Artificial Intelligence, Networks, and Spirituality

with Mark Coeckelbergh, "The Spirit in the Network"; Laurence Tamatea, "Online Buddhist and Christian Responses to Artificial Intelligence"; Robert M. Geraci, "The Popular Appeal of Apocalyptic AI"

THE SPIRIT IN THE NETWORK: MODELS FOR SPIRITUALITY IN A TECHNOLOGICAL CULTURE

by Mark Coeckelbergh

Abstract. Can a technological culture accommodate spiritual experience and spiritual thinking? If so, what kind of spirituality? I explore the relation between technology and spirituality by constructing and discussing several models for spirituality in a technological culture. I show that although gnostic and animistic interpretations and responses to technology are popular challenges to secularization and disenchantment claims, both the Christian tradition and contemporary posthumanist theory provide interesting alternatives to guide our spiritual experiences and thinking in a technological culture. I analyze how creational, network, and cyborg metaphors defy suggestions of (individual) animation or alienation and instead offer different ways of conceptualizing and experiencing communion between the material and the spiritual.

Keywords: animism; creation; cyborg; Gnosticism; network; spirituality; technology

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Can a technological culture accommodate spiritual experience and spiritual thinking? Today there are two dominant views on the relation between spirituality and technological culture. Some hold that technological culture is not hospitable and even hostile to spirituality. On this view, science and technology have created a world devoid of meaning and a society that has been purged of the sacred. Spirituality, then, is not to be found in

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our material culture, which has divorced us from the sacred. Others share the disenchantment and secularization view but argue in addition that there is, or should be, a movement of reenchantment. This can mean the reenchantment of nature; alienation can be overcome by turning toward religion or nature, where the sacred, untouched by technology, can still be found. But it also can mean the reenchantment of the material world. On this view, we should recognize that contemporary technological artifacts, such as computers, are not dead objects but have spirits. Instead of trying to escape from technology, we should perceive the magic in technology and reenchant the material.

In this essay I show that both the disenchantment and the reenchantment view not only rest on a very one-sided interpretation of the relation between science, nature, and religion and therefore misconstrue the problem (a point made by Szerszynski and others) but, in addition, tend to leave out some powerful metaphorical resources for thinking and experience that disclose a much broader repertoire of spiritual responses to contemporary technological culture. As it turns out, these are not just possibilities; many of these responses are already incorporated in that culture, in our daily technological experiences and practices.

In my reconstruction of different models for spirituality, I pay particular attention to metaphors, which are not only indispensable for thinking and living in general (Lakoff and Johnson 1980) but also have been proven to be crucial to theology and religion (Avis 1999; Daly 1973; McFague 1975; 1982; Soskice 1987). Metaphors for spirituality, then, shape our thinking and actions.

Aspiritual and Antispiritual Modernity: Spirit Gone

To the modern mind, which has divided our culture into different domains, spirituality has little to do with technology. Religion is spiritual, technology is material. Religion is going on "in the head," technology is going on "in the world." The world is aspiritual. Moreover, although religion played a public and societal role in the past, in premodern times, our modern society has been secularized—that is, purified from religion and religious institutions. Spirit, if it exists at all, has left the world. This leaves us with a material world in which it is up to us to create meaning.[1]

Some regret this situation but try to accept it. Others are more active and continue the mission of purification. For some, religion is a barrier to (scientific) progress. Daniel Dennett (2006), for instance, tries to keep religion out of evolutionary biology. For (conservative) others, technology is a threat to older forms of life, which are supposed to be full of meaning—a richness, it is assumed, that can never be matched by contemporary technological culture and is even actively threatened by it. And for many, religion is not a problem but is simply viewed as irrelevant to their lives or practices. One may practice engineering without connecting that

practice to one's religious ideas or practice (or the absence of such a practice). Technology, then, is seen as either neutral toward religion (and vice versa) or hostile to it. It is assumed that technology and religion belong to different spheres. On the basis of that assumption it is argued either that religion should not be allowed to colonize technology, if it should be granted existence at all, or that technology should not be allowed to damage religion and its associated life forms.

The view that we better understand the world in nonreligious terms has been described in terms of *secularization*. Many observers of modern society have argued that this view has been embraced in modern times. It is said that we live in a modern, secularized society. But there is another, more controversial, term. One of the founders of sociology, Max Weber, coined the term *disenchantment* to describe the (supposed) shift from a religious understanding of the world to a scientific understanding of the world (Weber [1919] 1946). He used the German word *Entzauberung*; the opposite is *Bezauberung*, which means magic or spell. By using these terms, Weber emphasized a change in our subjective experience of the world rather than (only) a separation of secular society and religious institutions. For Weber, in the modern experience science and technology have replaced the religious experience of mystery and magic by scientific clarity, calculation, rationalization, intellectualization, and control.

This secularization and disenchantment view is inadequate for many reasons, reasons that refer both to the history of science and technology and to present technospiritual practices. Let me offer seven arguments why there is a an intimate connection between science and technology on the one hand and religion and spirituality on the other. This will prepare the ground for a further exploration of the relation between technology and spirituality: my discussion of several models for spirituality in a technological culture.

