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Contradictions

Neuroscience and Religion

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1

The universality of religious beliefs

Summary There is a near universality of religious beliefs throughout the history of civilization, a highly puzzling cultural observation that is still true in the twenty-second century. However, reasonable explanations for this universality can be derived by considering the origin of such beliefs. Since religions were an essential cultural element for primitive humans, the practice of imprinting them during early childhood was never abandoned, and religions became an integral component of most civilizations. The practices of religions have changed, but their moral teachings are still based on the Golden Rule, which was already known to Confucius, several centuries before the arrival of the Christian and Moslem prophets. The main religious denominations, however, have lost their unity because they have divided into smaller groups. The varieties of religious beliefs contradict each other, and they also contradict the unity of truth.

1.1 The birth of religions and human culture

The ancestral association of humans with religions is a remarkable cultural phenomenon that cannot be easily overlooked, because religious beliefs are still essential components of all cultures. We can assume that when humans started to wonder about their origins and ultimate fate, they did not have any solid knowledge on which to base explanations for the most basic questions about life and death. Besides, they could not even communicate all their thoughts before developing a complex vocabulary. Thus, they must have lived in a world full of mysteries and unpredictable processes that they could not even name, much less understand, and most groups must initially have relied on their own instincts and on the ways they learnt from their ancestors, who themselves will have learnt from their survival experiences.

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The complexity of reality was beyond their understanding, so supernatural explanations may initially have provided the only answers to the many questions about their origin and fate, as well as predicting the weather and seasons, which might initially have seemed mysterious. For example, the Sumerians, Ancient Greeks, and Egyptians used supernatural hypotheses to explain the world and invented different gods with the express purpose of explaining specific natural events.

In analogy with children, the thoughts of our early human ancestors probably took place even before they developed an appropriate language, which, according to the most recent theories, took place about 80,000–160,000 years ago in southwestern Africa [1]. Thus, the origin of their world and of their own existence was mysterious, but after their language developed, they probably invented a variety of stories and explanations that later evolved into legends and religions. Stories about the origin of the initial group are likely to have developed long before they could envision any complex form of religion. Even if the stories were imaginary, they were probably told by the elders and had the effect of increasing the coherence of the group, providing a decisive advantage in the ruthless and competitive environment in which they lived.

The widespread belief in supernatural explanations that are fundamental to all religions may largely reflect their naive simplicity, which is easily acceptable to children and primitive humans. Moreover, in the absence of writing, the stories supporting these beliefs were orally transmitted, so they were easily spread and embellished by the elders. The stories underlying religious convictions had the great advantage of providing a measure of hope, security, and protection that is very much needed by all primitive cultures and by children during the early stages of their development and during the difficult times when they have to care for their own families. Children are periodically insecure and need reassurance that they are loved and protected, not only by their parents and the group, but also by some higher beings, which are assumed even more powerful than their own parents. Religions throughout civilization assure believers that they are not alone in this world, and that they will be cared for by some mythological supernatural power. Despite our scientific and philosophical knowledge, it is still difficult to accept that we are alone in the Universe and that our self will vanish with our death.

Most religions are characterized by the belief in a supernatural creator and by the underlying assumption that, through prayers and meditation, humans can somehow communicate with the gods. Even though there are no witnesses to this form of communication, there have been several self-appointed prophets, shamans, and preachers that report trance-like experiences in which they claim to have been contacted directly by a god or by higher spirits. Priests and preachers have also been emphatic in invoking the sacred books written in the name of a god to justify themselves and to justify their authority for dispensing advice. Religions have been used to answer the most elemental

questions, often similar to those that are typically asked by children, and to impose a code of behavior, that is also imprinted in them.

Even though the existence of any kind of god has never been proven, religions are based on faith in a god that provides a system of values and beliefs, complemented by a series of rules of behavior that aim to make life in a society organized and predictable. As pointed out by Adler [2], the Golden Rule, the principle that we should behave toward others as we would like others to behave toward ourselves, has been independently discovered by several cultures, and tacitly incorporated into most religions. The universality of the Golden Rule, which was popularized by Confucius (551–479 B.C.E.), long before the Christian Commandments, is a clear indication that moral behavior originated, not in any specific religion, but in a *basic biological need that transcended all cultures and beliefs*. Actually, long before Jesus Christ started to preach, Confucius had already proposed morality in the absence of religious belief. All societies need rules for individuals to be able to live together in a tightly bound community. Unfortunately, the Golden Rule is not always applied to individuals *outside* the clan or the tribe. However, because of the efficiency of modern communications, the size of the group to which our moral rules are applied keeps growing with the advances in civilization. We may hope that the application of the Golden Rule toward different ethnic and political groups will soon become universal.

What seems to be essential for religious dissemination is that religions should be taught in a dogmatic fashion to young children, when they are credulous and can be imprinted for life. Actually, there is a deep analogy between the trust that children and primitive human groups have for their parents and their elders. Older adults who have not been indoctrinated during childhood are not religious or may become religious only under exceptional circumstances, for example, after accidents in which the odds were heavily against their survival. However, the most essential component of religions is the assumption that humans have a soul, a supernatural spiritual component that is the essence of a person, and which will transcend the death of the flesh. Most people understand that their bodies will die and decompose after their death, but believe that their supernatural soul will separate from their body (Fig. 1.1).

Patients hope that their souls will then be received by God in Heaven, where it will meet all their beloved friends and relatives. Some even believe in “the resurrections of the flesh,” which as Miguel de Unamuno has remarked, is much more desirable than a purely Platonic resurrection [3].

Religions give a feeling of belonging to a larger group that provides a sense of togetherness, security, and collective meaning, features that are enhanced during religious ceremonies. The universality of religious beliefs has triggered the curiosity of several social scientists and neurobiologists, to the point that some have suggested that humans may have a brain center for a higher

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Fig. 1.1 Hallucinations recalled by a patient. Artistic representation of a hallucination reported by a patient after she recovered from a serious disease that produced a near-death experience, in which she felt that her “spirit” was separating from her body

authority or paternal figure, which when occupied provides a sense of confidence and security [4, 5]. Most of us felt secure during our childhood, due to the protection given by our parents. Even later, when we were growing up, we still looked to our parents for guidance. However, when we became too proud to ask for their help, or they could no longer provide this support, we needed to become self-sufficient or get somebody else that would take their place. Perhaps the memory of them or the example they set gives us a sense of confidence and security which is later transferred to a supernatural being that symbolically takes their place. We do not like to be alone and unprotected, but our mere desires are obviously not sufficient to create any god.

