

## Article

# Awe and Artifacts: Religious and Scientific Endeavor

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Academic Editor: Noreen Herzfeld

Received: 4 February 2017; Accepted: 30 April 2017; Published: 8 May 2017

**Abstract:** The article takes as its point of departure the reflections of Henry Adams and Jacques Ellul on the possible gradual replacement of objects used in religious worship with objects used in technological worship, and advances the hypothesis that such a substitution is unlikely. Using information from psychology, history of religions, and history of science, the perspective proposed is that of a parallel historical analogous development of both religious and scientific attitudes of awe by the use of artifacts carrying two functions: firstly, to coagulate social participation around questions dealing with humanity's destiny and interpersonal relationships across communities, and secondly to offer cultural coherence through a communal sense of social stability, comfort, and security. I argue that, though animated by attitudes of awe ("awefull"), both leading scientists and religious founders have encountered the difficulty in representing and introducing this awe to the large public via "awesome" artifacts. The failure to represent coherently the initial awe via artifacts may give rise to "anomalous awefulness": intolerance, persecutions, global conflicts.

**Keywords:** scientific and religious awe; the sacred; hierophany; icons and scientific images

## 1. Introduction

Paris World Fair 1900: *Palais des Machines*. Among the major attractions: huge dynamos generating electricity. The quiet spectacle attracts hundreds of men and women staring with a sense of awe at the amazing technology. The reactions on their faces are quietly observed by the American historian and journalist Henry Adams. These reactions are not new: Adams remembers having seen similar attitudes previously on the faces of the pilgrims frequenting the shrines of the Virgin Mary throughout Europe. This leads him to the expectation that the "cult of the dynamo" might one day supersede the "cult of the Virgin" (Götz 2001, p. 9). About ninety years later, a similar perspective is proposed by the French philosopher Jacques Ellul, who observes the "sacred awe that we experience face to face with nuclear fission" and the "religious complex" that strikes the human being when faced with items such as "television, computers, bikes, and rockets". In his opinion, the advent of the modern era has not radically changed the ways we interact with our environment, but has rather changed the environment itself. In this case, the modern environment, far from being the result of the "supposed dedivinisation of the world", becomes instead "a fictional world in which our religious sense incarnates itself" in physical objects that are no longer natural, but are still considered worthy of adoration if used with "joy and fear" (Ellul 1990, p. 121).

The following discussion is intended to argue, contrary to the views of Adams and Ellul, that there are no reasons to conceive of an actual replacement of religious objects with technological objects. As I will argue, there has been, at least in the Western mind, a perennial parallel cultivation of scientific awe on the one hand and religious awe on the other, since the awe of ancient man of science for scientific enquiry is similar to the awe of the contemporary scientist when making an unexpected discovery, and since the awe animating the religious founder or prophet still corresponds to the mystical experience

of contemporary famous or secluded religious members, irrespective of the degree of development of science and technology. Although the awe of the scientist is in a way analogous to the awe of the religious founder, the two kinds of awe should not be interpreted as interchangeable. In this article I focus on the similarities of these two kinds of awe, but I do not intend to argue that they are identical, an opinion which will rather resonate with Adams's and Ellul's argument that, since they are almost identical, awe for scientific artifacts might someday replace the awe for religious artifacts. The opinions of Adams and Ellul are essential in bringing more attention to the role played by both religious and scientific artifacts in the human effort to attain or to make present the kind of awe a member of either a religious or a scientific community aspires to. Both scientific and religious artifacts have an undeniable, indeed central, role in promoting awe. In this paper I distance myself from Adams and Ellul by considering that, if the idea of a replacement should be admitted, it will not be a replacement of religious with scientific artifacts. As I will argue, since these phenomena (awe in religion and awe in science) reflect parallel historical developments, a replacement may occur separately within each field: the initial feelings of awe of the scientist when making a discovery (the awefull event), feelings that the scientist tries to make available to a wider audience, may be superseded by a qualitatively less powerful awe for technologically sophisticated items, in the same ways that the initial feelings of awe of the prophet in front of a revelatory (awefull) event may be superseded by the awe of the people in front of the majestic tokens of human skill intended initially to attract social participation around feelings similar to those experienced by the prophet.

In the first two parts of this article, I integrate elements from recent findings in psychology dedicated to the study of awe as a psychological phenomenon, from the theoretical view on the concept of the "sacred" developed by Rudolf Otto and Mircea Eliade, and from examples mainly from the history of the Judeo-Christian tradition, in order to argue that, since the ancient developments of the western scientific and religious mind, human beings have been animated by a feeling of both fear and fascination in front of extraordinary phenomena, a feeling that I characterize by the term "awefulness". It is this awefulness that constitutes the source of the endeavor that prompts both prophet and scientist to advance further in the understanding of the mystery of the world, and to view their breakthrough discoveries as experiences entitling them to a special vocation to make their discovery known as widely as possible, ideally to the whole of mankind.

