An Unexpected Journey.
Explicit and Implicit Religious Dimensions of Technology Throughout the Ages

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ABSTRACT

Contrary to a widespread assumption, technology is not a neutral reality which can be left to a purely self-referential understanding. Indeed, one cannot seriously grasp technological phenomena without becoming aware of the symbolic matrixes—that is, the wide sets of values, symbols, beliefs and myths—which have encoded technology in given periods of history. This paper examines these major symbolic matrixes from pre-history to the threshold of the present time. Doing so, it attempts to shed light on the deep relationship between technology and religion, explicit and implicit, from the paleolithic silex to the contemporary iPhone.

The aim of this paper[1] is to share some reflections on research developed some years ago on the impact of "new technologies"; this phenomenon, booming from the 1980s on, included many remarkable advances in a number of fields, from robotics to cognitive science, from artificial intelligence to bio-technology. Several scholars have questioned this increasing presence of technology in our lives under various angles—sociological, economic, political, etc. As one involved in the field of religious studies, I myself tried to examine it through what could be called a "history of the sacred".[2] Indeed, and unlike what is often inconsciously assumed, technology[3], in human history, has always been in some

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[1] Dedicated to the memory of Karen Pärna, colleague, partner in academic projects, friend, and of Edward Bailey, without whom this journal, as well as the network of implicit religion, would simply not exist.

[2] See Ménard & Miquel, 1988; Ménard 2000. The results of this research have been widely circulated in French speaking academic milieux but never in English. Hence the possible interest of this paper in spite of the ambition of its scope, questionable indeed for an academic journal article, and for which, in any event, I solicit the reader's understanding.

[3] It is capital to note from the start that the essential interest of this research is in the religious dimension of *technology*, not of *science*, with which it must not be confused in spite of numerous—though not always transparent—historical links. In that sense, it differs from the interest of other researches which have been more specifically centered on the relationships of *science* and religion. See notably Harrison, 2010 and its discussion on the *Religious Studies Project* (www.religiousstudiesproject.com).

relationship with the sacred. To put it otherwise: it has systematically possessed a religious dimension, explicit or implicit[4], overt or concealed, throughout the ages. And it is this dimension that has been explored, in order to have a better understanding *of the present*.[5] Indeed, my main concern as a scholar of religion has always been with the contemporary world. Yet a historical survey is hardly avoidable here, to root an understanding of our own times. I would therefore like to present a panorama of this research—at least a condensed one, since an exhaustive presentation of the whole story would naturally require more than a journal article. The coming pages will first present the main hypotheses of the research and introduce a few useful notions. Then will be sketched in broad features what will be called great "symbolic matrixes" in which technology has been embedded and encoded throughout history. Doing so, we will try to keep in mind that historical periodizing is always a rather arbitrary, fictitious and to some extent violent endeavour. With that precaution, the paper will thus consider the following blocks: Pre-history and the first civilizations of Humankind; Ancient Greece; Medieval Europe; The Age of Enlightenment and the birth of the Modern world. That will bring us to the threshold of our own times and to the questioning of what could be called the present and future fate—or destiny—of technology, although this part of the reflection will have to be postponed to a forthcoming article. Yet, hopefully, it will already provide fruitful elements for discussion.

Hypotheses and concepts

The basic intuition of the research, roughly speaking, was this: contrary to a widespread assumption, technology cannot be left to a purely self referential understanding. In other words, no technology is *neutral*; no technology is something that one could be satisfied with studying from a purely functional or instrumental point of view.[6] Said otherwise: it is a little short to say that a hammer is a hammer *tout court*, a computer, a computer; that, in themselves, these—technical—objects are *only* tools, *neutral* tools, and that their meaning,

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[4] I take the liberty of believing that the distinction between both is clear to most readers of this journal and, thus, does not require any explication here.

[5] For a different, though very stimulating perspective, see Callon *et al*., 2001, Stahl, 2002, Feenberg, 2010.