1.2 The evolution of religious beliefs

It would not be possible to cover all our knowledge of primitive cultures and their supernatural postulates in an adequate way in this brief overview of religious beliefs. Moreover, different cultures have evolved in different fashions, because the sequence of their religious development is not as rigid as the stages of biological development. However, by identifying the key developmental stages that have culminated in today's religions, it may be possible to summarize vast amounts of information that could help us to understand the deeper roots of religious beliefs. Religious practices may progress from the worship of natural forces and elements, through animism, ancestor worship, totemism, and shamanism in various orders, and finally culminate in different forms of theism and polytheism. All these practices support supernatural beliefs that involve magic and multiple deities, as will be discussed below.

Primitive cultures, like infant humans, tend to believe that natural processes such as rain and storms are *animated* or are actually the work of somebody, as several researchers have pointed out [6]. It is clear that early humans were not scientists, but their logic and primitive technology taught them that things occur due to a cause, and they were able to anticipate the dangers of signals indicating the presence of a predator or natural enemies. However, natural processes without obvious causal agents were often attributed to supernatural powers and to minor deities that had specialized functions.

The cult of the ancestors, veneration of the dead, and burial rituals were practised by almost all ancient cultures, not only because they were thought necessary to heal painful experiences, but also to preserve the souls of the dead. These rituals involved praying, and some cultures also had altars at home, where the ancestors were offered food and prayers, a practice that is still common in several oriental countries today.

Totemism is another a primitive practice involving a mystical relationship with totems, which are animals, plants, or objects used as the emblem of the group and considered sacred. Totemism includes a collection of different beliefs, sometimes involving the cult of ancestors and the dead, belief in spirits, and certain taboos. Breach of these taboos, or an offense or damage to the totem, may bring sickness or death to individuals or to the whole group. Totemism is rich in rites and ceremonies involving dances and imitation of animals, humans, or natural processes. It was claimed by the French sociologist Emile Durkheim (1858–1932) that totemism was a fundamental characteristic of all religions, but this is no longer accepted today. In contrast with totemism, *shamanism* is an animistic system of beliefs in which mediation between the visible and supernatural worlds is effected by shamans. These are individuals who claim to receive their powers directly from the gods and spirits, and acquire their status through personal communication with the supernatural. Such communication takes place through dreams and visions, some of which are

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believed to be produced by visits from the souls of dead or living persons, or by other spirits [7].

Some anthropologists take the view that religions emerged largely because of the limited “successes” of magic in dealing with natural disasters, and as a confession of human impotence in the face of death or natural forces. These limitations created the need to believe in and recruit the help of higher powers through religion, which was and still is a fundamental component of human life. However, much of the information on supernatural beliefs and worship by illiterate tribes and cultures has been lost forever. To fill the gaps, it has been assumed that their beliefs were similar to those documented in the nineteenth and early twentieth centuries by numerous anthropologists who studied primitive cultures that remained isolated in remote parts of the world. Despite some contention, it is generally agreed that there has been a continuous progression from supernatural and superstitious beliefs to the more complex and sophisticated religions.

Religions developed in parallel with civilization, long before recorded history. Like many of today’s primitive cultures, our early ancestors may have used prayer, dance, and complex ceremonial ritual to communicate with the gods or with the spirits thought to control their destiny. Some primitive Melanesians believe in a mystic impersonal power, which is called *manua* and has equivalents in other primitive cultures. In their efforts to control the environmental factors required to successfully cultivate their gardens, or to fish and hunt, primitive societies exploited their practical knowledge, but they often supplemented this knowledge with magical practices to counter the unexpected and uncontrollable natural forces that could transform a well-executed operation into a disaster. Primitive cultures knew very well which processes could be controlled by applying the appropriate techniques, and which were out of their control and had to be prevented if possible using magical ceremonies. Similarly, our early ancestors may have resorted to begging the help of the superior powers attributed to the gods only after recognizing the inadequacy of their magic and mystical solutions for daily problems.

Offerings are a common component of religious rituals in which something valuable is given to the gods or spirits as a conciliatory gesture or homage, the most extreme being the ritual sacrifice of an animal or a person. It is interesting that myths, rituals, and sacrifices have developed in all primitive cultures, apparently in an independent fashion. Even the most primitive people seem to recognize that, to get something from somebody, you have to offer something in exchange. The anthropomorphic character of the gods is implicit in the assumption that they will appreciate the offerings, even if the offerings are useless to the gods, and only represent a sacrifice or hardship for the givers.

The birth of myth and religious belief seems to be directly related to our constant search for meaning and to our human fear of death. According to anthropologists, early humans would have assumed that human experience

did not end after the death of the body, so they conceived the existence of a creator who gave them a spirit or soul that would survive death. They also left indications that there were good and bad spirits who could affect their life. Similar beliefs may have developed independently in many isolated populations throughout the world, suggesting that the idea of extinction after death seemed unacceptable to all early humans in different civilizations. It also indicates the birth of symbolic thought and the use of symbols and symbolic behavior, such as rituals, to transmit meaning.

Ernst Cassirer rightly considered that the most characteristic human attribute is the abstract capacity to invent and use symbols [8]. The earliest record of symbol writing has been found in ochre engravings of unknown meaning in the Blombos Cave in South Africa, dated to about 100,000 years ago [9]. Ice age hunter-gatherers who lived 30,000–50,000 years ago painted, not only realistic animals, but also some half-animal and half-human figures in several European caves. The significance of their drawings, or their carvings of little ivory statuettes, remains unclear, but they are certainly examples of a burgeoning artistic ability. The religious meaning of many sculptures in Mesopotamia and Egypt only became evident to us much later, with the decoding of writing, which was invented about 5,000 years ago.

The oldest known temple was built in Göbekli Tepe, southern Turkey, about 11,600 years ago. In fact, several temples have been found in a large area that runs from southern Turkey to the southeastern side of the Fertile Crescent, near the mouths of the Tigris and Euphrates rivers in the Persian Gulf. The temples contain several pillars or standing sculptures representing humans. These are made from a single piece of stone 6 m tall, and are surrounded by circular walls, with a long aisle that provides access. The pillars also bear carvings of several local animals such as boars, cranes, foxes, scorpions, and snakes. The area was fertile and provided an ideal setting for prehistoric farming, as attested by the discovery of domesticated wheat and other grains. There is little doubt that this area became the cradle of civilization, even if it received influences from several different directions.