In the third part I will show that there has been a certain parallel tension inherited within both religious or scientific artifacts due to their ambiguous status as both vehicles of induced awe and instruments of wellbeing. I argue that these artifacts are meant to be "awesome" in the sense that their function is to reconcile the ideals and values of communion with the mystery of existence and community among social members with the ideals and values of practical applicability aiming at strengthening social cohesion in everyday interactions, and generating social stability and a sense of social order and hierarchy. In the fourth part I argue that, given the human feeling of pride, together with the passion for myth and the marvelous shape of religious or technological items, the practical role of scientific or religious artifacts tends to disconnect individuals and societies from the pursuit of higher goals, having sprung from the original "awefull" experience of either the prophet or the scientist. Given the fact that human awe can be induced, the use of artifacts may also be intentionally manipulated in order to induce in human beings a special kind of awe, no less awefull than the original founding awe in science or religion, but which emphasizes only selected aspects of the original *mysterium tremendum et fascinans*. I call this kind of awe "anomalous", as it does not cultivate the harmonious mixture of a wish for knowledge and a tremendous respect for the mystery of existence, and so may easily engender social and political unrest.

## 2. The Founding Awefull Event

The attention given in psychology to the human reaction usually described as awe is very recent. The 2016 *Encyclopedia of Mental Health* defines awe as a "self-transcendent emotion" which "sits in the upper reaches of pleasure and on the boundary of fear", and admits that the more extensive studies

focusing on awe as a psychological attitude have been published after 2003 and have only made visible “the tip of the iceberg” of this essentially human manifestation (Zhang and Keltner 2016, pp. 131, 134). Nevertheless, some of the studies reviewed have emphasized at least three points that I find important for the development of my argument.

Firstly, J. W. Zhang and D. Keltner (Zhang and Keltner 2016, p. 131) argue that awe is not only restricted to psychological manifestations by the human beings in the face of religious events, but can also be triggered by other elements, such as grandiose natural landscapes, powerful leaders, and cognitive elicitors. Secondly, as suggested in the short definition, the essential characteristics of awe are to include both positive (fascination, pleasure) and negative reactions (fear). This corresponds with Rudolf Otto’s definition of the sacred as *mysterium tremendum et fascinans*, a phenomenon that triggers human awe, a feeling that makes the person tremble, but nevertheless brings them closer to the extraordinary event (Otto 1958, p. 140). Thirdly, the *Encyclopedia* mentions the findings of two recent surveys which show that awe is a feeling that may either arise spontaneously, or may be artificially induced during psychological experiments via specific tasks or visual content. The first survey, by V. Griskevicius, M. N. Shiota, and S. L. Neufeld (2010) showed that people induced to feel awe were more able to process information-rich stimuli, and the second survey, published in 2012, and led by J. Berge and K. L. Milkman, has found that the feeling of awe stimulates curiosity and interest (Zhang and Keltner 2016, p. 132). This is again compatible with Otto’s view on the fascinating force of the sacred event on human psychology.

Here I would like to place more emphasis on the third point revealed by these recent psychological surveys: besides arriving at a definition of secular awe that is highly compatible with the classic description of the phenomenon of the sacred, recent findings in psychology also show that awe can be induced. I argue that this has also been the case with sacred awe throughout the history of religion and science. It can generally be asserted that virtually all founders of great religions have intended to induce in their fellows the kind of awe they themselves experienced during an unexpected encounter with the sacred. The historian of religions Mircea Eliade emphasizes that the response of Jacob, after experiencing awe in his dream at Haran at the sight of a supernatural ladder ascending into heaven, was twofold: firstly, to utter the words “How dreadful is this place...”, and secondly, to set up a monument consecrating the spot as special. Eliade sees in the gesture of the Patriarch a merely symbolic act, since the place had been consecrated not by the human action, but by the very phenomenon of theophany, which opens this space “above”, making it thus a “point of passage from one mode of being to another” (Eliade 1959, p. 26). Nevertheless, the very act of consecration both by words and deeds functions as a sign which, although highly symbolic, encourages subsequent searches for renewed contact with the divine, either personal, or collective: “He called the place Beth-el, that is, house of God (Genesis, 28, 12–19)” (Eliade 1959). A human being, in themselves incapable of directly consecrating the place or instituting a gate toward a new dimension, but merely of acknowledging such theophany, can only re-present the experienced awe to himself and to others through words and actions. It is these words and actions that have an impact on the human community (in this case, the followers), since the original awefull event has been revealed only to the one experiencing it. By following the path and reaching the place or situation indicated by the words and actions of the person having had the original theophany, others may hope to attain similar results, although this time not by accident or chance.