[6] See Daumas, 1969; Ellul, 1980; Habermas, 1970; Heidegger, 1977; Mumford, 1971. When available, English editions or English translations of books written in other languages have been given here as references.

or significance, is essentially determined by their utilization: for instance, if I use a hammer to nail a painting on a wall, it is considered a helpful tool; if I use it to break one of my colleagues' skull, it is seen as a blunt criminal weapon. The fact is however that, from the moment one seriously considers the history of both technology[7] and its symbolism, things are far from that simple.

Symbolic matrixes

This is what led to the hypothesis according to which one cannot really understand a technology without questioning its meaning and without exploring the symbolic matrix in which this technology is embedded. Now, what is a *symbolic matrix*? This notion will hereafter be exemplified in very concrete ways. To give a short theoretical definition, let us say it is a wide set of values, symbols, beliefs and myths which encode the technological reality in a given period of history, and which does it in such a way that it is impossible to consider the technology outside—or irrespective—of this symbolic matrix without missing something essential in its *significance*.

Through the uncovering of the great symbolic matrixes in which technologies have been embedded and encoded throughout history, it has been possible to bring to light two main watermarks—if the metaphor may be allowed—in the very fiber of the history of technology.

The ruse of technology

First, one could interpret the history of technology's symbolism under the guise of a *ruse*, rather in the sense that Hegel speaks of a "Ruse of Reason" (*List der Vernunft*). To put it as simply as possible: Reason, for Hegel, is undoubtedly the motor of history, even though it seems to lose, to dissolve or to dissimulate itself in the world; and the world, for that reason, often sounds as though "told by an idiot, and signifying nothing". The ruse, therefore, consists in the fact that Reason lets things interact with each other, apparently without having anything to do with this interaction, yet nevertheless pursuing, and triumphantly unfolding, in the end, its own goal[8].

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[7] See Gille, 1978.

[8] Which, for Hegel, was a rational—and rationalizing—goal.

I would like to be clear: this is a loose *comparison*, to which, with all due respect to Hegel, a teleological—let alone apocalyptic[9]—meaning is not to be given here. It only suggests that things seem to happen as if technology was often blazing its path through history in a very humble and modest way, hidden and not acknowledged—indeed, not unlike the disguised prince in Mark Twain's story; yet, revealing itself more and more as one of the most important dimensions of our times, if not indeed the most critical one.

Technology and the sacred: from transgression to respect

The second great watermark that the research has brought into the open leads to consideration of the history of technology as the story of a long shift, or slide, from one pole of the sacred to the other, that is from a sacred of *transgression* to a sacred of *respect* for the world's order[10]. From the origin of civilization and for a very long period of time, technology has dwelt on the side of what is to be considered a transgression of the world's order. From the European Middle Ages on, it has swung to the other pole, that is, it has become an essential component of what contributes to a respectful strenghtening and even to a re-sacralization of the world's order. This should become clearer as this paper unfolds.

There and back again: prehistoric technology and the sacred

So let us consider the first historical symbolic matrix of technology which, roughly speaking, corresponds to prehistoric times and the rise of the first civilizations.[11] Technology, at the dawn of human cultures, appears as an essentially dangerous reality, impregnated as it is with a transgressive experience of the sacred. What does that mean and why is that so? It is so because, ever since its very primitive aspect (the silex, for example), technology gives human beings a conscience and feeling of empowerment, and in fact it increases significantly their agency in and on the world. But there is a cost, which is a

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9 That is, suggesting the presence of some hidden truth revealing itself either gradually or at some end of history. Legitimate and fruitful as it could possibly be, such a perspective is not the one which has inspired the present article.

10 This perspective mainly refers to Durkheimian authors such as Georges Bataille (1955; 1989) and Roger Caillois (1960) who propose that the experience of the sacred has two opposite faces—or poles: a *respectful* (and habitual) one, when the interdicts (taboos) are scrupulously obeyed, and a *transgressive* one, when the same taboos are—momentarily, but just as necessarily—put aside (generally in well defined and ritualized contexts).

11 See Leroi-Gourhan, 1993; Eliade, 1978.

profanation—or more exactly a profanization[12]—of the cosmos. Technology indeed, the primitive tool, is what inaugurates and sets up a secular (or profane) space as separated from the sacred whole of the world, this sacred whole in which the stars, the mountains, the rivers, the trees and the animals are immerged, "as drops of water in water" (Georges Bataille). A profane, secular space: that is, a space where humans work, have a *conscious* action on the world, transform it constantly to satisfy their—real or supposed—needs.