First, the modern view wrongly assumes that religion had nothing to do with the birth and development of science and technology. Bronislaw Szerszynski has argued that contemporary technological ideas and practices remain closely bound up with religious ways of thinking and acting (2005a, 7). Rather than being autonomous forces with their own logics, our history of thought and action is a history of technology-and-religion. As Anne Kull puts it, "The secular society as well as contemporary sciences came into being not by making a decisive break with religious thought but through the transformations of the sacred" (2006, 786). According to Szerszynski, secularization never happened. The story of the technological transformation of nature and the story of the ongoing sacralization of nature are one story, not two. He proposes that we "see the modern secular, including science and technology, as a distinctive product of the West's religious history" (2005b, 814). To support his thesis he draws attention to the theological roots of modern science. He argues that the relationship between

modern science and religion has not been one solely of conflict; instead, the emergence of modern science in the seventeenth century marked "a spectacular fusion between religious thought and natural philosophy" (2005b, 816). René Descartes, Isaac Newton, and Gottfried Wilhelm Leibniz did not abandon God but did talk about God in a different way. Modern science was not the abandonment but the transformation of theological discourse. Szerszynski shows this by offering a story of transformations—from the primal and archaic sacred to the monotheistic sacred, the Protestant sacred, the modern sacred, and the postmodern sacred (2005a, 16–23).

As for technology, consider the close links between religious practices and the development of technologies for timekeeping, a history that runs from ancient to modern times. Medieval monasteries needed clocks to regulate prayer, and in modern times clocks were required for regulating church services and limiting the length of sermons (see, for example, Dohrn-van Rossum 1996, 266). We also may want to remind ourselves of the history of chemistry, a science that evolved from alchemy between the seventeenth and the nineteenth centuries. Giuseppe Del Re (1997) has argued that the elimination of "the spirit of alchemy" must be considered a loss. A reason why is given by Morris Berman, who sees the story of modernity as one of "progressive disenchantment":

> The view of nature which predominated the West down to the eve of the Scientific Revolution was that of an enchanted world. Rocks, trees, rivers, and clouds were all seen as wondrous, alive, and human beings felt at home in this environment. The cosmos, in short, was a place of *belonging*. A member of this cosmos was not an alienated observer of it but a direct participant in its drama. . . . Alchemy, as it turns out, was the last great coherent expression of participating consciousness in the West. (Berman 1981, 16)

However, if Szerszynski is right, there has been no disenchantment but transformation; the spirit was never eliminated in the first place.

Second, we may well ask how "secular" *contemporary* science and technology really is. Contemporary science still has its myths, such as the claim to have privileged access to objective truth, which made Bruno Latour call for a secularization of Science (Latour 2004; Szerszynski 2005b, 818).

Perhaps the most powerful myth, and one that can help us to understand why transhumanism and human enhancement are attractive to many, is that technology could do what popular Christian religion has always promised: offer us immortality. David Noble (1997) argues that the reason why our culture developed such an obsession with technology is that technology promises the transcendence of mortality. Again, this leaves religion and technology deeply intertwined rather than separate. Like Szerszynski, Noble argues that the founders of modern science such as Francis Bacon had religious ambitions—or, more precisely, their scientific and religious ambitions were fused. They wanted to achieve knowledge of the divine design of nature and ultimately of the mind of the creator. Later, the spirit

of engineering met that of American militant Protestantism. Aimed at creating paradise on Earth, technology was considered a means for salvation. Noble points to contemporary scientific projects such as the space program, artificial intelligence, and genetic engineering as being motivated by religious concerns. They are attempts to (literally) escape the earth, to reach eternal life, and to overcome the limitations of current existence.

The dream of creating life out of dead material is rooted in mysticism and alchemy. In the sixteenth-century legend about the creation of the Golem, a clay figure is given life. Transhumanists today propose that we upload ourselves into a computer system, where we can continue to exist. Thus, rather than meeting basic human needs, technology transcends such mortal concerns.

Philip Hefner has argued that technology shows that we are finite and mortal. In films we see robots that are much stronger than we are, and we realize again and again that we are mortal. Technology is a mirror that shows us what we are. In response, we use technology such as genetic engineering and medicine to live longer, preferably forever. We create technology in order to compensate for our finitude: "a good deal of our technology seems to be a denial of death and an attempt to escape it" (Hefner 2002, 658). This is what really troubles us. Technology reveals our deepest intentions. Thus, technology can be described with a term usually reserved for religion. It is about what Paul Tillich called *ultimate concern*; "in its engagement with finitude and death, technology becomes almost explicitly religious" (Hefner 2002, 659). It thus "becomes" what it always has been.

Third, to think that technology is less important to what we care most about is to disregard the insights of philosophy of technology. Technology shapes what we do, how we feel, and therefore who we are. As Marshall McLuhan suggested already in the 1960s, long before the Internet, technology changes how we think and feel (McLuhan 1964). Technology also shapes our self-image; it helps us to understand who we are (Hefner 2002, 660). What is our relation to technology? Have we always been cyborgs, as Andy Clark argues (2003)? In any case, technology is not separate from our self-understanding. If we disconnect technology and religion, we have a misguided understanding of technology and what it does to us. According to Szerszynski, technology is mysterious not because we do not understand how it works but because what it does goes beyond the intention of designers. Contemporary philosophy of technology teaches us that things are not just instruments to reach those ends; they also change the ends themselves. Peter-Paul Verbeek (2005) speaks about things that "do things"—things have consequences for our lives and our existence. Technologies "extend and transform these ends and thus transform our concepts of human need, flourishing, and even identity" (Szerszynski 2005b, 820). Finally, as illustrated by Hefner's point about morality, technology is not only about mirroring what we are but also about trying to be different

from what we are. Technology is about imagining what is not yet but what could be. Hefner links this with freedom and the concept of transcendence (2002, 661).[2] In other words, technology is about what we really care about.