The complex religious beliefs of different cultures reflect not only their mythology, but also the stage at which they stabilize or cease to evolve. Local conditions imposed by different natural forces, food abundance, or periodic floods also contributed to determining the forces that were feared and worshipped by the different cultures. Early humans continually sought to control the forces of nature for practical purposes, and to avoid natural disasters, epidemics, and drought. The heavens are generally considered to be animated, since they *seem* to be the source of rain, wind, lightning, and thunder. Thus, many primitive cultures believe in heavenly gods who control to varying degrees the events that affect their lives. Interestingly, some of these beliefs, such as the exact location of gods, angels, and other minor deities in heaven, are still essential components of today's major religions.

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Religions are now found throughout the world, and are almost universally hailed as the highest expression of the human spirit. The early supernatural beliefs, however, were varied and heterogeneous, because they were polytheistic, with different gods and spirits who fulfilled specific functions for which they were worshipped. Animism still predominates in some illiterate cultures. It consists in the belief that, in addition to humans, animals and other objects also incorporate a spirit that somehow provides their essence. They also believe that during sleep, as in death, human souls can separate from the body (Fig. 1.1) and visit other persons, in whom they produce dreams.

Early religions started out polytheistic, as though every important natural element had to be worshipped independently to help struggling early civilizations. Other conceptions of the supernatural include pantheism, the belief that every object in the Universe is sacred, and theism, the belief that one god created and rules the Universe. The latter should be contrasted with deism, which is the belief in a god based on reason rather than revelation, and in particular a god who created the Universe, but does not interfere with humans and does not control the Universe.

1.3 Western religions

Whereas there are many different types of religion in the world, there is a tendency for underdeveloped cultures to believe in polytheistic religions. For example, early civilizations like the Greeks had many deities that were classified in different categories and had specific functions. Zeus was their main god, but there were many others, such as Aphrodite, who symbolized love and beauty, Prometheus, the creator of humankind, Athena, the goddess of wisdom, and Dionysus, the god of wine. The Romans, Egyptians, and Phoenicians also had a large collection of major and minor gods.

Today, the most widely followed religions are Christianity, Buddhism, Islam, and Hinduism. These are divided into several different branches, spread through different regions and countries. Judaism is actually a small religious/ethnic group that is only politically important in the Middle East and in the United States.

Christians believe in Jesus Christ as their main deity and in the writings of the New Testament. Jesus is thought to be the Son of God, who was sent to Earth to save humanity. Christianity spread rapidly in different countries and regions, so it is no surprise that Christians eventually divided up into several groups. And since they spread in three different directions, they split into three main subgroups: Roman Catholic, the Eastern Orthodox Church, and Protestants. These later subdivided further into various churches.

Islam is also a monotheistic religion that believes in Allah (or God). Like the Christian God, Allah is thought to be the creator of the Universe and the source

of all good and all evil. Muhammad (570–622 A.D.) was the most important prophet of Islam and codified the strict rules that Muslims are required to follow today. Like Christians, Muslims believe that, after death, they will enter either paradise or hell. They must do a pilgrimage at least once in their lifetime to worship at a shrine in Mecca. Despite the similarity of their expectations after death, there are important differences in the beliefs imposed by these religions.

In some parts of the world, Buddhism is seen, not as a religion, but as a philosophical system. Based on the teaching of Siddhartha Gautama or Buddha, it encourages followers to free themselves from the tyranny of materialism.

Other religions have developed in Africa and the islands of the Pacific Ocean, and among the indigenous populations of the American continent. There are mixtures of aboriginal, Caribbean, and Christian religions that prosper today, but it is not our purpose to detail all the variants.

The Sumerian, Egyptian, Roman, and Greek religions venerated several gods, each of which provided protection in specialized areas. In contrast, Christianity, Judaism, and Islam are monotheistic religions, which worship a single personal god who is the creator and ruler of the Universe and actively intervenes in the personal affairs of humans and communicates with them. As indicated previously, deism is the belief in a god that created the Universe, but does not intervene in human affairs, while an atheist is someone who does not believe in any personal god, and an agnostic is someone who is not convinced one way or the other about whether gods exist.

In America, there is a diversity of local traditions and religious beliefs that are thought to be intrinsically respectable and that are never openly criticized by political leaders, even though they contradict each other, and even though, in the best of cases, only one of them could be completely true. In the average American city and in the countryside, there are many competing churches showing that religious freedom and practice, within socially acceptable limits, often forms the backbone of small communities. Religious participation is almost obligatory, because it procures a respectable status in the community and a social outlet for interaction, not only at a personal level but also in business and politics.

This situation is not always constructive, because in some parts of the country, political and religious leaders control the decisions of school community boards and oppose the teaching of biological evolution, for example, which is unacceptable to most religions. Community boards also oppose the innovations brought about by competitive newcomers and immigrants.

Thus, while the universality of religious beliefs can be explained when we look at their primitive origins, their fragmentation suggests that they are all affected by local legends and political groups. Religions have survival value when they serve to bring together and promote coherence in groups of people,

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but they have also been a major source of conflicts, some of which are still raging around the world, with little hope of appeasement.

1.4 The detachment of the spirit

Tabloids and popular magazines often publish descriptions of near-death experiences that require the subject to be in an extremely abnormal organic state. People get sick and approach death only when there is something seriously wrong with their bodies. Under normal conditions, the composition of the body fluids is kept within narrow limits, what Claude Bernard called the *internal milieu* [10]. When the composition of the body fluids is altered by disease, the functions of most vital organs such as the heart, kidney, liver, and brain are deeply disrupted and this can produce a whole range of organic mental symptoms including delusions, hallucinations, and delirium.

Delirium is the most frequently observed mental disorder in clinical practice [11]. Manifestations include reduced awareness and attention, memory impairment, disorientation in time and space, rambling speech, and incoherence. Delirium may also involve many associated features such as anxiety, fear, depression, and perceptual disturbances, including illusions or hallucinations. As indicated below, delirium can be caused by almost any factor that alters brain function. About 10% of medical-surgical patients become delirious at some point during their hospitalization, but the incidence increases to 40% in geriatric patients. Delirium due to a general medical condition is characterized by disturbances in consciousness that cannot be explained by a brain lesion, and it is strongly associated with increased risk of death. Delirium characterized by vivid dreams and hallucinations is frequent in children and other individuals with high fever and dehydration.

In short, a variety of conditions that alter the composition of the blood beyond certain limits can produce an abnormal state of consciousness and eventually cause death. Delusions of detachment of the spirit from the body (Fig. 1.2) are frequent during periods of prolonged dehydration, intoxication by drugs, and severe organic disease, as experienced during agony.