When humans cut down trees to build shelters for themselves, their technological interventions contribute to the profanization or desecration of a portion of the cosmos, so as to annex it to their own universe; until then, this portion of the cosmos had been the unaltered abode of fairies or the inviolate dwelling of elves—if these woods had not themselves been fabulous creatures, like Tolkien's walking trees, the *ents*. In a similar way, when humans kill animals to eat their flesh or use their skin to clothe their own bodies, they annex sacred beings—sacred, because animals are immerged in the sacred whole of the cosmos—to their own secular universe. They instrumentalize—that is, they desacralize—them. And it is in that sense that they commit a transgression, that technology essentially presents itself as a transgression.

Yet, according to George Bataille's suggestion, the same movement which creates a *profane space* separated from the sacred whole of the cosmos also instils into the soul of humankind what could be seen as a *nostalgia of the sacred*, a nostalgia of the origin (or of some Lost Paradise) (Eliade, 1978): a profound desire to find oneself again part of the pre-secular—and pre-conscious—sacred whole of the world. In that respect, one can observe that the technical object acquires a deep ambivalence. This object is what creates a profane space, cut out of the sacred. But it is also what is going to make it possible for humans to find their way back to the realm of the sacred, *once this object has been enriched with a symbolic, mythical, religious dimension*. The arrow, for instance, is a technical object which allows people to hunt and kill animals. But, used in a particular symbolic way—that is, densified with myth and used in a ritual context —, it will acquire new, mystical powers;

[12] In the literal sense of "making profane what used to be sacred". In that perspective, the idea of "sacrifice" (of animals or other goods) would be the opposite, implying the return to the realm of the sacred of something that was until then available for a profane utilization. The etymology of the word *profane* is pretty transparent: *pro-fanum* = [what happens] "in front of the sanctuary", as opposed to what takes place in it.

more precisely, it will make it possible to bring the hunter into communion with the animal, even to capture some of its superhuman, sacred power. It will even make it possible for the hunter to *become* this animal, in some symbolic and magical way, and, hence, to be somehow reintegrated as a part of the sacred cosmos, together with the rest of the animal world. Likewise, the same arrow, when launched towards the sky by the shaman, will grant him or her supernatural powers, allowing him or her to ascend into the heavens and thus start his or her journey to the world of spirits.

Considering this, it is not really difficult to understand the fearful and ambivalent[13] dimension that technology possesses in this first age of mankind, both because it separates—and exiles—human beings from the sacred cosmos and because it allows them to be back home in the sacred, if one may say so, when enriched with a symbolic, religious dimension. For that reason, in this early symbolic matrix, technology has been constantly and tightly encoded in—and by—myths which have determined its correct use, fixed its necessary limits and, as a result, prevented it from developing beyond a certain point in an autonomous way, that is in a purely functional and instrumental manner. Even though it inaugurated a profane space and gave birth to a secular world, early technology, for centuries, remained enshrined in a sacred paradigm.

Ancient Greek limitations of technology

With the emergence of Greek civilization, a very different symbolic matrix gradually develops. Technology, henceforth, does not belong any longer to the mysterious (Otto: "numinous") universe of the sacred; for the first time in human history, it presents itself as a thoroughly profane, purely instrumental activity in various fields of arts and craftmanship: architecture, agriculture, domestic life, naval construction, statuary, etc. And, for that very reason, it is a widely disparaged activity, notably in the eyes of philosophers such as Plato who pursue the quest of Truth *sub specie æternitatis*, whereas "techniques" concern the imperfect, contingent, ephemeral, material world.[14]

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[13] See Otto, 1923, and his well known considerations of the Holy (German: *das Heilige*, French: *le sacré*) as *fascinans et tremendum* (fascinating and terrifying).

[14] See White, 1962; Duby, 1974; Gimpel, 1976; Vidal-Naquet, 1977.