Fourth, technology does not exclude wonder and mystery as it escapes our understanding and control. Our efforts to control and rationalize have not been completely successful, to say the least. Technology shows our power to change the world, but it also shows the limits of that power. We still live in a world full of risk, albeit risks different from those in modern and premodern times. Technology leaves enough room for magic and mystery in that sense. Moreover, science itself, as it explores the universe "above" and "within" us, becomes increasingly more mysterious and invites wonder. We feel awe when we learn about the stars, our brains, and the nanoworld. This especially happens as we lack full understanding of the universe we discover and of the technologies we create. Science is also increasingly concerned with the invisible, which, according to most moderns, has always been a mark of the spiritual. Finally, as sociologists of science have shown, even its method is less rational than previously supposed. Many scientific discoveries seem more closely related to the religious concepts of miracle and grace than to getting the facts right; they appear as gifts of nature. We can do our best, but then we have to wait and see what the outcome will be, what will be given to us.[3] We feel that the unexpected can happen. Neither scientific discoveries nor the consequences of technology are entirely within our control.

Fifth, apart from these intimate connections between technological and religious thinking and experience, there are more straightforward ones as well. For instance, we sometimes speak of things as if they are persons or as if they had spirit. And religious persons often use the Internet. Jeff Zaleski (1997) has shown that this use of cyberspace changes the meaning of spirituality, religion, and the sacred. A recent study shows that the clergy (ministers, pastors), church leaders, and religious institutions in the United States use the Internet for purposes of spiritual formation and communication (Wyche et al. 2006). Genevieve Bell has studied what she calls technospiritual practices: new technologies that also do cultural work and are linked to narratives of progress, change, and revolution (Bell 2006, 146). She suggests that in the United States young people use the World Wide Web more frequently for religious purposes than for pornography (p. 148) and that some of these practices are connected to the agendas of religious organizations (p. 151).

Sixth, these down-to-earth connections between technology and religion suggest that the influence of religion in society is still considerable and that we must revise the secularization thesis. We moderns have not banned religion from our technological culture and society, and when and where we have tried to do so, such as in Western Europe, it has not been entirely successful. Not only is "secularization" a more local phenomenon

than many supposed, but the many Christian and non-Christian forms of spirituality that live on in many societies, including Western European ones, suggest that spirituality still plays a significant role in society and culture.

Seventh, the assumption that spirituality is necessarily amaterial or antimaterial is mistaken. As the history of art and anthropology shows, natural and artificial objects always have been part of spiritual experience, practice, narrative, imagery, and thinking, and they continue to play that role today. Moreover, many religions do not advocate a hostile attitude toward matter, objects, artifacts, or technology. One may consider animism and nonmodern cultures here (which, arguably, no longer exist in pure form; they all are transformed by modernity to some extent), but there are other examples. Materiality and embodiment can be seen as important to Christian spirituality, which has not (entirely) eradicated magic. The doctrine of transubstantiation in Roman Catholic theology teaches that in the sacrament of communion the substance, but not the appearance, of the bread and wine changes into the body and blood of Christ. Thus, hostility toward matter reflects only one interpretation of the relation between materiality and spirituality. It does not exhaust the vast landscape of our present, past, and future spiritual imagination.

Reenchantment and Postmodernity: Spirit Returns

One response to disenchantment is to actively try to reenchant the world. We might seek spirituality, magic, and mystery in nature, which is supposed to be unspoiled by science and technology, and turn, for instance, to non-Christian views in order to get "closer to nature" or to the world of the spirits. This turn is not new; it happened already in the nineteenth century, as John Wallis (2005) has shown with regard to spiritualism in the United States. Examples of contemporary reenchantment can be found in the rise of neopaganism in the United Kingdom and the success of New Age literature all over the world.

Insofar as these views are hostile to science or the scientific worldview, they differ from attempts to combine science and religion, as, for instance, Ursula Goodenough has tried in her meditations on the wonders of nature informed by her knowledge about contemporary biology. According to her "religious naturalism," the scientific account of nature "can call forth appealing and abiding religious responses" (Goodenough 1998, xvii) in the same way as we can listen to a Mozart sonata with a sense of awe while knowing that the music can be "reduced" to ink on a page (1998, 34).

Apart from contemplating and enjoying the mysteries of nature, we also can seek spirituality in the material transformations of nature by humans in technology. I first show this below in my discussion of gnostic and animistic responses to technology and then offer alternative models.

Gnosticism and animism share with the disenchantment and secularization views the assumption that science and technology have left us with an aspiritual world, that modern technological culture is necessarily aspiritual or even antispiritual. This is what connects both views. However, they also argue that we can reenchant technology in a postmodern culture. What does this mean? What is the relation between reenchantment and postmodernity?

Zygmunt Bauman has argued that reenchantment is distinctively postmodern (1992, x). Richard Jenkins (2000) has argued more accurately that enchantment and reenchantment are both distinctively modern and responses to modernity. Whatever term we want to use, our current culture is characterized by spiritual pluralism. The dominant liberal view, faithful to its belief in a strict distinction between the public and the private, seems to hold that we are free to choose our spirituality in the religious supermarket. In contrast to politics and science, religion is seen as belonging to the private sphere, in which individuals are free to choose their "personal" views.

First, such a view could emerge only from the modern view that the world is a spiritually neutral thing on which we then project our spiritual outlook or perspective.

Second, it seems to suppose that spirituality is a matter of choice. But this often is not the case. Often we reenchant technology without even being aware of it. Most processes of reenchantment are unintended and largely unacknowledged. Consider contemporary technological practices. W. A. Stahl has shown that our talk about computers and the Internet is magical and mystical (Stahl 1995; 1999). Lee Bailey in his book *The Enchantments of Technology* writes that there is an undertow of enchantments in our engagement with technologies. He gives the example of android robots, which arguably are among the most enchanting of machines[4] (Bailey 2005, 155). From a theological angle, Stephen Garner (2005) proposes the hacking metaphor to describe theology-technology engagement, and Rosalyn Berne (2003) explores religious mythology in Ray Kurzweil's vision of new technology. Thus, there are various conceptualizations of existing practices as reenchantments. Here I discuss two particular varieties of reenchantment: gnostic and animistic interpretations.