The evidence indicates that near-death experiences are *organic mental syndromes* that fall under the category of delirium. Normal healthy individuals do not have near-death experiences, but the number of patients that recover from near-death experiences has increased during recent years because the high technology of modern medicine can save the life of a patient that previously would certainly have died. The typical cause is cardiac arrest followed by coma and cardiopulmonary resuscitation. However, near-death experiences are reported only by a small proportion of patients that undergo cardiopulmonary resuscitation. Delusions of detachment of the spirit from the body, so typical of

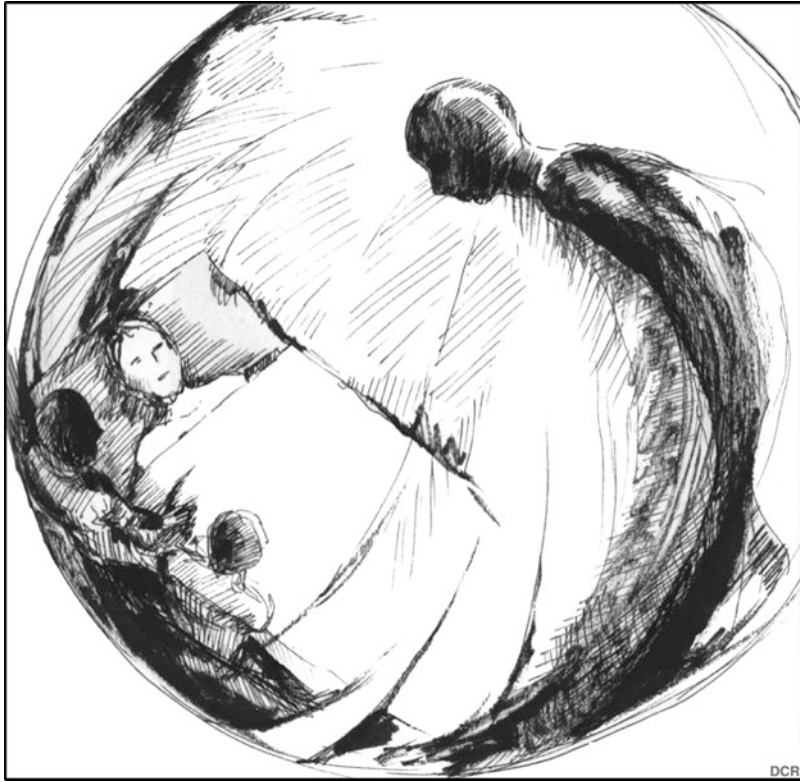


Fig. 1.2 Hallucination of observing her own dying body. A different patient reported after her recovery, a near-death experience with hallucinations, in which she felt that her soul was observing her own dying body and members of her family who were taking care of her

near-death experiences, are also produced by hallucinogenic drugs, including mescaline and LSD.

The diversity of the descriptions provided by patients that recovered from these extreme pathological conditions indicates that their visions were conditioned by their preconceptions, culture, and religion. Their stories are inconsistently described by different persons and in reports from ancient times, as in many biblical revelations and visions. The vividness of the descriptions and the depth of the near-death experiences obviously do not provide any indication of their reliability. Unfortunately, some of the reports on near-death experience have been performed just by collecting information provided by patients that anonymously answered a mailed questionnaire, without describing the physical condition that caused the experience [12]. However, the proposal that the near-death experiences could be labeled as “religious or spiritual” ignores the fact that such experiences usually take place in

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semi-comatose or delirious patients with serious organic abnormalities. The most ardent believers are often individuals hoping for any sign that could be interpreted as an indication that they have a soul that will survive death.

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2

The contradictions and consequences of religious beliefs

Summary Humans have assumed for thousands of years that they have a spirit or soul that will survive the body after death. These beliefs gave rise to countless religions that developed in different directions and led eventually to Christianity, Islam, and Judaism, and many minor religions. Hinduism and Buddhism, however, could be better described as a mixture of philosophy and religion. All religions are based on faith, so not surprisingly they evolve in different directions and originate countless branches and subdivisions. It should be noted that these contradict not only each other, but also scientific knowledge. Faith is a primitive form of irrational knowledge in which the truth or falsity of the beliefs cannot be tested. But faith is an essential component of all religions.

Drastic religious changes took place during the Reformation in the sixteenth century, and some of these had major political and religious consequences, sparking off many political conflicts and still fuelling wars even today, mainly in the Middle East and in western Asian countries. The freedom given to all established religions and new religious movements has unintentionally created further conflicts, many of which have ended in tragedy. Extreme faith can produce shared psychotic disorders that may have lethal consequences.

2.1 Cultural and religious contradictions

The first encounters with contradictions probably originated at the dawn of civilization, when humans started to face the contrast between their raw instincts and the incipient human aspirations of having a shelter and food for their family. Our hominid ancestors (Chap. 3) were probably striving to separate themselves from the ruthless animal world in which they were born and to avoid the constant challenges of dealing with predators and competing

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hominid groups. The evolution of the hominid brain progressed slowly, but the development of the prefrontal cortex and the areas of association that increased the interconnectivity of different brain regions and functions resulted in a dramatic increase in intelligence and in the probabilities of survival. These changes were mainly due to development of areas related to creative intelligence and language.

With the progressive development of higher intelligence, abstract thinking, and language, primitive humans became better prepared to face life, and as agriculture gradually came on the scene, there was some free time between harvests to think and to wonder about the meaning of life and death. Early humans assumed at some point that there must be something else after death [1–3], so they conceived the existence of a supernatural creator and assumed that they had their own supernatural soul that would survive death. In analogy with their own world, they thought that there were good and bad spirits, angels, and devils, who could affect their lives. Similar beliefs apparently developed independently in many isolated populations.

Today, the major religions are Christianity, Islam, and Judaism, if we consider Hinduism and Buddhism to be better described as philosophies of life rather than religions. The Christians believe in Jesus Christ as their main deity, while followers of Islam believe in Allah. Like the Christian God, Allah is believed to be the creator of the Universe and the source of all good and evil. Muhammad (570–622 A.D.) was the most important prophet of Islam; he codified the strict rules that Muslims must follow, which include praying in Arabic five times a day. Besides, during Ramadan, the ninth month of the Moslem calendar, Muslims must abstain from food, drink, sex, and smoking, from sunrise to sunset. They must go on a pilgrimage at least once in their lifetime to worship at a shrine in Mecca. At death, they believe, like Christians, that they will enter either paradise or hell.