If one looks for a paradigm to characterize ancient Greek technology, it would be illustrated by a category of people that philosophers, and especially Plato, have always despised: the sophists, among whom Gorgias remains the best known. Who were these people? Nowadays the best approximation would probably be our barristers—and also, in a more contemporary context, people involved in the business of publicity and marketing, as well as political spin doctors. Basically, sophists were professionals whose job was to defend people in various legal actions. Theoretically, like present day lawyers or publicists, they were naturally not supposed to lie or falsify the truth; yet their essential goal, unlike the philosophers', was not the pursuit of truth *per se* but the defense of a client—or also, today, the selling of products or ideas. The same lawyers, under different circumstances, could perfectly sue their former clients, the same publicity agents could sell the competitor's products and the same spin doctors spin for their opponents of yesterday—without any condemnation, any contradiction, and any mood.

This was not necessarily a cynical approach in Plato's time, any more than it is in ours, even though, in the eyes of philosophers who saw the quest for truth as their—sacred—mission, there was an abyss-like gap between the two perspectives. For them, indeed, technology "played" with things in the same way as sophists "played" with words and arguments to gain their cause; that is, in a purely utilitarian and instrumental way, regardless of the "Ideas" which were believed to give their eternal and immutable shape to eveything under heaven, from the stars to the sands, and from the gods to the tools.

For that reason, Greek technology never really developed in an utilitarian way, to exploit nature or dominate it. Indeed, the ancient Greeks very rarely applied their technological knowledge—which was far from negligible—to the realm of work or productivity[15]. To our modern surprise, they always preferred drawing up plans of possible machines to rolling up their sleeves and dirtying their hands building and operating them; and this, notwithstanding the fact that it would have made their business wealthier and their

[15] One might put forward that the existence of slavery, in ancient Greece, dissuaded the development of more productive technologies. The argument is interesting but reversible : slavery was not a economically costless reality and more productive technologies would, in all likelihood, have allowed non negligible savings in that matter. Besides, some authors (v.g. Ellul, 1980) have clearly showed that other societies where slavery existed were much more open to technological "progress".

existence more comfortable. However it is not without interest to note that they used their technological knowledge to build what they called *thaumata*. These artefacts were kinds of automatons: wonderful—and wonderfully useless—machines[16], whose function was essentially to re-enchant the world, notably in the temples where, for example, they allowed gods and goddesses to appear—*ex machina*.

Both through their myths and through their philosophical traditions (which often were rationalized myths[17]), the Greeks seem to have deliberately limited the autonomous development of technology; and this, for three main reasons:

First, because they refused what they considered to be the dangerous excesses (*hubris*) of technology, the myths of Icarus and Prometheus remaining, in that respect, the best known and most striking examples.

Second, because they refused to let this profane, utilitarian and approximate technology take precedence over the eternal and immutable values of the Logos and of its privileged approach, the philosophical quest.

And third, for ethical reasons this time, because they refused to let technology supersede the sacred values of the City. As a Spartan general summarized it: "Of what use is the soldier's courage under the launchings of catapults?" [18]

Despite its undoubted progress, the ancient Greek civilization never let its technology develop beyond a certain point, for ethical and at least implicitly religious reasons.[19]

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A word in passing about the Chinese civilization whose technological paradigm was not unlike the one that has just been presented regarding ancient Greece.[20] It was the Chinese

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16 Not unlike Victorian mechanical toys or present day special effects in cinema, not to mention the innumerable—and often prodigiously useless—gadgets of all sorts which punctuate our lives.

17 See Veyne, 1983.

18 See Vernant, 1983.

19 A longer paper could establish interesting parallels between Classical Greece and the medieval Muslim civilization, as compared with medieval Christian Europe, approached in the next section.

20 See Needham, 1969.

who invented gun powder, as we know. But they used it to make fireworks, like Gandalf for Bilbo's birthday party, at the beginning of the *Lord of the Rings*. The mere idea of using such a technique as a working tool (like Nobel's dynamite, for instance) or as a weapon of war (as Western guns and firearms) would have been shocking to them. Zhouang Zhou, a IVth c. BCE philosopher, thus tells the story of an old peasant who was asked why he did not use some otherwise available technology to irrigate his fields. The old man sketches a grin: "I do know these things, of course; but I would be ashamed to use them; they who use machines end up with a machine in the place of the heart."