Gnosticism and Demonization. A very influential spiritual framework that plays a major but usually unacknowledged role in contemporary technological culture is Gnosticism. My point here is not to establish the historical role of Gnosticism in technological development but rather to discuss an interpretation that helpfully understands some technological practices as gnostic. Gnosticism shares with the modern and postmodern view the assumption that there is a divide between the material and the spiritual. It cannot find spirit in the material world and therefore shares with modernity the feeling of alienation. In response to this situation, it turns to the

spiritual, which it finds in the self. The idea is that in my self I can find a divine spark, a link to the divine. More generally, it is by turning away from the material world that I can find the spiritual.

Together with the modern myth of individual sovereignty, a response to disenchantment that can be seen as a defense against power structures (Korczynski and Ott 2006), Gnosticism is a powerful and attractive spiritual response to the supposed problem of disenchantment. The Dutch sociologist Anton Zijderveld (1970) already understood Gnosticism as an escape from modern power structures; people turn inward, away from the abstract world of bureaucracy, power, and technology. Such a turn also is found in the history of Christianity.[5]

Whatever the sociological explanation provided, there is no doubt that our technological culture is full of "gnostic" practices. In particular, the rise of the Internet lends itself well to a gnostic interpretation. Stef Aupers and Dick Houtman use the term "cybergnosis" to refer to "a relocation of the sacred to the digital realm, inspired by the desire to overcome the experiences of alienation, suffering, and impotence" (2005, 81–82). According to Gnosticism, we originally inhabited a divine world but have fallen into the dark, material world. To overcome this alienation, people embrace the cyberworld, which allows us to escape our mortal bodies and become spiritual entities. The cyberworld is an environment where the spiritual self can flourish. Based on empirical study, Aupers and Houtman conclude that "Digital technology seems to be increasingly considered the means *par excellence* to liberate the self from worldly suffering and imperfection and to overcome the alienation of modern life" (2005, 38).

Whether or not digital technology is indeed a means to overcome alienation,[6] I propose to call this desire and attitude *geofobia*: We want to leave the world, sometimes quite literally. We try to be extraterrestrial. Technology provides the means to escape our earthly existence. By means of knowledge (*gnosis*) we can liberate ourselves from our dark, embodied existence. The desire to leave the earth is intimately connected with the desire to escape our bodies and the risks related to real, embodied social interaction. As suggested above, we could interpret some transhumanist proposals for human enhancement in these terms. Instead of only temporarily escaping to a virtual world, and returning again, we may try to upload ourselves into an immortal infosphere so that we can dispense with our earthly body.[7]

We need not think only of exotic technologies. Writing, too, is a technology and can be interpreted in gnostic terms. As Douglas Groothuis put it in his popular *The Soul in Cyberspace*, "even the shift from an oral to a written culture tended to disembody knowledge. What once required the memorization and recitation by living persons could now be retrieved through the dead pages of papyri, parchment, or paper" (1997, 38). In other words, we already "download" ourselves for the ages. Paradoxically, we try to achieve *spiritual* immortality by processes of *materialization*.[8]

In any case, it is clear that the gnostic response to technology rests on the modern assumption that the world is antispiritual. The divide between the material and the spiritual did not have to be invented by modern gnostics; it was already part of our culture.

The turn away from the material world sometimes takes the form of a demonization of technology, which was a common move among philosophers of technology in the first half of the twentieth century. The fear was (and often is) that we lose control over technology. Consider the Frankenstein myth or the film *2001: A Space Odyssey* (Kubrick and Clarke 1968). Here technology appears to us as an autonomous force that, albeit of our own making (see my discussion of the creational model below), turns against us and develops in unpredictable ways. Instead of offering gnostic liberation, technology comes to be seen as a posing a threat. But the gnostic view and the demonic view share the assumption that there is no spiritual good in "material" technology.

Sometimes the demonic is attributed to individual artifacts or technologies. This brings me to the subject of animism.

Animism. For animists, objects have (individual) spirits. Technological objects are no exception to this rule, especially if they appear to think and to do things. Consider computers and robots. In spite of our scientific frame of mind, which we are supposed to have after much education and socialization in that direction, we may have the feeling that something technological lives, is animated, has spirit. Thus, animism is a denial of the assumption that the world is material-without-spirit. Animism maintains that it is both material and spiritual. How shall we understand this?

Animism is traceable back to premodern, pre-Christian, and pretheist (including polytheist) culture. If adopted in postmodern times, it may give rise to an entirely different view of the world and of society. Leaning on research by Tim Ingold and others, Szerszynski has argued that premodern cultures experienced their world as an already meaningful place inhabited by humans and nonhumans. There never was "nature" purified of the social; nature was already social. "Relations with nature in premodern societies were not seen as a clearly separate category of technological relations distinct from the social and the cultural" (2005a, 41). These humans cooperated with matter rather than fabricating things out of "natural resources." Therefore, they had "a greater sense of agency in non-human nature, and a more porous understanding of the human–non-human boundary" (2005a, 177).

This understanding of premodern cultures can be used to criticize use of the term *technological culture*. Human culture always has been technological. In ancient cultures, however, what *we* would call "material" objects or "technologies" were strongly linked to religion or spirituality. They were embedded in a worldview that was religious in the sense that its practices

were meant to link and relink (*religare*) objects and persons. Now we see technology as standing apart from the rest of culture, including religion and society. Only on this assumption could the idea emerge that our culture is dominated by technology (and hence the possibility of demonization of technology). The term *technological culture* indicates the perception that technology is dominant and/or all-pervasive—but it always has been all-pervasive, and it is perceived as dominant only because we mistakenly disconnected it from the rest of our culture. Therefore, in this article I continue to use *technological culture* to refer to contemporary *perception* of technology while keeping in mind that technology is not an autonomous force or a separate category. (Some may prefer the term *technological-spiritual*, for lack of a better term. Below I also use the term *material-spiritual*.)