But despite their similar expectations after death, these religions involve important differences that preclude their unification into one single religion. Thus, since the main religions were born, there have been inherent contradictions between believers. The existence of contradictory beliefs between different cultures is one of the reasons why the world is chaotic, generating arguments about politics, territories, and religion which can easily result in armed conflict and religious persecution. Unfortunately, the United States government sometimes feels compelled to intervene as a peacemaker to protect American investments.

The American political, economic, and racial confrontations of half a century ago were solved with minimal violence. Today, we have in theory the freedom to choose beliefs, express opinions, and decide how to live our lives. While these are considered among the most important assets for American people, only a small fraction of the population really has the means and the privilege to choose their career and attend the schools of their choice.

Even though our freedom is nominally guaranteed by the constitution, the choices available to most Americans, and especially of those that have just immigrated, is unfortunately limited by a constellation of cultural, social, and economic factors. They include the cost of higher education, the lack of popular role models outside the sports or musical arenas, and the provincial mentality that predominates in many small communities.

One of the most severe blows to American confidence was produced by the assassination of President John F. Kennedy. The shock of losing our hopes for rationality and innovation was compounded by the passive and uncritical acceptance of family tradition, religion, and social conventions. Still today, freedom of choice cannot truly be exercised by most people, for they become prisoners of their own traditions and environment. In addition to their poor education and the need to work long hours to pay for food, high-interest mortgages, and the traps of easily obtainable credit cards, the average American worker is constantly *distracted* and *diverted* from preparing for a better future. There are no Roman circuses with gladiators, but there is football, basketball, and baseball, not to mention video games and movies that provide immediate entertainment to *divert* a large sector of the population from more fundamental issues. Americans seem to live in a modern adaptation of Huxley's *Brave New World*, with a blind and irrational confidence in a future inspired by television shows, soap operas, or sporting matches.

We have a diversity of local traditions and religious beliefs that are all thought to be intrinsically respectable, and cannot be openly criticized by political leaders. In the average American cities and in the countryside, there are many competing churches showing that religious freedom and practice are the backbone of our society. Religious participation provides a respectable status in the community and a social outlet to interact, not only at a personal level but also in business and politics. These developments are not always positive, because political and religious leaders are beginning to control the decisions of school community boards, and to oppose the teaching of biological evolution, for example, as well as the innovations brought about by competitive newcomers and immigrants. To make the situation worse, the voice of intellectuals cannot be clearly heard over the background noise created by primetime television commercials and political propaganda [4].

Our cultural tradition also seems to have been short-lived, because many nonfiction authors whose books were read by the previous generation are hardly read today. Interestingly, books for or against religion are selling well today, but the great majority of nonfiction books are written about popular entertainers, sports heroes, and political personalities. There are also many "How-To" books, on cooking and other crafts, as well as travel, dieting, adventure, and other entertainments. But the number of scholarly books produced by private publishers is actually at an all time low. Even university presses often agree to publish serious non-fiction only if the book could be used for teaching.

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This is because non-fiction books simply do not sell nearly as well as popular fiction or memoirs about the horizontal lives of famous actors. Perhaps the new electronic forms of communication and the WWW will facilitate the reading of thought-provoking books and replace the role of the classic *public intellectual* that characterized Europe a few decades ago.

The cultural crisis is not new, but it has reached unprecedented proportions. As Adler indicated, it was Averroës (1126–1198) who proposed to accept independently the “truths of faith” and the “truths of reason”. However, he assigned a higher status to the truths of reason, because the truths of faith belong to the sphere of imagination [3]. Besides, Averroës thought that religious writings could be interpreted allegorically, giving him room to avoid contradictions. Averroës was probably the first to suggest life in such a schizoid world. Dualism reaffirms the existence of different realms and the use of faith as a legitimate method to validate beliefs.

Descartes (1596–1650) contributed significantly to putting dualism on apparently solid grounds [5], and other philosophers and some scientists have tried to justify the simultaneous acceptance of two independent realms. This was probably a way to avoid conflict between religion and reason, which could have been fatal during the Middle Ages or the Inquisition. Even today, some philosophers and scientists keep their religious beliefs in a compartment well separated from their objective knowledge. The majority of people get along with social conventions by dividing reality into two independent worlds, the *natural* and the *supernatural* [3]. The objective world is understood through science, which relies on reason, logic, and empirical knowledge, while the supernatural world, ruled by *faith*, provides religion, astrology, and other superstitious beliefs. The duality of body and spirit, which is implicit in today's popular culture, is still fundamental to the organization of the intellectual and spiritual life of most people.

2.2 Early spiritual beliefs

Homo sapiens seems to be anything but *sapiens* in relation to faith and religious beliefs. Our early ancestors may have started to have religious thoughts when the Neanderthals began to bury their dead in special positions. Burying a parent or a child is certainly a painful experience. It feels like a deep injustice, and makes us want to take good care of the dead, compelling us to ponder the meaning of life and death. The existence of these universal feelings suggests that religions would have been developed in the early stages of civilization by the most primitive and ignorant cultures, who still believed in magic, spirits, and witchcraft. As discussed below, people thought that being alive and moving, that is, being *animated*, meant having a soul.

All religions support the idea that humans have a soul or a spirit. Animals were also thought to have a soul, *anima*, or *vital spirits*, because they can move

at their own will. Actually, the word *animal* derives from *anima* or soul in Latin. Observing the movements and autonomy of animals fascinates everybody, especially children. This is probably why Walt Disney's *animated* cartoons became so popular, and today animation is used in television, not only in advertisements for children, but also for adults. The existence of animal spirits, however, was disproven in the 1700s, when the Italian physician Luigi Galvani (1737–1798) was able to produce movements in the legs of recently sacrificed frogs by applying electrical discharges to the frogs' sciatic nerve.

The use of electricity to study animals has had far-reaching scientific and philosophical consequences, besides disproving the theory of "vital spirits" to explain animal movements. Vital spirits were replaced by what Galvani called "animal electricity". Galvani's experiments were published more than two centuries ago, in 1791. They provided the basis for the studies of Alessandro Volta (1745–1827), who invented the battery, and for the German physician Emil du Bois-Reymond (1818–1896), who continued to study animal electricity in electric fishes. The multiple devices designed by these investigators to register animal electricity led many years later to the invention of the EKG or ECG (electrocardiogram) and EEG (electroencephalogram), and these in turn have provided the starting point for much more sophisticated imaging techniques, such as positron emission tomographic scanning (PETs) and functional magnetic resonance imaging (fMRI). Besides being powerful diagnostic tools, these can visualize some of the brain activity involved in mental processes and in the maintenance of consciousness.