### 3. The Human Representational Effort of the Awefull in Science and Religion

The recent history of science abounds in examples of accomplished scientists having experienced a feeling of awe at the unexpected discoveries unfolding in front of their eyes. To give a few examples, one may consider the awe felt by Ernest Rutherford at the discovery of alpha particles; Arthur Eddington’s amazement at the deflection of light by the sun’s gravitational field; Karl Popper’s repeated use of the term “miracle” while speaking about human evolution; Stephen Hawking’s prediction of black hole radiation inviting him to meditate about the hidden realities of the universe

(Stanesby 1988, pp. 101, 128); Francis Collins's comparison of the human genome's chemical structure with a book of human nature that was, until the year 2000, known only to God (Smith 2005, p. 10); Fritjof Capra's comparison of the "cosmic dance of energy", or the "dance of subatomic matter" with "the Dance of Shiva, the Lord of Dancers worshipped by the Hindus" (Capra 1975, pp. 11, 245); or Albert Einstein's appreciation that "the scientist is activated by a wonder and awe before the mysterious comprehensibility of the universe which is yet finally beyond his grasp" (Torrance 2002, p. 31). This phenomenon is in fact not a discontinuity in the history of science, since scientists in the past seem to have felt similar attitudes in the face of the majestic spectacle of physical nature. According to John Hedley Brooke, the attitude of Johannes Kepler toward the universe seems to have evolved from aesthetic to reverential awe, and of course the metaphor of nature as a book known clearly only to God, but nevertheless accessible to human mind, seems to have captivated Kepler as well as Galileo, Newton, and Francis Bacon (Brooke 2005, p. 168). This kind of awe can even be traced back to ancient times, where, Charles Freeman informs us, "despite his achievements as a scientist, Ptolemy remained in awe of the universe" (Freeman 2005, p. 67).

For all these scientists the fact of having unexpected access to previously unknown aspects of the laws of physics does not stop them in their tracks as a result of fearful awe, but rather their fascination acts as an impulse to curiosity and interest and as an encouragement to continue their research and make their results widely known. As Elaine Howard Ecklund puts it, the awe felt by scientists propels them toward a different kind of "engaged spirituality" that feeds back into the work they undertake as scientists (Ecklund 2010, pp. 67–68). This is similar with the prophets' or religious founders' commitment to disseminating the message of the divine being as widely as possible, being fully convinced of the far reaching positive consequences of the fact that they have made contact with previously unknown dimensions of existence. The great prophets are often depicted in the Judeo-Christian tradition as trying to escape their calling by God, but eventually accepting the task and continuing to spread the word of the revelation they witnessed until the final days of their lives, which ended usually in martyrdom (Ronald 1998, pp. 98, 105, 150). Scientists, depicted by Ecklund as "spiritual entrepreneurs", have a similar role to that of the prophets, as they "would not be motivated only by self-interest (how to make more money or achieve personal success)" (Ecklund 2010).

In spite of some contemporary views, like those of Richard Dawkins, that overtly minimize, or plainly misread the positive impact of the "awe factor" on the followers of a prophet or religious founder in comparison with the social and intellectual impact of the awe felt by the scientists (Dawkins 1993, p. 243), I argue that both scientists and prophets have spent their lives in a spirit of openheartedness, being always convinced that, after witnessing an awe-full event, they have a duty to keep a record, describe their encounter, formulate in words their insight into the unknown, and even attempt at establishing or building material means to commemorate or replicate the context of the event. Inspired by Dawkins, one might reply that on this point science differs widely from religion in the fact that scientists, unlike prophets, after having lived a tremendous experience, try to look for identifiable data and present them to the critical examination of other scientists from their own community (Dawkins 1993). On this subject I would like to restate Ian Barbour's argument that "there simply is no theory-free observational language" (Barbour 1997, p. 108). Nonetheless, I believe this aspect still needs more clarification. Giving some examples from the early history of the Christian Church, I will now shift my emphasis towards the conviction of religious founders that what they were presenting as the facts of their experience had, in their time, the value of data destined to be integrated into a larger theoretical framework already accepted by their community.