But let me return to animism. Animism is found also in the early stages of child development. Children think that something is alive when it moves, and they speak of it as if it were a person. Already in the 1980s Sherry Turkle observed that young children treat computers in this way; they "are drawn into thinking psychologically about the computer because of its behavior" (Turkle [1984] 2005, 61). An explanation of such responses is offered by evolutionary psychology, one of the most successful narratives of our time.[9] Animistic relationships are understood as adaptations to hunter-gatherer life forms. Some claim that animism is the natural way of thinking. Bruce Charlton writes: "We were all animistic children once, and for most of human evolutionary history would have grown into animistic adults. Animism is therefore spontaneous, the 'natural' way of thinking for humans" (2007, 727).

The animistic attitude to technology is not restricted to premoderns or children. Today people may, often without being aware of it, experience technology in animistic terms and attribute agency and spirit to things. They sometimes talk about their computer as if it were a someone rather than a something, give names to laptops (name giving is an important sign of regarding something as an individual), get angry at vending machines, and so forth. As humanoid robots appear increasingly human, they are likely not to be treated as mere things.[10] Animism therefore is an important model for the relation between spirituality and technology. It also exemplifies again that there are many spiritual understandings already present in our technological practices. Below I take *some* inspiration from animism when discussing spirit emerging in and from networks—but less from its attribution of individual spirit to things (as exemplified in some contemporary technological practices) and more from its social, communal dimension (exemplified in nonmodern worldviews).

Browsing the models discussed so far, it may seem that the Christian tradition is not very relevant when it comes to finding a place for spirituality in a technological culture. It seems as if Western culture has never been Christian. But this impression is erroneous.

Creationalism: The Spirit of the Parent

The three monotheist world religions, including Christianity, share a creational[11] view of the world: The world is created by (the one and only) God. This view has laid the foundations for, or at least contributed to, modern science and its worldview. The creational act divides creator and creation, thereby de-divinizing that creation. The world came to be viewed as aspiritual matter, which science and technology came to understand neither as land to manage, as a landlord (a feudal metaphor) or a steward, nor as matter to shape (arts-and-crafts metaphor), but as raw materials, resources for processing and fabrication (industrial-production metaphor). On this view, Christian thinking is not a good framework for understanding and inspiring spirituality in a culture that is supposed to be dominated by technology.

However, Christians also have viewed the relation between creator and created in the light of a very different metaphor: that of parenting.[12] Around this metaphor a model of spirituality can be constructed that interprets technology and the world of things in a much more favorable way that differs from gnostic darkness and scientific neutrality. God created us; therefore we are the children of God. This parenting metaphor is not simply a neutral way of making the same idea sound better. It has important theological and anthropological implications. What is a parent? Christians generally see God as their father. Now, a father can be the one who passed on his DNA, to put it in contemporary terms. One could also use a production metaphor; production is also reproduction here. According to the traditional doctrine of the *imago dei*, we are created in the image of God. Humans are children of God in this sense. But being a father does not necessarily imply warm concern and care. Perhaps God is not concerned with us. Fathers can be absent. Even if a father is concerned, he may communicate this concern in various ways. In the authoritarian model, a father is the one who is in command of the family. Humans, then, have to obey the father. But a father also can be someone who does more, who cares for us, who loves us, who educates us in a different way—not only by command—and who helps us. All of these metaphorical connections need to be taken together to reconstruct a comprehensive picture of the Christian view of the relation between God and human beings.

This metaphorical scheme with its plural meanings can be applied to the relation between humans and technology. What we get is a post-Christian, humanist model for spirituality in a technological culture. Let me employ the metaphors.

First, things are products of human beings, sometimes actually made in our image (humanoid robots), but they always refer to human culture. If things are our "children," they cannot be aliens or monsters; they carry human "genes." If we create things, we should not feel more alienated

from them than we feel alienated from our children. Of course this creation is not *ex nihilo* (from nothing); we use matter available to us, which is believed to be created (or not—humanism need not be Christian). Also, if we still care to keep God in the picture, we can think of the relations in the following way: God is a grandparent of the things we make. (The grandparent-grandchild relation is remarkably absent in the history of ideas. We could, however, reinterpret Hefner's "created co-creator" model [1993, 255–76] in these terms.)

Second, things are made by us to fulfill a function, to "do their job." They are to follow our rules and contribute to our aims. They should "obey" us; we are (or at least like to be) in command. Although this instrumentality rightly draws attention to the human purposes for which technologies are initially designed, the model gets into trouble when technology has consequences that escape our control.

Third, we can come to care for the things we make. We can even come to love them. However, one cause of environmental degradation is that we care too much about the material but too little for things. We do not treat them well. We throw them away. The care model, as opposed to the reproduction and authoritarian models, is already supported in craftsmanship and stewardship models, but it can be strengthened by using the parental metaphor. Today most objects are made by industrial production, which weakens our parental connection with things. Parenting involves intense and sustained contact, investment, care, and love, whereas industrial production promotes isolation, alienation, and conflict (as capitalist, communist, fascist, and other mass-production political systems tend to do). Philosophers of technology such as Karl Jaspers, Günter Anders, and Walter Benjamin lamented this: Our existence becomes alienated in an age of mechanical reproduction.

How could we respond to these problems? One possibility is to interpret at least some experiences of alienation in terms of the parental metaphor. Sometimes artifacts go their own way. They may act like disobedient children and not do what we want them to do. However, children grow up and go their own way, which requires that parents accept distance between them and their children. The Frankenstein problem is a problem of all parent-child relations: Alienation follows procreation. We need to learn to live with it.