2.3 The contradictions between science and religion

Most cultures have been through similar, but not identical developmental stages that started with primitive taboos, animism, and polytheism. The evolution toward monotheism seems a major simplifying step. While replacing the complexity of polytheism in some cultures, it required a greater capacity for abstract thought. However, some religions that are considered monotheistic, such as Christianity, actually refer to a multitude of deities, including various saints and virgins, who are said to be specialized in solving specific problems or in helping to cure some diseases. In many churches, there are separate altars that allow people to pray directly to different saints. But, if everything else fails, it is still possible to pray directly to any member of the Catholic Holy Trinity, which includes the Father, the Son, and the Holy Ghost. But the idea of three persons existing in One Divine Being is a Catholic dogma that is not acceptable to Protestants. The Catholic Trinity has been declared a mystery, and it has been complicated by more than 2,000 years of theological arguments and irrational explanations.

Today, almost 90% of Americans are religious and believe in two independent realms, living thus in a schizoid universe with a natural and a supernatural

component. Moreover, some contemporary philosophers have even tried to demonstrate that physicalism is wrong, proposing that there is a fundamental difference between the subjective character of qualitative experiences and the physicality of the brain [6, 7]. It is a pervasive illusion to believe that qualitative experiences and the mind are nonphysical phenomena. The overview provided in this book will show that qualitative experiences are ineffable, not because they are mysterious or supernatural, but because they consist in *language-independent* neural processes that could be named, but not re-created in the brains of others through explanations (Chap. 4). Actually, languages can only be developed and translated by anchoring words or gestures into qualitative experiences, or by making the appropriate sounds and gestures that are understandable because humans and higher animals have similar phylogenetic backgrounds and common experiences [8] (Chap. 6).

There are no satisfactory explanations for how the natural and the supernatural realms could interact with each other. Do we have a dual nature, material and spiritual as most religions teach, or are the duality of body and spirit only an ancestral hope supported by religious beliefs, family tradition, and wishful thinking? The most common answer is of course that we have a body and a spirit. At some point in our lives, we have all been deeply preoccupied about our nature and ultimate fate. We realized, probably during our early teens, that we are not just acting in a school play, but we are living our real and only life. When we were young, we envisioned growing up, preparing to face life, and realizing all our dreams, while knowing that some day in the very, very distant future we will be facing death. We may also have sometimes hoped that the preachers were right, and that we would enter the supernatural world, where we could live happily through all eternity in the company of our loved ones.

But this would be possible only if we had a *dual nature*, a physical body and a spiritual soul that would survive death. Actually, it really does seem as though we have a spiritual or intellectual component that is not physical. I will show later that this feeling is produced by the impossibility of perceiving our brain and its functions, which are then attributed to a supernatural soul. We have no doubts that our physical body will eventually die and decay, so it seems encouraging that the major religions and our subjective feelings tell us that we may also possess a non-physical spiritual component. The problem with this view is that faith and beliefs are not rigorous ways to tell what is true or false. Faith is *only a primitive way of validating beliefs*, because it gives rise to innumerable contradictions, as indicated by the religious incompatibilities that have always plagued the world. Moreover, faith is not compatible with science and reason, both of which we have learned to trust. Religion and faith require belief in an interaction between the *natural world* and a hypothetical *supernatural realm*, but nobody has explained how the two realities could interact without violating the most fundamental principles of physics and reason.

Belief in the existence of a spiritual nonphysical component implies that there is a natural reality and a supernatural reality, and that we are part of both worlds, even though there is no evidence for the latter. We know that we have a physical body and a thinking mind as well as a strong moral sense and deep emotions that seem somehow spiritual. Nevertheless, there are too many religions and contradictory beliefs for all of them to be true, as each individual religion claims. When we grow up, no answer comes, and regardless of our education or occupation, we realize that we still do not know what comes after death, if anything. Thus, we carry on with dignity, while looking for reassurance. The majority of us initially accepted the most popular belief: if we are good in this world, our souls will go to Heaven after we die, but if we are not, we will go to Hell, where we will suffer forever. However, this statement is just a childish dream, and some of us have serious doubts about the existence of a God with good intentions who would create a perverse Devil. It seems that the God of the Bible was also schizoid.

The most ironic aspect of religions is that they were invented at a time when primitive humans were living in deep ignorance, when the Earth was thought to be flat, and the Sun to revolve around the Earth. Since religions cannot discriminate between false beliefs and true knowledge, they simply qualify as superstitious beliefs, the irrational creations of well meaning, but deeply ignorant people, some of whom were in addition epileptic or paranoid enough to have auditory hallucinations, such as the Prophet Muhammad.

Mary Baker G. Eddy (1821–1910), the founder of the *Church of Christ, Scientist* in Boston, was also mentally unstable and reported that she was able to have conversations with God. She founded the *Christian Science Monitor*, a newspaper, and a magazine. Her teachings advocated refusing medical treatment in favor of prayers, because she believed in the spiritual healing of diseases, including all the bacterial diseases of childhood. It was said by her followers that she was able to heal people instantaneously, and this could well have been true if she was dealing only with rampant psychosomatic complaints. Initially, she had thousands of followers, but the number of believers has shrunk to less than 10% in recent years. Eventually she was found guilty of contributing to the deaths of several children, who got prayers instead of regular medical treatment. Some of her followers still believe in spiritual healing, and even recently this has resulted in the unnecessary deaths of several children, whose parents are being brought to trial under the accusation of manslaughter.

Since all religions claim to be true, none of their claims can be taken seriously, simply because religions contradict each other. A true religion is an oxymoron. In addition, there are major inconsistencies between the omniscience and the omnipotence of the Christian god and the contradictory realities in which we live. God seems to ignore all the problems that affect humans, including the chronic infantile mortality and the hunger of children in Africa, especially Somalia, in the area of the African Horn, where in August

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2011, children less than 5 years of age were dying at the rate of 10,000 per month. It seems reasonable for humans to expect an omnipotent god to solve at least some of the serious problems that chronically affect many children.

In fact, such problems should never have developed. God's neglect is universal, because there are many catastrophic situations around the world. For example, God should have stopped all the calamities that have plagued the world in recent years, such as the devastation of New Orleans by the hurricane Katrina in August 2005, which killed more than 1,800 people and destroyed a considerable fraction of the poorer neighborhoods. Not to mention earthquakes, which regularly produce a much higher toll: an earthquake of magnitude 7 in Haiti killed more than 85,000 people in January 2010, and the Great East Japan Earthquake of March 2011 produced a tsunami that resulted in more than 13,500 people being killed, while 14,500 were still missing a month later. The same tsunami also destroyed three nuclear reactors and resulted in the spread of highly radioactive particles that have been incorporated into the food chain and have made a large area uninhabitable for many years to come. While religious leaders might argue that these disasters are necessary to test the strength of human character, they are much more likely simply to indicate natural forces beyond our control, with or without the help of Divine intervention.