First of all, it appears that the biblical writers had been highly selective in their efforts to place at the core of the Christian teaching the idea of the profound impact of Jesus's earthly existence on physical nature by miraculous events like incarnation, changing water into wine, the Transfiguration, walking on water, feeding the multitude with only a few pieces of bread and fish, and of course his Resurrection and Ascension into heaven with his transfigured body. Subsequently, up until the time of the first Ecumenical Council, it had become clear to the representatives of the Christian

communities which books, out of the many that were circulating, had been retained as canonical (Lindberg 2006, p. 15). This indicates a dominant willingness of the Church doctors to establish a corpus of books that would contain an acquired set of data extracted from the witnesses of Jesus's life or from those having witnessed special revelatory events, by what today might be called an endeavor aimed at being as critical as the times would allow. Secondly, Christians had been taught by the Apostle Paul about the imperfect knowledge, communicated via human-made channels, about the current and future immersion of the physical world into the transcendent reality: "For now we see through a glass, darkly; but then face to face: now I know in part; but then shall I know even as also I am known" (1 Cor. 13: 12). That is why Paul warns those taking upon them the responsibility of becoming the experts of Christian faith: "Let a man so account of us, as of the ministers of Christ, and stewards of the mysteries of God" (1 Cor. 4:1). Thirdly, the drafters of the Nicene-Constantinopolitan creed (381) took a special approach to Christian tradition by introducing terms like *ousia*, *homoousios* and *hypostasis* which could not be found in the Scriptures (Freeman 2005, p. 179). These insertions may rather be seen as both an effort to extend the *logos*, human theoretical reasoning, at the expense of *mythos*, into the divine mystery, and as an attempt to give an innovative aspect to the tradition, in order to keep it alive, dynamic, and open to the integration of new data upon acceptance by the widest possible number of "stewards" of the divine mysteries.

This introduction of a critical and innovative spirit into the tradition sheds light on the argument I am developing about the similar religious and scientific attitudes toward an awe-full experience. One of the practical advancements of this critical and innovatory spirit was the official proclamation of the veneration of icons on the occasion of the Seventh Ecumenical Council (787). From then on, icons, mosaics and stained glass windows would play a major role in the ambitious Christian project of rendering unitary a Tradition that contained many largely contrasting views about the mystery of God and its relationship with the mystery of the world. The icons were thus not meant as simple visual interpretations of myths, but their official recognition may be regarded as an attempt at rendering visible, via highly symbolical means, a reality beyond the reach of most of humanity. Against iconoclasm, the supporters of icons faced the challenge of producing concrete images of what had only been presupposed by human reason to be the reality, after analysis (by reason and faith) of the kind of data received from the divine being via revelatory channels: the awe experienced by Moses and the prophets; by Paul, who claimed to have travelled to the third heaven (2 Cor. 12:2); by all those who witnessed Jesus's miraculous actions upon the physical world; and by the saints of the history of the Universal Church.

The challenge of this effort was not only mythical, but also cosmological. Contemporary poet Tracy K. Smith, whose father worked on the Hubble telescope for many years, recounts in her poem *My God, it's Full of Stars* her awe at the sight of the first pictures composed correctly at the second attempt, after the telescope's optics had been corrected: "We saw to the edge of all there is—So brutal and alive it seemed to comprehend us back." (Smith 2011, p. 12). Imagine a similar response from somebody entering the Hagia Sophia for the first time and being visually stricken by the beauty and the arrangement of the mosaics: in the eyes of both minds, several centuries apart, grandiose representations of the universe generate similar kinds of feelings. Christian religious art can thus be seen as a prefiguration of the technological ambition of the Western mind to pierce the mystery of the world by a rational quest for meaning and knowledge of reality.

By the end of the twentieth-century, as Joseph C. Pitt writes, the technological infrastructure behind the awe felt by scientists upon the reception of data and images from the Galileo space probe traveling at high speed toward Jupiter, became highly complex: "The machinery, the programming and the capacity for mistakes is enormous. If you add the testing of scientific theories to the problem, and the interaction between the theories and the technological infrastructure, as well as among themselves, there can never again be a simple history of the ideas of science, nor should there be." (Pitt 1995, pp. 11–12). Today science avails itself of powerful new technologies, and in spite of efforts aimed at technical accuracy, scientists still gaze into the deepest layers of the images and data obtained



in search of clues about what is still only vaguely known. The proto-technological project of the Judeo-Christian early tradition also appears to have been an immense coordinated global effort (global within the limits of the then-known world) to integrate and harmonize diverse “data” about the cosmic order, the divine action, and the place of humanity in that order. The goal of this joint project involving diverse communities within the Universal Church had thus been to produce a living Tradition open to creative effort in which new data and new forms of human artifacts would contribute to a better picturing of the mystery of the universe that was believed to be structured according to a theandric principle.

#### 4. The Tension between the Two Functions of the Awesome Artifacts of Religion and Science

Overcoming the issue of iconoclasm had represented for the early Christian Church a statement of refusal to remain only in the realm of the mythological. This may seem less obvious for today’s minds, where religious art is not necessarily a tool of historical and scientific knowledge. The long and complex communal process of writing, editing, and compiling what would eventually become the canonical source of Christian revealed knowledge culminated in 787 with the official recognition of the human representational effort of the divine being and the theandric universe. By officially accepting icons, the Early Church signaled once again, via a Council presented as Ecumenical, that its concerted effort across the board had always been one that transgressed mere adoration, its ultimate goal being the human cognition of the divine being and of the complexity of the universe as the Creator’s work. Nevertheless, if this choice preserved the possibility of human cognitive endeavor in the *mysterium tremendum* of the divinely ordained world, this does not mean that iconoclasm was completely groundless, but that it was simply contrary to the dominant practice and cognitive expectations across the Early Church. What iconoclasm showed to be at stake were the limits of representation.

