does not back, in the name of tolerance, the irrationality as the incompetence of astrologers, the doubtful practices of seers and other gurus, the irrationality of risky therapeutics, the interdiction of some courses, the throwing out of all scientific concepts contrary to sacred scriptures.

However, the testimonies are clear: in some schools of Brussels for instance, it is not possible any longer to teach the notions of evolution, some parts of biology or even history (prehistory, evolution of Man, evolution of the world). Pamphlets are distributed to the schools to "rectify" the courses of biology.

The actual neo-Darwinian concepts of human evolution conceive this evolution as a bush, unpredictable and ad random. At the beginning of the 20th century, most of the biologists conceived evolution as a linear process oriented to progress, even if Darwin already presented evolution as a bush. It is this point of view, of a process in one dimension, that some Catholics, for instance, still see human evolution. One accepts with more difficulty that human evolution constitutes, as for all animal species, a bush where numerous abortive branches are present. The human species has always been polymorphic, at genetic and cultural level. In the future, with the development of techno-scientific capacities, human beings will probably intervene in their own evolution, which does not imply that these deliberated transformations would bring alienation, a disappearance of freedom and of self-consciousness.

Which relationship to the world for a humanist not guided by any revelation? Human being is alone, what does not mean he would not have the duty to give himself a morale. "It is Man, his reason and his freedom which constitute his dignity, that we must found the principles of the respect to the other, not in a divinity" (Ferry, 1996). "We must reaffirm with force the value of Man, of all human beings. To affirm and to respect the dignity of Man, to the condition to allow each human being to define his own dignity" (Hanson, 2000). "If we may not, of course, tolerate anything, we have no objective criterion, no universal foundation, which allows us to decide on an absolute way which is, or is not, tolerable. But do we need this in reality? Do we need a foundation to love life, truth and peace?" (Comte-Sponville, 1994).

One can also always conclude by words such as "life of any organism, that it results of an evolutive process or not, is a sign of God" or such as "The scientific progress is a movement due to the divine guidance and cannot be in conflict with this God"! One is in front of a kind of "domino" doctrine: by defending the biblical scriptures against the concept of evolution, the religions are obliged today to defend, against the whole world, the genesis or a part of it, but if the genesis cannot be considered as real, then the Bible or the other sacred scriptures are seriously put in doubt. The concept of evolution has since the 19th century been, and is still, a threat from the traditional religious authorities. To admit evolution is considered by creationist as an intellectual suicide.

The evolution does not correspond to any creator myths of the different religions: these myths are parts of the memes, from which the "reproductive success" is very regularly decreasing, they keep only some allegoric value. A relatively popular meme is the meme of the theist evolution, which admits the reality of human evolution but sees in it an evolution guided by the divine hand. Another version sees the divine hand only in the evolution of intelligence. Still another one sees the divine influence in the creation of the first living organisms from non living material and, for some also, evolution occurs without divine influence, but God would have catalysed the Big Bang at the origin of the universe.

Biological sciences try to understand vital mechanisms and put in doubt revealed truths. Perhaps is it for this reason that those who estimate to know the truth find science as disturbing. The information is dispersed today in a few seconds in our global village, the possessors of the revealed truth find too often the solution to isolate themselves and to bring "their sheep" in the same isolation.

Fundamentalism is present in all religions, it is not especially Muslim, and it is also of Catholic origin, present in the Judaism and the protestant "revivalism". If Western Europe is actually no longer a place of fundamentalism, the three monotheist religions are able of fanaticism, they are rapid to say they are offended in their convictions and to speak of sacrileges when they are in a force position. A link seems to exist between the different kinds of religious fundamentalism to destroy the European humanist model (Fourest and Venner, 2003). Moreover, there exists a de facto link between the protestant American puritans and the Saudi puritans: the neo-fundamentalist values are defended with the petrodollars on one side and the support of the United States on the other side (Etienne, 2002).