Second, if industrial production conflicts with the care model, we could change industrial production rather than the care model. We could try to make more lovable artifacts, things that people keep. We could involve people in the production of artifacts. In general, we could intensify the relation between humans and things. Paradoxically, by attending more to things (the material) we can achieve more in terms of the spiritual, at least if we wish to understand the spiritual as not in opposition to the material.

Rather than alienating ourselves from our offspring, we should try to love our own creations—the technological culture and the things we have made. To avoid alienation, we can make technology more familiar to us, humanize it, since it is already of our making. There is a human spark in technology, to use gnostic or—why not?—Eckhartian language. (Of course, the gnostic view and Meister Eckhart's Christian view are different, and Gnostics and Eckartians would locate a divine spark in the human self, not a human spark in things. But the spark metaphor is a powerful one.) We can try to unite things with our purposes, feelings, hopes, and dreams. Then we will feel more at home in the world we created. We will feel more related. As I said above, given its etymology, that is one of the meanings of religion; the word derived from *religare*, "to relate again," "to reconnect," "to bind again." Religion then means, among other things, to relate humans not only to other humans and to the divine but also to our own (material) creations.

Third, rather than seeing the relation between humans and things asymmetrically, that is, as a one-way relation from creator to created, we can see humans and things as shaping one another, as co-creators. If things do things to us and touch all of our concerns, including our ultimate ones, surely they also create us in that sense—they co-shape what we are and what we want to become.

The shift from creation to co-creation can be clarified by using a metaphor shared by contemporary biology and cyberculture: code, or writing. In the one-directional Christian view, the code is written by the divine Author. God has written the book of the world, and we, who should try to become good librarians and readers, have to take care of that book with love and try to understand it—hence the development of modern science *as* religion. In the post-Christian humanist model, there is either one author (the artist or craftsman model) or many authors (industrial or communal production model, for instance film making). In what I call *co-creational humanism*, this multi-author view is radicalized. The authoritarian model (it need not be authoritarian in a political sense) is fully replaced by a democratic, participatory model: We all write the code. We all create our material-spiritual technological culture. It is an open source. There is no longer a copyright, which tends to protect producers and publishers rather than authors.[13] In its radical version, things too are "writers," but (just as humans) not authors. There are writers, readers, editors, and hackers. The boundaries between these activities are no longer clear. But we can experience joy in co-creation instead of alienation or jealousy (between humans and things, between different entities who all want to be Authors).

Using the code metaphor does not imply that there is no human freedom. Only when codes are seen as blueprints (another metaphor) is there no freedom. But codes can be used in other ways. Our DNA is not written

by us, and our computer programs are not written by all of us, but this does not prevent us from shaping our lives and doing our things with these programs. Moreover, we learn in biology that there is not a relation of determinism between the DNA and the phenotypes; the result depends on many factors that go beyond what is in the code. In a similar way, a Christian may argue that God has created the "code" of the world but that how the world turns out, how it develops, how it evolves is not in the hands of the creator. The same holds for one-directional, authoritarian models of the relation between humans (creator) and artifacts (creation). What things do and become is not determined by human intention. With intelligent learning robots, the result of the learning process cannot be predicted. The idea of co-creation, with humans and things shaping one another, gives more attention to things being in the role of writer.

The "symmetrical" response suggests an unorthodox way of viewing the relation between humans and things. Humans no longer occupy the central place they held in Christianity and in humanism. The next (and last) model I discuss takes a further symmetrical turn, moving beyond humanism. It is perhaps closer to the social, communal dimension of animism. My purpose here is not to defend that (or any other) model of spirituality but to explore this move and its implications for our views of spirituality and of technology. In order to complete this turn, we need to go beyond the metaphors offered by pastoral, agricultural-feudal, and industrial production and further attend to the technological and social structures of our own time.[14]

The Spirit Of and In the Network and the Cyborg

An important metaphor in contemporary times is the network. We see networks everywhere. There are networks between things, for instance between computers, and there are networks between humans, for instance between academics. Now some have argued that from one particular network, the World Wide Web, spirit could emerge. If the WWW constitutes an enormous mind, they argue, surely it also has a soul or spirit. (Sometimes this view is inspired by Pierre Teilhard de Chardin's concept of noosphere.) If soul or spirit can emerge from the human brain, with its vast number of connections, why not understand the spirit of the WWW in that way? Connection is sacralized. This spiritualization or sacralization of connection concerns the spirit *of* the network, in the same way as there is the spirit *of* a particular computer, as in animism. However, this view is opposed to "individual" animism. Spirit is not attributed to individual things; rather, spirit is supposed to emerge from a network of things. (If this view can be called animism at all, it is a kind of "collective" animism that attributes spirit to the network, to the whole, not to individual things, the parts.)

In a similar vein one could argue that spirit can emerge from a network of humans. Perhaps the Christian concept of the Holy Spirit could be conceived of in this way, although in the mainstream Christian model Spirit means God, and the emphasis is more on a top-down relation—the Spirit (of God) comes down to the people, becomes incarnate in them. The Christian tradition stresses incarnation rather than emanation.[15] This is a top-down model because in this model spirit is not emergent, however *bodily* incarnation might be. But it also is conceivable that spirit emerges or emanates, bottom-up, from a network of social relations.