Judeo-Christian tradition manifests a profound awareness of the limits of the human representation of the divine. The special approach of the Mosaic representation of God’s presence was not by the intermediary of some sculpture, but by two tablets bearing God’s written words. According to Leonard Shlain, this particular way of representing God’s relation to humanity appears as a major achievement in the history of the human technological development, as it stressed the importance of adoration by learning and the use of reason: “A radical new communication technology would so change cultural perceptions that the first people to utilize it would introduce the fundamental features underpinning Western civilization.” (Leonard 1999, p. 79). Nevertheless, it seems that, in the immediate aftermath of God’s direct revelation at Mount Sinai, the people of Israel manifested more attraction toward a representation of God via a fabulous object (a calf) made entirely of a noble metal, a choice which showed that a representation by letters, as revolutionary as it had been, simply proved unsatisfactory for the appeasement of people’s passion for myth and physical form (Exodus 32:4). Several other representations followed, like that of the Ark of the Covenant, which was placed in the Tabernacle, later replaced with Solomon’s Temple, which in turn fell prey on several occasions to sacking by political enemies (Magness 2012). This explains why sometimes the prophets urged the people to come to an adoration of God which was beyond representation by material objects and mythically-infused acts, but rather by acts of reason. The Prophet Isaiah claims to have had a vision where God entrusted him with the following message for the people of Israel: “To what purpose is the multitude of your sacrifices unto me? (...) Learn to do well; seek judgment, relieve the oppressed (...). Come now, and let us reason together, saith the Lord” (Isaiah 1:11, 17, 18). Jesus also showed awareness of this difficulty of representation: “God is a Spirit: and they that worship him must worship him in spirit and in truth” (John 4:24). After all, the “house of God” that Jacob talked about during his theophany was not a human-made building, but a natural place elevated to a special status, directly appropriated by God, an act only acknowledged by humans, as Eliade has argued (Eliade 1959). However, this did not deter Judaism and Christianity from representing the houses of God by huge buildings: at the inauguration of the Hagia Sophia, the emperor Justinian is believed to have exclaimed: “O Solomon, I have surpassed thee!” (Whitby 2006, p. 167).

Not only in religion, but also in science there is a perceived difficulty in doing justice, via the right means of representation, to the feelings of awe felt by established scientists. As in religion, a straightforward representation of this kind of awe in a less specialized, universally accessible language, seems less likely to impress people thirsty for the spectacular. Just as the religious community has done with icons, the scientific community presents to the general public images of the mysteries of the universe: planets, galaxies, black holes, as well as neuronal connections, cellular division, the beginning of human life, and so on, the kind of images that generate reverential awe for the amazing complexity of the universe. As Richard Dawkins puts it, “black holes are incomparably more wondrous, more romantic, than anything you read in the pseudoscientific literature, in New Age drivel, in ‘the occult’, in the Bible. Let’s not sell science short” (Dawkins 1993). Even so, people tend to experience more awe looking at the spectacle of CGI displayed in movies about intergalactic superheroes that generally defy the laws of physics (Bell 2006, p. 71). Science nowadays thus has a similar task to the one embraced by the Judeo-Christian tradition: to deal with all the mythical popular misunderstandings of scientific achievements and create an accurate depiction of reality, using for this purpose both words (theories) and high resolution images showing its progress in inspecting either the very big or the very small. The technology is new, but the technological intention is thousands of years old, and it is not the exclusive prerogative of science.