There exists a convergence between Christian, Jewish and Muslim fundamentalists: they are adapting to societal facts and racism being not acceptable, one is proposing that each criticism against religion would be an "anti-religious racism". For all these kinds of fundamentalism, "when God is Man's chief, man is woman's chief", and thus all are attacking the equality between men and women, the access to contraception, the right to abortion, the use of preservatives in the struggle against AIDS, the freedom of thinking. The danger of an irrational fundamentalism is to lead to violent conflicts between individuals or between populations not sharing the same believes.

God, State, Nation are supra-human mystifications used by some to dominate others. In this way, a morale and a discourse of justification of power and of ethnic cohesion exist, because "God is with us". Believe in imaginary beings is a consolation concerning the continuation of life after death. One often represents religion as keeping oneself busy with other truths than those of science. "There is no conflict for me between Christian faith and scientific data that I am considering. I do not see under which form this conflict would appear, except if we would attribute to the Bible histories a competence that they do not have" (Th. Monod, 2004). There would be no conflicts between religion and science: it is perhaps more objective to say that this conflict has already taken place and it has been lost by religions which took hundreds of years to accept some scientific findings. Still today, there where religions are virulent, many citizens continue to make literal interpretations of the so-called sacred books.

6. Conclusion

The renewal of the philosophical practice must be based on observation and not on speculation, on reproducible experiences and not on intuition, on clarity of the discourse and not on its darkness, on public debate and not on authority arguments. It is not intolerant to distinguish between what is rational and what is not, biology and natural sciences are based on rational concepts, and religious (as well as astrology and most of the so-called parallel medicines...) are not. Human culture can no longer ignore the biological sciences: the hostility to a biological approach of Man is based only on religious preoccupations.

The reality of evolution does no longer represent a subject of discussion in modern biology. The problem is considered as acquired. Only creationists still consider that species have been created separately and remained immutable, and that the adaptation of living beings is due to the divine providence. One is no longer present in a scientific domain, but in a religious sphere. Many non-fundamentalist Christians consider however that there is no more conflict between the facts of evolution and their religious faith.

In human palaeontology, going back to the darkness is forbidden: scientific knowledge remains one of the common goods of humanity on which to base secular rules. In our countries, for a very large majority of the population, the religious convictions changed partly because the scientific and philosophical discourses, inspired by the anthropological and palaeontological sciences, call these convictions into question.

I am not opposed to religious believes, at the strict condition that they remain in the private sphere and that they would not impose to me directly or indirectly laws invading the public space. The tolerance applies itself in terms of respect of individuals. But, in the same way that I can not admit xenophobia, racism, inequality of sexes, refusal of co-education, I cannot admit that one is refusing the teaching of scientific knowledge, including the teaching of human evolution. This teaching would perhaps not be limited to sciences, but also be approached in the teaching of history for example to confront the notions of evolution to the myths of religious, to develop the critical sense and to stimulate questions. The historical perspective and the compared demonstration can only favour the reflections and the non-dogmatism.

Knowledge is however not sufficient to protect us of ideological epidemics and to struggle against fanaticism. Teaching cannot be limited to the transmission of knowledge, it is essential to learn to learn, to learn to be critical: doubt, scepticism, and contestation are also educative tasks (A. Kahn, 2004). The doubts, essential towards science, are however perceived as a threat for and by religious authorities.

Sciences are a necessary condition to humanism. They incorporate nature without making it sacred, recognising we are free and responsible to give a value to our own life. Students must be encouraged to give shape to their own lives in a non-dogmatic way.

It is necessary to arm our students, but in fact all citizens, against the different kinds of manipulations and against the madness of extremism and fanaticism. Fanatics refuse to give any explanation to their acts and thoughts: they preach the truth and are insensible to all argumentations; they cannot have any responsibility in relation to their fellow-citizens but only in relation to an uncontrolled higher authority, their God.

"Freedom means responsibility. This is why most of the human beings fear it" (George Bernard Shaw, 1856-1950).

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