Perhaps there is a further possibility. Could spirit emerge from a network of humans and things? In such a network there would be two kinds of spirit, or, rather, spirit at two levels. On the one hand, there would be the spirit *of* the network, in the way that the WWW can be said to have spirit. For instance, one could consider the Internet as a network of people and things from which spirit emerges. Here spirituality concerns a "vertical" relation. On the other hand, there would be spirit *in* the network, in the sense that the material (things) and the spiritual (humans) are already connected in the network ("horizontal" relation). One could even add a third level: Individual things and individual humans also have "spirit." Thus, one could conceive of a multilevel spirituality according to a hybrid human-things network model:

> Level 3—network (of people and things) > spirit *of* the network (vertical relation)
>
> Level 2—(network of) people and things > spirit *in* the network (horizontal relation, social)
>
> Level 1—individual things and individual humans > individual spirits

In the philosophy of technology literature, Latour is known for conceiving of science—and, by extension, the social world—as a network of what he calls "actants": Both humans and nonhumans do things and are connected (Latour 1993; 2005). On the basis of Latour's model of the social, one could conceive of a spirituality in and from a community of actants.

This is, of course, not a Christian and not even a humanist vision of spirituality, insofar as it puts forward an ontological symmetry between humans and things (as Latour does). But should there be such a symmetry? One could accommodate the humanist objection by saying that some nodes in the network (the human nodes) are more important than others. However, the network metaphor itself discourages such qualifications. This is perhaps why Latour could not conceive of his network of actants but in a symmetrical way.

An alternative model of spirituality, which appears at least as non-Christian and nonhumanist, is to shed the network metaphor and its assumption of ontological distinctiveness altogether and replace the dualism

human/things with a cyborg view. In such a view, spirit and matter are already united. There is no need of a network between human and things if they are already connected in much more intimate or deeper ways than is assumed in the network model. The spirit of the cyborg is already a union of human and nonhuman and of matter and spirit.

In response, the network view might distinguish itself from this cyborg model by interpreting cyborgs as special cases within a networked world of distinctive humans and things rather than the default ontological and spiritual mode. It is then assumed that sometimes, or in some cases, humans and technology (and spirit and matter) come closer to one another or unite but that this is not usually the case. Or one might understand cyborg being as a matter of degree. Wearing glasses is perhaps a lower degree of cyborg existence than working every day and all day with a computer.

In any case, the multilevel model of network spirituality is very much in tune with the premodern and pre-Christian view of the natural understood as the social: Humans and things live together in one world, and spirit is in them and emerges from their cooperation.

This model of spirituality rests on a very different conception not only of spirituality but also of society. According to this model, society is not something we create. Both the modern and the post-Christian humanist worldview assume that the social world is of our own making. Similarly, although we create things, we are not completely masters of technology—not because our creatures may turn against us (the Frankenstein fear) but because we live together and cooperate in a network that is by definition not completely in our own hands. The network evolves in various ways, and some of them are unpredictable and uncontrollable. But in this model this is not an experience of alienation, because we are part of the network; technological artifacts are not aliens but our social fellows. It is an experience of a *social* problem, a problem of communication: How can we create community? In spiritual terms, it is a problem of finding communion between humans, and between humans and nonhumans. In religious terms, it is about reconnecting humans to other humans and to things.

Note the use of the idea of *reconnection*. Again, this is different from saying that there is no individuation, that the parts are not separable, that we are already cyborgs, that we are already part of things and that things are part of us. A defender of the network view may respond that this is true only to some extent and that a spiritual effort is needed to reconnect but without aiming at the loss of individual distinctness.

Note also that the idea of an evolving network, in which all human and nonhuman "fellows" constitute one another, does not necessarily exclude a weak notion of co-creation, as long as speaking of "creation" does not assume full control or authorship (it is a democratic, or, rather, "netcratic," system), and as long as the spirit that emerges is not seen as reducible to what is co-created. Technological culture as a network is the space where

tragedy reveals itself. We are not (merely) drivers of spirit but perhaps rather its vehicle. We are not in (full) control. The network and its spirit(s) evolve.

This idea of evolution is not the same as the neo-Darwinian idea of evolution. I discuss the evolution of material-spiritual networks, not the evolution of organisms or species as it is usually understood in science. The network model recognizes the spiritual dimension of contemporary technology and avoids using a term that can be easily interpreted as a modern notion that tries to eliminate spirituality from the natural world (which is still dominant despite efforts to sacralize evolution). Both the network model and the cyborg model try to do justice to experiences of connection rather than alienation (not being connected): the often wonderful and sometimes fearful way in which humans and things, matter and spirit, are linked, and perhaps unite, in our technological culture.

Note, finally, that these models are better able to cope with so-called hybrids and processes of hybridization. Modernity tried to keep different spheres separated. But, as Latour has argued, there are hybrid social problems, such as global warming and deforestation, which involve both humans and things (Latour 1993). There also are hybrid beings. (Latour thinks there is a proliferation of such beings.) Some intimate relations between humans and technology can be seen as constituting cyborgs, such as the relation between humans and computers. There may be more literal cyborgs in the future. Scientists are increasingly able to connect "living" nature with "dead'" matter. More, technology may be integrated in the human body.

According to the modern view, such hybrids can be understood only as horrors: They cross the boundaries of the domains and are therefore cultural monsters. According to the creational model of spirituality, they constitute another crossing—that of the boundary between creator and created. I do not know for sure how this is to be evaluated within that model. Is it to be avoided, or is it to be desired? If the latter, it seems to approach what Christians mean by communion, which involves taking another body as part of one's own body. According to the network model, humans and things should be connected. But should they unite? Perhaps some kinds of cyborgs and other hybrids in some environments and contexts may well achieve the much-desired communion between spirit and matter. For some, such a union is a dangerous idea. For others, it is what spirituality is about.

Conclusion

I started with the question: Can a technological culture accommodate spirituality? To pose the question in this way, it turned out, mistakenly assumes that the material and the spiritual are unrelated or hostile to one another. In practice, people often practice animism or Gnosticism when dealing with contemporary (information) technology. In general, our contemporary culture incorporates many spiritual and religious myths and assump-

tions. As I suggested, it is more technological-spiritual or material-spiritual than technological.