Indeed, technology has always had an important place in the religious representation of the divine. Ignacio Götz argues that the contribution of technology in religion is so important that it may ultimately explain people’s awe for religion: “The point is that, from time immemorial, technologies have been connected with the sacred probably because they, or their use, inspired awe among the people, or because its use had to be curtailed or controlled by some early, incipient capitalists: the awe the pyramids inspire is similar to the awe before a Lamborghini that sells for upwards of \$100,000” (Götz 2001, p. 10). This view might resonate with the opinions of Henry Adams and Jacques Ellul with which I chose to introduce this article. All three authors tend to take as a point of departure the impression made by the latest technology and to formulate judgments about the role of the initial technology. As I have been arguing, from time immemorial, technology in its rudimentary forms has been the vehicle of religion, not only because of the social intention to disseminate widely the awe felt by privileged persons during theophanies, but also because of the human fascination for knowledge of what has been presented as mysterious and divine. The awe expressed in front of the pyramids is rather of the same nature as the awe expressed in front of medieval cathedrals, or grandiose natural landscapes due to the fact that they give the impression of being miraculous. This is largely different from the awe in front of the latest type of car, or the latest type of mobile phone, or any high-tech gadget, which is rather of the marvelous type. Indeed, what brings them closer is the exclamation: “I have surpassed thee!” In uttering these words, the emperor Justinian, like the Pharaohs of Egypt, inadvertently confused an artifact intended to induce awe for the divine with an item intended to induce the people’s awe for his own personality. What the pyramids and the car have in common does not pertain to the feeling of awe, but to the feeling of pride. This explains, at least partly, the current tendency to regard political and social awe, based on pride and envy, as similar to the awe of what have been perceived as religious theophanies in the face of natural or cosmic landscapes, an awe which is based on the equal effect of fearful respect and fascination.

Being partially indebted to the Humean distinction between miraculous and marvelous (Earman 2000, p. 33), I have chosen to indicate by the term “awefull” hierophany, the event triggering both fear and fascination, whereas, in order to better characterize the limits of the artifacts meant to represent the sacred, I will choose the term “awesome”, which rather reflects the contemporary amazement when faced with marvelous artifacts. I believe that my use of the term “awesome” can be contextualized within the contemporary tendency to consider all pieces of human technology from all times of equal strength in inducing a sense of sacred awe. I agree with Adams, Ellul, and Götz that all technological advances in human history have provoked great feelings of awe, and that is why I call them awesome. From this point of view, the pyramids, the Jewish temple and the Hagia Sophia have

themselves been the fruit of awesome technology for their specific times, and this means they have become awesome. The fact that some of them still survive gives them a special aura, but still does not make them awefull in the absolute sense of the hierophany. From this point of view, we can accept as awefull only the lived experience “in spirit and in truth”.

Both religion and science have produced special technologies to reaffirm and make present again the kind of awe that animated both religious founders and established scientists. Religious representatives and scientists have repeatedly attempted to produce representations of this awe which would bring not only a degree of truth to reason, or spirit to feelings, but the right balance between the two. When the people of Israel were thirsty in the desert, and attacked by venomous snakes, Moses devised special devices, either to obtain water in that rocky area, or to heal people by using a material object that itself resembled a snake (Numbers 20:11; 21:9). Although these devices attracted awe for the power that had been invested in Moses by God, their capacity for representation was not sufficient to induce in people an awefull attitude in truth and in spirit, since these artifacts did not impact upon people’s consciences as did the general hierophany accomplished by God himself on the Mount Sinai (Exodus 19:18). Only a few days after succeeding in feeding a large number of people in the desert with just a few loaves and fishes, Jesus overtly manifests his disappointment: “You seek me, not because you saw the miracles, but because you did eat of the loaves, and were filled.” (John 6:26). This clearly shows the tension, brought about by awesome artifacts and actions, between re-presenting the awefull and the practical social use of the awesome, which eventually becomes so ubiquitous that the sense of wonder is ultimately lost.

In its turn, science has also faced similar problems. The emergence of the radio communication system in the early twentieth-century, stemming from the general scientific effort of the technological application of the late-nineteenth-century discovery of Hertzian waves, gave scientists and ordinary people the feeling of having witnessed something like an awefull event. But at the same time, concomitantly with the awe felt by such a revolutionary technology, there appeared practical problems related to the economic sustainability and to the pecuniary exploitation of such a system of communication (Caselli 2014, p. 268). Today, as the radio became smaller, portable, and ultimately integrated into other communication devices, the kind of awe that animated its initial inventors has been completely forgotten. It does come back from time to time, if the radio comes in special shapes or colors, in order to trigger a limited awe, at least for a short time, as in front of a marvelous artifact. This phenomenon did not appear, for instance, in the case of a particle accelerator which, at the time of its invention in Ernest Rutherford’s laboratory could be held in the hand (Brown 1986, p. 73). As time went on, the particle accelerator became ever bigger, eventually surpassing the size of the biggest medieval cathedrals. The fact that the accelerator did not become a commodity partly explains why visitors to CERN in Geneva are still affected by a sense of wonder for the mystery of matter. The emergence of other means of mass communication, like television, computers, and tablets, encouraged people to stand in awe for only a short time, before going on with their usual daily social and economic activities, now increasingly boosted by the new available technologies. Big questions, inviting to awefull attitudes about humanity’s existence and relationships, have rather been superseded by questions regarding the shape, appearance and degree of technical performance of the awesome objects. In other words, people around the world, in search of *mythos*, did not “see the miracle” (John 6:26) in the awesome artifacts at their disposal, but rather perceived a marvelous way to make life more comfortable.