The multiplicity of religions is illogical, unnecessary, and contradictory, because we only need one true religion and one effective god, but neither can be identified with any degree of certainty. Actually, although this critique may sound childish and naive, it applies to the gods of all religions, all of whom have been neglecting the needy around the world. If Jesus Christ was actually a god, who descended from Heaven to be with the mortals, it seems strange that he has not been able to come back to talk to and advise humans for the last two millennia. God should be aware that many serious problems have occurred since his last visit; we have had many wars and plagues, and more recently, we have had two world wars that were much more devastating than anyone could have imagined two millennia ago. Besides, God has also been ignoring the crimes of tyrants and despots from Argentina and Afghanistan to Tunisia. Are these tests of our character and faith, as proclaimed by many religious leaders, or are they an indication that we are on our own and would do better to protect ourselves.

2.4 The fragmentation of culture

The problems of human nature are complex and intertwined, so *Contradictions* is not only about beliefs, but also about the nature and reliability of our culture. Inspired by C. P. Snow's "The Two Cultures" [9], I realized that the arbitrary division of knowledge into disciplines allows us to create tight compartments to avoid contradictory beliefs and confrontations. For example, we could justify

almost anything by taking refuge in a particular religion, philosophical doctrine, or narrow academic discipline. The idea is to convince people and ourselves that other disciplines have no relevance to the subject under discussion, or that they have an “independent nature”. We easily forget that nothing is in fact independent in this way, because universal laws encompass the whole Universe and supersede our provincial cultures. Besides, matter and energy are physically equivalent as described by Einstein. Opinions are subjective, but truth is universal (or at least it should be), and it has a coherence and beauty that leaves no room for contradictions. Today, the coherence of knowledge and truth are both essential, not only for our intellectual well-being, but also for the survival of our civilization.

Our cultural situation contrasts sharply with the Western philosophical tradition that started with the cosmological preoccupations of the pre-Socratic philosophers, who speculated on the origin of celestial bodies, life, and the structure of matter, the existence of movement or the nature of numbers. The early Greek philosophers were not only theoreticians, but also tried to solve practical problems, such as measuring fields and calculating the distance of faraway objects. With Socrates, Plato, and Aristotle, philosophy expanded into an all-encompassing body of inquiry that included the origin and the possibility of knowledge, ethics, geometry, logic, biology, metaphysics, etc.

Specialization and the ensuing fragmentation of knowledge into disciplines and sub-disciplines is one of the generally accepted, but potentially divisive developments that today threaten the unity of our culture. The fragmentation of knowledge is institutionalized by academic departments at many universities, which sometimes become responsible for the fragmentation of teaching. These departments are organized and maintained for several reasons. Initially, their names were derived from a new specialty with a fancy name, which suggested that their members were working in the forefront of knowledge. However, the dual obligation of research and teaching created the need for a territorial demarcation. Moreover, they have personnel that have to be supervised and sometimes paid for by obtaining competitive research grants. Thus, academic departments are *territories with a budget*, which become symbols of the power of each departmental chairman, who tends to perpetuate the status quo by resisting any attempt to reorganize or to change the curriculum. This is why academic departments are generally reorganized only after the replacement of a chairperson.

2.5 Religious atrocities and shared psychotic disorders

Different churches and new sects start as small congregations that branch out from larger denominations, such as Judaism, Christianity, or Islam. Many developing sects incorporate elements from other religions. For example, Christianity began as a synthesis of Judaism and Greek religion which

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also incorporated elements from Celtic religions and Roman paganism [10]. All major, time-tested religions have proven their social acceptability and have generated major independent denominations. The explosion in the number of denominations can probably be traced to the Reformation. Ulrich Zwingli (1484–1531), who initiated the Reformation in Switzerland, preached that the Bible is the absolute authority. The German theologian and leader of the Protestant Reformation Martin Luther (1483–1546) also accepted the Bible as the sole source of revelation. He believed that salvation would be granted on the basis of faith alone, and supported a universal priesthood of all believers.

Unitarianism was a movement that emerged from the Reformation and favored a view of the scriptures as interpreted by reason. They did not believe in the Trinity or in the divinity of Christ. One of the first promoters of Unitarianism was the Spanish physician and theologian Michael Servetus (Miguel Serveto), who discovered the circulation of blood through the lungs. He argued that there was nothing in the New Testament that contradicted the monotheism of the Jewish Scriptures [11]. For his denial of the Trinity, Servetus was burnt alive at the stake in 1553 by order of John Calvin. His execution provoked a justified reaction against punishing heresy with death, and this probably had a role in the spread of Unitarianism to England during the seventeenth century. The seditious movements breaking off from the central authority of the Roman Catholic Church, and the license for free interpretations of the Bible which could be validated just by personal faith alone, contributed to the generation of a wide variety of religious denominations, sects, and cults. The Bible thus became a useful kit for developing religions to suit individual tastes and the fashion of the times.

The Protestant legacy and the religious freedom guaranteed by the American Constitution, assure the endless proliferation of sects, churches, and denominations. This proliferation is further fueled by competition between the different denominations, which have to recruit followers and donors to survive. Churches without parishioners do not prosper. Kosmin and Lachman [12] list an impressive number of denominations in their text and tables, but after several failed attempts to count them all, let us just say that the U.S. Department of Defense lists 260 denominations under the general heading of Protestant chaplaincy alone.

2.6 The “new” religious movements and their apocalyptic predictions

Dissident sects or churches are usually recognized as legitimate, even though some are weird, by almost any standard. They are tolerated in the name of religious freedom, providing that they are not socially obnoxious. Sometimes these sects evolve into large denominations, despite certain odd features. An example are the Mormons, who were polygamous until 1890, or the

Christian Scientists, discussed previously. More recently, several New Religious Movements, such as the Hare Krishna, The Unification Church (“Moonies”), the Divine Light Mission, and others, even though they were ephemeral, have created serious social and psychiatric problems because they have violated the civil liberties of certain cult members.