In this article I disclosed a broader repertoire of models of spirituality that might be further developed or recast. My exploration of spiritual metaphors showed that the modern and the Gnostic view are not the only responses to the question concerning the relation between technology and spirituality and that, next to attributing individual spirit to things, we also can conceive of the relation between humans and things by employing and stretching creational, network, and cyborg metaphors in order to arrive at post-Christian and posthumanist models for spirituality in a technological culture—that is, a spiritual-technological culture. These models are not only descriptive (models as representation) or ways to understand practices (models as heuristic device) but also conceptual frameworks that can inspire (models as examples or ideals to strive for) and that ask for engagement. And metaphors are not only descriptive but also normative.

First, the different models of spirituality are each related to a particular moral-spiritual imperative. For animists, the task is to interact with other living things. For (post-)Christians, the duty is to create, care, educate, and love. For networkers, the imperative is to connect, communicate, inform, adapt, and move—indeed, to join in the dance of humans and things. For cyborgs, the mission is to celebrate communion in the marriage of matter and spirit.

Second, concepts and ideas can not only give rise to new interpretations of existing practices and experience, but, as the history of Christianity shows, also transform these experiences and give birth to new practices. As such, thinking has a normative "force." This force is not determinist. The influence thoughts have depends on many factors and conditions, and it partly depends on us. The models can be seen as doing an *appel*, as calling us to transform our practices. It is partly up to us, as individuals and as societies, what we do with them.

I insist on the qualification "partly." The models discussed here are not options or products on the shelves of the religious supermarket. It is not a matter of choice alone. It would be misguided to understand spirituality, or indeed anything else in human culture, as a matter of choice alone. Whether or not we embrace the network metaphor and its corresponding model, it is undeniable that material, social, and spiritual change in a technological culture is complex and hard to predict, let alone steer. Moreover, perhaps it is part of a spiritual attitude to let go of complete control. Perhaps we commit a kind of spiritual incest if we try to exercise too much control over our creations rather than set them free. And, if there is any control, it might be more in the network than in its nodes.

In this sense, modernity (that is, the modern worldview, but not the world we created or are part of) with its Frankenstein-type myths *is* hostile to spirituality. But these insights concerning the limits of what theory can

do for spirituality and the limits of control over our creations do not force us into passivity or retreat. Instead, I suggest that we become more attentive to and aware of the spiritual-technological practices that are going on before our eyes. If we do not like what we see, we are free to imagine and explore better ways to create, cope, and live with technology, with others and quasi-others,[16] and with ourselves.

NOTES

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1. An example of the view that it is up to us to create meaning can be found in Jean-Paul Sartre's existentialism (Sartre 1946).
2. Note, however, that there are other uses of the concept of transcendence.
3. This reminds me of Augustine's view of freedom and grace in the *Confessions*.
4. For Bailey, android robots symbolize the mechanistic answer to the philosophical question of whether humans can be reduced to machines. He argues that they function as "a symbol of faith in an absolute worldview [the mechanical worldview], a totally rationalized, mechanized picture of ultimate reality" (Bailey 2005, 156). He sees in robot myths a project that aims at "absolute, universal mastery by technological consciousness" (p. 177).
5. We might also understand Augustine's inward turn (which was not gnostic) in response to loss of political power in late antiquity.
6. Some argue that it actually may do the reverse. According to John Teske, the Internet as a communication technology has *reduced* social involvement and psychological well-being, for instance because of the importance of bodily presence for shared emotion (Teske 2003, 684). He argues that the Internet is "fostering the illusion of a disembodied soul" when it suggests that intimacy is possible without "painful self-disclosure, naked and vulnerable in the face of another" (2003, 688). If this is true, the Internet does not provide the liberation of *gnosis* but instead keeps us in the world of illusion and isolation, the world of the *demiurge* (the evil creator of the material universe).
7. One may question whether this would really be "enhancement." Our earthly body is also the source of pleasure and seems indispensable to (human) joy and (human) love. For example, I interpret Michel Houellebecq's novel *La possibilité d'une île* (2005) as suggesting that any emotional enhancement that makes us less emotionally sensitive also deprives us of some of the most valuable and meaningful human experiences.
8. An alternative way of understanding this technology is to see it not as *dis*embodiment but as the *extension* of our body, in the same way as glasses and computers extend our body. This changes the analysis of human-technology relations: Rather than having to tackle the problem of gnostic alienation, we may wish to understand ourselves as cyborgs (discussed in the last section of this article).
9. See Hefner's remarks about the epic of evolution in a *Zygon* editorial (Hefner 2009).
10. In *God in the Machine* (2004) Anne Foerst shows how machines such as MIT's robot "KISMET" provoke feelings in us and raise profound philosophical and theological questions.
11. I use the term *creational* rather than *creationist* to avoid confusion with the debate about evolution versus creation.
12. I use the gender-neutral term *parenting*. In the Christian tradition, the emphasis is usually on the father.
13. The analogy to religion is perhaps that the "copyright" on the code claimed by the monotheistic religions does not protect the Author and the code but supports the human religious institutions that "produce" the film or "publish" the code.
14. However, I resist the idea that we *ought* to use "contemporary" metaphors. The "ought" meant here exists only in the sense that some metaphors may better enable us to cope with our existential conditions and that therefore their exploration is "imperative."
15. See also Tillich's distinction between human spirit and divine Spirit in the third volume of his *Systematic Theology* (Tillich 1963, 111–20). Following Paul, he identifies Spirit with Christ/God. He discusses incarnation, the entry of the divine Spirit into the human body.

16. From the perspective of the cyborg view, one may of course question how "other" other humans and things really are. And living with ourselves may involve living with the "other" in ourselves.

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