## 5. Religious, Scientific Artifacts and Anomalous Awe

Besides mentioning that the feeling of awe can be induced, recent psychological studies also refer to another two feelings that compete with awe, but never have the sense of humility that awe brings. These feeling are pride and envy (Zhang and Keltner 2016, pp. 131–32). Pride and envy can be discussed as a characteristic of a personal wish or need to compete with others, as in the case of Justinian at the political level, but this also occurs on a smaller scale, as wanting to possess better



designed and more technologically advanced gadgets than other people. Pride as a political tool may indeed manipulate the feelings of awe of entire peoples. It has been the case with the personality cult around the world in many cultural and historical contexts. To give just an example, one of the gadgets of Ceaușescu, the first president of Romania, was the *People's House*, the second largest building in the world, second only to the Pentagon. Even so, in spite of the great awe inspired, this monumental architectural complex ultimately proved insufficient in keeping the leader in power. The result was an important historical event, which I mention here because it occupies a special place in the history of technology being used to induce awe: the Romanian Revolution of December 1989 was the first event ever in the history of broadcasting to be covered live by a television. Today the Romanian Television archives contain 400 h of recordings, among which 120 were broadcast live (FIAT/IFTA 2017). In spite of this wide coverage, the historical paradox is that, decades later, people are still asking for the “truth” of what happened back then, and who were the “terrorists” that shot hundreds of innocent civilians, but who simply vanished, never to be found. Some voices believe that the event was not a revolution at all, but a coup (BBC News 2009). The awe of the people was there, the spirit of revolution was also there, but the truth was absent. I call this type of induced feeling by the use of technology, rituals, powerful rhetoric, but without the right balance between the two aspects, *tremendum* and *fascinans*, an anomalous awe.

When visiting a nuclear museum in Oak Ridge, Tennessee, Arthur Molella was surprised to see the exhibits arranged in such a way as to trigger visitors' awe for the unilateral truth of the great power of military technology, making people forget about Hiroshima, Nagasaki and the great risk of total annihilation (Molella 2003, p. 211). This is another example of induced anomalous awe that rather emphasizes the so-called truth of the power of technology and a distorted spirit of patriotism. Commenting in 1952 on his limited involvement in the project leading to the first atomic bombs, Albert Einstein asserts: “I was well aware of the dreadful danger for all mankind, if these experiments would succeed [...] To kill in war time, it seems to me, is in no ways better than common murder” (Einstein 1952). This assertion may still be interpreted as a statement of the scientist's awe in front of the implications of the human capacity to make scientific discoveries with a lasting impact on the fate of the entire humanity. This kind of awe corresponds to the revelatory awe animating both the prophet and the scientist, since it reveals the *mysterium tremendum et fascinans*. The awe-full character of the scientist's experience was genuine, since the fascination for knowledge of how the new discoveries of science might be used in military technology was well balanced by the trembling in front of the “dreadful danger for all mankind” in the light of the pacifist spirit, a moral value that humanity has struggled to secure over the course of its history. At the same time, the scientist was aware of the potential anomalous awe that might be generated in the eyes of some peoples by the spectacle of the destruction of others, the complete annihilation of the enemy. Only a few days before his death, Albert Einstein signed the Russel-Einstein manifesto, where he exhorted: “There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom (...) If you can do so, the way lies open to a new Paradise;” (Russel 1955). This is an implicit reiteration of the fact that the artifacts used in both science and religion to induce the experience of awe-full or revelatory events, can be intentionally manipulated to trigger anomalous awe. Instead, “if we choose”, the awesome technologies should rather be used to achieve “continual progress”, which would help bring people closer to each other and closer to a religious or secular epiphany that may move them internally toward the path of their quest for meaning.

## 6. Conclusions

The ideals of scientists and religious representatives are thus to move peoples, internally in their attitudes and externally in their actions, through the use of the artifacts of religious cultures and technologies, and to bring them closer to feelings of awe in front of the mystery of existence which as yet waits to be unveiled. In spite of such ideals that may encourage participatory democracies all over the world, or may initiate the postmodern renaissance of a new global culture, anomalous awe

still moves peoples toward special kinds of communal pride, such as national identity, ethnical or denominational discrimination, pride in being more technologically and culturally advanced than cultures considered peripheral to their own, and sympathy for populist measures of political leaders. The internet age, thanks to social media, represents a landmark in both scientific and religious historical ideals of *mysterium tremendum et fascinans*, as it constitutes itself, as clusters of independent participatory forums of conscience in which political, ethical and social phenomena are debated. This indeed brings humanity to the verge of an emerging global conversational conscience where both the truth or the spirit are pursued in equal measure. Humanity may in fact witness a slow and quiet revolution in coming closer than ever to the religious and scientific ideals of making as many people as ever rejoice, both as individuals and as members of wider communities, the awe of being human and an observer of the universe within and without.