The symbolic shift of medieval Christianity

Medieval Europe continued to widen the gap between the world of the sacred and the profane universe of technology. The Christian conception of Divine transcendence naturally has a major role to play here. It throws technology onto the purely profane side of reality—not to say the dark side of the Force —, where it furthermore remains a painful recalling of the sad consequences of the original sin: "In the sweat of thy face thou shall eat bread"—with both hands on the handles of thy plough or, for all that matters, on the keyboard of thy computer. The essential issue—that is, the glory of God and the salvation of the human kind—is elsewhere. And, in that respect, it is not surprising that the most valued lifestyle in Medieval Europe is *monasticism*, the life of men and women who have theoretically (and often really) cut themselves off from the world to be nearer to God and spend their days in prayer[21], contemplating the Divine—in a way that, let us notice, is not without parallel with the life and days of ancient Greek philosophers.[22]

But, paradoxical as it might appear, such an attitude had consequences that were different from the ones that were observed in the ancient Greek world. Instead of drastically limiting the development of technology, it rather left it somehow free and available to its own autonomous rise. And we find again, here, the *leitmotiv* of a *ruse:* medieval technology

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[21] Monks traditionally work to earn their living, it is true, according to the old Benedictine Rule of *Ora et labora*. Yet this dimension of monastic life remains a consequence of the original sin. For that reason, and at least in the first half of the Midle Ages, work is far less valued than prayer; thus, it is widely abandoned to lay brothers and sisters by "professed" monks and nuns.

[22] It does not mean that they did not care about their neighbouring communities, to which, as we know, they often offered medical cure, schooling, and other charities. This will become accentuated in the second part of the Middle Ages, for reasons developed here.

clothes itself in a new symbolism, and that is gradually going to value it positively. Indeed, in the context of medieval expectations of the return of Christ, around the turn of the first millenium, technology is going to become the means and token of what could be called a "social eschatology".[23] It will be enlisted to hasten the coming of a New Jerusalem, God's kingdom on Earth. Christ, it was believed, would come back as He had promised. But, many wondered, would He really be excited to come back, considering the miserable state of the world, full of war, injustice, poverty, ignorance and disease? Therefore, the Lord would come back, yes, but only when the Earth would have become a better place, worthy of His second coming.

And what would be instrumental to such a vital goal? The humble, inconspicuous and unassuming—one would almost dare to say hobbitlike—realm of technology. And, indeed, requisitioned to that holy goal, technology flourished in several fields: agriculture, irrigation, construction, architecture, tool making, early industry. Thus, it was believed, technology contributed to transfom this Valley of Tears into a New Golden Age. Among others, a new monastic community, the Cistercian order, played a quite determining role in that new perspective, its spirituality[24] transforming its monasteries into hives which were to become the technological pedagogues of Europe, not to say its early R&D centres.

Unlike *science* which, as we know, was often seen by the Church as a potentially dangerous competitor, and whose heralds, for that reason, often paid very dearly for their theoretical audacity, technology was simply seen as a humble servant, yet one which could be called on to contribute to a better Earth under the guidance of the sacred goal for which it had been requisitioned. Technology, in medieval imagining, thus became the privileged means to transform the sinful world, to sanctify it according to God's plan for the salvation of humanity.

No other civilization ever dignified technology with such a mission, *consecrated* it like this. This understanding is capital: the Western belief in the value of technology does not only go back to the 20th century or to the years of the Industrial Revolution, nor even to the

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[23] See Duby, 1966; 1974; White, 1962.

[24] Quite different, in that sense, from the lofty, "out of this world" Benedictine (Cluniac) tradition that had flourished in the first half of the Middle Ages. See Gimpel, 1976.

Renaissance (commonly considered as the source of the so-called "modern" world). Such belief is rather a pure product of the Christian Middle Ages. "In Technology We Trust" has been the more or less conscious but nevertheless determining motto of the West, not for the past one hundred years, but for the last millenium. That is why, as was mentioned in the beginning of this paper, it would be naive to consider technology as a purely functional (and hence neutral) phenomenon receiving its meaning (and value) merely from its user's intentionality: since the second half of the Christian Middle Ages, the very DNA of technology has included a deep belief in its creative and redeeming value.