New Religious Movements also recruit emotionally disturbed youngsters, 30–38% of whom have been under psychiatric treatment before joining these cults [13]. These youngsters become easy prey of the cults because of the “affection and concern” shown by cult members, who are oriented toward communal or unconventional living, as a large extended family. Such cults, which exceed 2,500 in number in the US alone, provide emotional support, a mission in life, and a feeling of accomplishment that is badly needed by their members. On the other hand, some cults are a public health hazard, because their leaders have been found guilty of inflicting mental distress, coercive persuasion, peonage, unlawful imprisonment, sexual abuse, physical violence, deceptive fundraising practices, misuse of charitable status, and other abuses.

Concerned parents and friends of group members have occasionally counter-attacked by rescuing and “deprogramming” the recruits. Deprogramming consists in removing the cult members from the group, and subjecting them to a coercive reeducation process. This technique, even though successful in many instances, has created additional legal and psychological problems, because the rescue also violates the civil rights of the recruits. We cannot analyze here all the psychiatric and civil rights issues surrounding the cults and New Religious Movements, but the interested reader is referred to the American Psychiatric Association report [13] and to Galanter [14].

2.7 The tragic consequences of blind faith

There is obviously a wide spectrum of sects and cults. In the extreme cases, the cult leader is eccentric, with bizarre ideas, demanding absolute obedience. The leader becomes the self-appointed interpreter of God’s will, and demands absolute faith, which may have tragic results. These leaders manage to convince the converted individuals to abandon their families, or bring them into the sect community, to which they must subsequently donate all their possessions. The followers often live in an unconventional manner under the guidance of an authoritarian and charismatic leader. In some cases, when the leader makes apocalyptic predictions such as the catastrophic end of the world with the salvation of the righteous, or the Second Coming of Jesus, they are prone to violence, which usually ends in tragedy when the predictions do not materialize. This is what happened with the mass murder–suicide of the People’s Temple sect in Jonestown, Guyana in 1978, when more than 900 US citizens died.

Another incident in which a sect was involved, in 1993, destroyed the Mount Carmel Center, in Waco, Texas. There was an armed conflict between a religious sect, the Branch Davidians headed by David Koresh, and the Federal law enforcement agents, following a 7 week siege. The sect, which had a long history of apocalyptic predictions, separated from the Davidians Sect of the Seventh Day Adventists, who believe that Jesus' Second Coming and the end of the world are near. The first prediction, by William Miller (1782–1849), was that Christ was returning on October 23, 1844. When Jesus did not show up, this led to much disappointment [15]. Since then, the second coming has been supported by visions and delusional interpretations of the scriptures by Ellen G. White. She had about 300 visions in her lifetime, and seems to have been frankly paranoid: she thought that Satan, who was represented by the Bishop of Rome, would seek to control the world. She believed that only those whom God addresses audibly are able to understand and explain the Scriptures [15]. The most parsimonious explanation is that Ellen G. White was not only paranoid, but was also having very vivid auditory hallucinations.

In another apocalyptic prediction, Florence Houteff, the wife of a deceased leader of the Mount Carmel Center, announced that on April 22, 1959, the faithful would be slaughtered, then resurrected and carried to heaven on clouds. Nothing happened, so everybody was disappointed, and the prophet gradually lost her followers. It is clear that the Davidians have been waiting a long time for a bloody confrontation between the good forces of God and the evil intentions of Satan. The stage was set for the unfolding of the Waco tragedy.

The leader of Mount Carmel Center was David Koresh, a peculiar self-appointed Messiah. His interpretations of the scriptures are clearly delusional and self-serving. Biblical revelations prompted him to father many children by different concubines, several of whom were under age. In contrast, the males in the colony were required to abstain from sex. Moreover, he was known to practice cunnilingus, which was considered a diabolical act by some members of the sect. His sexual practices were an obstacle, not only for preserving the flock, but also for expanding their number. Koresh believed that he had to be, not only a lover but also a *fighter*, so he accumulated an arsenal of semi-automatic rifles, and materials to manufacture hand grenades and other explosives [15].

The recurrent apocalyptic prophesies of the sect were fulfilled when the Federal law enforcement officers, who were probably identified with the forces of Satan, prepared to invade the Mount Carmel complex. The final episode, on April 19, 1993, was brought about by a fire that consumed the Mount Carmel Center. It ended with the death of 76 men, women and children, including David Koresh. The origin of the fire that engulfed the Mount Carmel Center

is in question and the Federal agents may share part of the blame. However, it is clear that such incidents do not develop unless faith is pushed to the limit, to create a shared psychotic disorder.

Independently of these events, another apocalyptic episode took place in late 1994, when 52 members of the “Order of the Solar Temple” were found dead in Switzerland and Quebec, in a murder–suicide ritual. Sixteen additional members of the same sect died in France, near the frontier with Switzerland, in December 1995. The bodies were found arranged in a sunburst pattern. Fourteen were shot after ingesting a sedative, and two—who were assumed to have shot the rest—died of self-inflicted gunshot wounds.

Sects whose beliefs generate violence or mass immolation attract attention, and they are labeled as deviant cults. The teachings and the doctrines of these charismatic groups are considered eccentric. In these extreme cases, it is clear that their leader is a disturbed paranoid individual who has induced a *shared psychotic disorder* in all the members of the sect. However, if the activities of the cult do not have tragic consequences, society does not recognize the psychotic character of the cult’s teachings. The members of the cult could not be judged as delusional, because religious beliefs are protected by the American Constitution. The New Religious Movements are only judged by their results, and not by the delusional beliefs of their members. It is important to remember that not even the most grossly ridiculous religious beliefs are considered delusional because of a loophole in the official definition of delusion that is in compliance with the constitution [13].

Faith does not have any truthful cognitive value because it cannot distinguish objectively between true and false, and cannot distinguish religious extremism from moderation. Deductive and inductive logic, as well as empirical knowledge, have rules that preclude gross deviations from the truth. Despite its limitations, faith is considered by all religions as the highest form of knowledge. However, faith is the engine that has produced the most striking injustices in history, and keeps the faithful ignorant of what science has to say. Another of the self-serving theories that some theologians, preachers, and gurus have proclaimed is that religious experiences are the “highest forms of consciousness”, which is a senseless metaphor in terms of truth. The mountains of incomprehensible gibberish created and propagated by religious writers hardly testify to the “superiority” of such states of consciousness. There is no acknowledgment of the fact that faith cannot discriminate truth, so any religion becomes true by definition. The tragedies generated by the cults, the ridiculous predictions of hundreds of visionaries and prophets, the Inquisitors of all times, the witch hunters, the religious persecutors and terrorists, are all based on “The True Faith”. Indeed, religious faith is blind by necessity, because the “right” and the “wrong” faiths are not distinguishable by their truth value.