However, the internet age is in danger of repeating the inadvertency of which iconoclasm was aware when criticizing the upholders of the representation of God and the universe by icons. This inadvertency is linked to any human attempt at inducing awefull feelings by artifacts (e.g., temples, pyramids, cathedrals, pieces of technology): a downplaying of awefull feelings in favor of more easily graspable awe for the awesomeness of the artifacts themselves, given their practical impact on the social lives of communities or societies. It should be specified that, if this latter kind of awe resembles a second-level awe, as it is an awe in front of an artifact rather than reflecting the direct experience of the awefull event (e.g., Jacob's vision or Moses's encounter with the unburnt bush), it should not be interpreted automatically as a morally inferior awe. Indeed, this second kind of awe, for the awesomeness of the artifact itself, has been present in almost all cases of human attempts at replicating the means of achieving the experience of the awefull event lived by the prophet (ark of the covenant, Temple, Hagia Sophia), and it is responsible for cultural development around the world. An exception to the general awesome character of the artifact might be the stone used by Jacob to mark the place of his encounter with the supernatural being. It was a simple stone, modeled by nature, in which the only human intervention was its vertical lifting, as a highly symbolic gesture of humanity's witnessing of the direct consecration of the place by the divine. The more the idea of consecration has become culturally embedded, the more the human artifacts aimed at re-presenting the original awe have become complex and "awesome". As I have argued, these artifacts were destined to express both the connection with the supernatural and also social and cultural coherence.

It is not its moral character of this awe for the "awesomeness" of the artifact that makes it appear to be a second-level awe, but its controllable character. The manipulation of the artifacts, either by external authorities (e.g., authoritarian rulers or dictators), or by internal passions (such as competition or pride) of those charged with the handling of those artifacts (e.g., clergy, governments, military), may generate a distortion in the representation of an awe which is different from the original awe. If the political leader's ambition was to reorient the use of religious artifacts (cathedrals, temples or pyramids) from the worship of the divine and the miracle of the cosmic existence towards a cult of his own personality, then the re-created awe achieved by political immixture would be far from making the people approach the awe originally experienced by the prophet. Although this has been achieved many times, this awe is only awe in an anomalous way, as it does not appear as an outcome of a true balance of both truth and spirit. Indeed, history abounds with many cases of political leaders strengthening their already strong rule by means of manipulating religious artifacts or technological achievements in order to use them as a means for religious persecution, confessional dominance, destruction of declared enemies, or enslavement and colonization of peoples of less advanced regions of the world.

In contemporary times, under the influence of ideological nationalism, the truth of the human technological capacity to create a terrifying weapon of mass destruction may be praised at the expense of the moral spirit of universal peace. Likewise, the technology used for the first time in modern history to bring into the homes of millions of people the image of a humbled, once all-powerful leader in Ceaușescu, helped propagate within seconds the spirit of revolution. However this was not enough,

since the awe that had been generated was only anomalous in the context of a distorted truth. Today, the contribution of the internet to intensifying human relations, and the emerging new technologies, still remain liable to the same double depreciation of the use of artifacts: firstly, a far stronger emphasis on the awesome aspects of the practical use of technological artifacts at the expense of the awe in the face of the essential questions regarding the contribution of those artifacts to the flourishing of mankind in ever-closer relationships between cultures; and secondly, the exploitation of the awesome toward generating an anomalous awe that overlooks or distorts the truth sought by human knowledge and the moral spirit of the values that have become dominant in communal relations through a long and painful historical process.

The awesome uses of the internet, that could extend to images, signs, or messages downloaded and exchanged in this virtual space, at the expense of the lived communal experience or face-to-face conversations, and the distortion of the fascination for learning more and of respect for other people's ideas, values or actions, may also lead the internet user to be subjected to manipulation toward anomalous awe nourished by individuals or institutions protected by virtual shadowy identities. Fake news, or fabricated contradictory accounts, generated by internet users themselves, by competing political powers or groups interested in implementing their own agendas; hacker attacks aiming at stealing personal data; terrorists posing as martyrs; the overall vulnerability of legal and political institutions using digital systems; the attempts by a number of governments worldwide to impose bans on websites or on users and regulate the content accessed by their citizens; all these highlight the frailty of such communication technologies. In this intricate web of public and private life brought about by the internet and new technologies, science and religion still have a major role to play, a role that goes beyond merely providing better technology and simple information, and beyond a mere hunt for identifying the witches and heretics for this new generation.

**Acknowledgments:** Supported by “the Fundamental Research Funds for the Central Universities”, Southeast University, Nanjing, Jiangsu Province, China.

**Conflicts of Interest:** The author declares no conflict of interest.

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