Modernity and the secularization of the technological mission

In a way, from the Renaissance to the Revolutionary era, from Cistercian monks to Steve Jobs and Bill Gates, the Western world has simply continued to unfold this eschatological and soteriological mission of technology[25], while secularizing it more and more. At least apparently so—or, let us say, as far as *explicitly* religious encoding is concerned. From the Renaissance on, technology, just as much as science, gradually freed itself from any explicitly religious calling. It became instrumental in the establishment of a new rational and technology-oriented order, purely profane and often even hostile to explicitly religious beliefs and values. A number of well known examples could be given, here, from Laplace's assessment that God was not needed in his cosmological model to the contraceptive pill which has shaken traditional Christian sexual ethics, and from Darwin's theory to Freud's. In short, technology seems to have become, together with science (of which, nowadays, it usually—and cunningly?—presents itself as an "application"), the vector of a new and purely *rational* order of the world. [26]

And yet, here again, one can catch a glimpse of a new symbolic *ruse* of technology: if it has been able to deploy itself in order to generate the big bang of the industrial revolution and the birth of the modern world, it is to a large extent because it has clad itself with a powerful symbolic guise which imposes it henceforth as a value in and by itself, and a somehow supreme value, at that, not to say a religious (albeit implicit) one. In other words, if, in the early ages of humankind, as we have seen, technology dwelt on the transgressive

[25] See Merton, 2001.

[26] See Janicaud, 1994.

side of the experience of the sacred, it has since migrated to the opposite one, becoming the means of a new sacralization of the world, the vector of a new Golden Age, the vehicle of a new collective and secular Salvation.

In this Promethean religion of technological power, the *technical object* becomes a central symbol: a symbol, no longer of a dangerous transgression which would have to be constrained by all means, but, on the contrary, of a new sacred order of the world, which Progress is already and rapidly bringing forth. Many signs suggest that our contemporary world continues to valorize such a Promethean symbolism which not only links the promise of a new Golden Age to the unfolding of the power of technology, but which also broadens the realm of this power to the whole of society and culture: technology, in that respect, becomes both the symbol and the means of a transformation of the human and social order as much as it had played this role in the natural and material order[27].

So much so that one could observe a capital reversal of the symbolism of technology, its power becoming less and less seen as a means to transform the world and more and more as its own goal. In the past centuries, technology was seen as fulfilling its project of a rational reorganization of the world. But that, to a large extent, seems to be already realized. Therefore, technology henceforth tends to simply actualize its own power. The "powers of the rational" (Janicaud, 1994) has transformed itself in a "rationality of power" which has become its own end. Modern technology thus becomes the expression of what could be called a *sur-rationality*, a little in the way we speak of *surrealism*. And it is as if this sur-rationality, imposing technical Reason as an ultimate goal, imposed itself as a new supreme value. Technology, henceforward, *must* be favoured, encouraged, developped, implemented because it is there—and because it is powerful. As Dennis Gabor (1970), the Nobel Prize winner and inventor of the hologram, ominously coined it in his famous "law": all that is technologically possible will nececessarily be implemented.

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Yet we are aware of the—blunt and brutal—fact that technology has also shown a very dark side in its historical journey, from acid rains to oil slicks, from GHG to GMO, from

[27] Let us only mention here the eloquent example of *transhumanism* and its ideology of a re-creation of humankind, which it foresees with conviction and pursues with enthusiasm. See Masson, 2014.

Hiroshima to Fukushima; we are aware that, especially since the beginning of the XXth century, it has caused and will in all likelihood continue to cause terrible damage to the world. Nevertheless, for the majority of our contemporaries, that too obvious negative impact of technology can—and will—be "repaired" by what we believe to be its intrinsic goodness, redeeming value and omnipotent presence in our lives. What is at stake, here, is one of our deepest beliefs, a faith grounded in a thousand years of Western religiosity[28], both explicit and implicit. And this—I suggest—constitutes our main challenge to a critical reflection on technology to-day.

[28] In that respect, those who insist most loudly on the "incontroversially" autonomous nature of technology could in all likelihood be seen as the best examples of a *parallel* religiosity.

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