

Consumer Reception of New Technologies

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At a subconscious level, many of us revere our favorite internet search engines and would be lost without them. We experience Google, Baidu, Naver, and Yandex as omniscient, omnipotent, and omnipresent, very much like a god. We greet many other technological innovations with a similar sense of religious awe and reverence. However, we greet other new technologies with fear and foreboding. They take on monstrous proportions in the popular imagination and media treatments. Examples include atomic energy; the internet with its hackers, ransomware, and malware; social media with its election meddling and fake news; algorithms with unintended consequences like racial discrimination; and artificial neural networks and machine learning programs that seem to defy human understanding. As these examples suggest, there is no single pattern of technology reception, and our reactions evolve with time. Eventually most new technologies are domesticated and become normal. We examine these patterns of technology reception and derive implications.

Keywords: artificial intelligence, disruptive innovation, history of technology, transhumanism, robots, cyborgs.

*“To a new world of gods and monsters!” (Dr. Pretorius in the 1935 film, *The Bride of Frankenstein*)*

GODS AND MONSTERS

How do consumers initially receive major new technologies? For the most disruptive technologies we find reactions of awe and fear that personify the innovation as a god or a monster. We can learn about the reception of current and future technologies from the histories of the reception of previous technologies, such as electricity, the telegraph, the automobile, the radio, and plastics. Near the end of this paper, we make such comparisons explicit. New technologies are a source of concern in religions, folklore, myths, science, science fiction, popular science, and futurist projections. We will draw on these sources and on interdisciplinary scholarly literature in constructing our analysis and model of the role of monsters and gods in the reception and characterizations of new technologies. We examine how our model of greeting new technologies applies to prior predictions of future technologies-yesterday's

tomorrows. We conclude with a consideration of what pressing consumer research issues our model of technological monsters and gods poses.

Our Model of Technology Reception

We briefly present our model here and use it throughout the paper. In the later portions of the paper, we discuss further implications of the model. At its simplest, the model suggests that we greet major new disruptive technologies as either monsters or gods and sometimes as hybrid monster-gods. A monster is an anomalous form that confuses our neat categories, such as male/female, human/animal/machine, living/dead, and animate/inanimate (Asma 2009; Basil-Morozow 2010; Nakamura 2015; Shildrick 2002). Disruptive innovations like the telephone, television, computers, and the internet are examples of one-time monsters of technology. For example, when a young child first hears someone's voice over a telephone, it may prompt surprise-is the phone alive? How can grandmother be in that little device? Is it a machine, an animal, a person, a monster or a god? Smits (2006) offers a monster theory of new technology reception that focuses at the level of organizations or society. She suggests that we may experience both fascination with and fear of new technologies, but that ultimately, we must deal with the monster. Such actions and reactions can take one of four possible forms.

1. Exorcize or expel the monster (Exclusion). This is a violent Luddite-like reaction exemplified by eco-terrorists destroying GMO field experiments. Smits (2006) suggests that this strategy may be in vain and that the monster that has had its head cut off will just grow new ones.
2. Help the monster adapt or transform to fit familiar categories (Change the Monster). For example, biodegradable plastics may help overcome the non-disposable problems of earlier plastics (Meikle 1986).
3. Embrace and adapt to the monster (Change the Self). This strategy deifies the monster, clarifying its ambiguous form and changing our framing of it from a monster into a god. We saw this strategy with the computer, which evolved from being seen as a monster in the 1950s to a god in the 1980s (Davis 2016), to an everyday object by the 2000s.
4. Get the monster to assimilate to altered categories (Change the Categories). An example of this strategy is harvesting organs from comatose patients. Initially this was regarded as monstrous cannibalistic harvesting of living patients (Scheper-Hughes 1998) until the medical profession invented the category of brain-dead patients to justify the practice (Smits 2006). This was a more contentious solution in Japan where body and soul are seen as integral and inseparable based on Shinto beliefs.

In each of the four strategies, the goal is to tame or domesticate the technology in order to make it suitable for human consumption (Haddon 2003). These processes of domestication have been employed with "monstrous" innovations, such as "body hacking" (Fox 2018), computer virus attacks (Pieters and Consoli 2009), and the introduction of information technology into insurance companies (Kaarst-Brown and Robey 1999). In the case of biotechnology, consumer acceptance must overcome the monstrous "yuk factor" that has led to characterizations like "Frankenfoods" for genetically modified crops (Midgley 2000). Dyson (2007) proposes, tongue in cheek, that the solution to domesticating this monster is to get low cost CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) genetic engineering kits into the hands of amateurs. He envisions:

biotech games, designed like computer games for children down to kindergarten age but played with real eggs and seeds. ... The winner could be the kid whose seed grows the prickliest cactus, or the kid whose egg hatches the cutest dinosaur. (Dyson 2007)

There are more serious processes by which individual consumers attempt to tame or domesticate technological monsters. In dealing with adopters of smart home technologies, Hargreaves, Wilson, and Hauxwell-Baldwin (2018) describe a process of co-evolution between humans and devices that involves cognitive, practical, and symbolic changes. For example, Amazon's Alexa and Baidu's are neither monsters nor gods, but genies that can only grant certain types of wishes. This represents a combination of the third and fourth strategies above (Harford 2013).

If regarding new technologies as monsters is one extreme, regarding them as gods is the other. Of these two poles of reactions to technology, consumer researchers have most often found godlike reverence for new objects of consumption. Their studies tend to detect religiosity in two contexts: traditional and technological. Traditional foci can be seen as a reaction *against* high technology by locating the sacred in alternative realms. These alternative realms include nationalism (Varman and Belk 2009), sports teams (Richardson and Turley 2007), fetishized objects (Fernandez and Lastovicka 2011; Thomas 2001), consumer totems (Cayla 2013; Healy and Beverland 2013), nature worship (Canniford and Shankar 2013), primitivity (Belk and Costa 1998; Kozinets 2001), third places (Venkatesh, Karababa and Ger 2011), river magic (Arnould and Price 1993), and brand-focused consumer tribes (Cova, Kozinets, and Shankar 2007), subcultures (Schouten and McAlexander 1995), and brand communities (Muñiz and O'Guinn 2001) as well as religion per se (Miller 2004).

Technological religiosity has been found in reverence for Star Trek (Kozinets 2001), Apple computers (Belk and Tumbat 2005), Apple Newton (Muñiz and Schau 2005), in-vitro fertilization (Fischer, Otnes, and Tuncay 2007), and digital home assistants within the Internet of Things (Hoffman and Novak 2018). But consumer researchers have tended to treat such religious reverence not as a macro-level systemic phenomenon affecting entire generations of humanity, but rather as either a micro-level individual phenomenon (e.g., Fernandez and Lastovicka 2011) or as a meso-level communal phenomenon (e.g., Muñiz and Schau 2005). We also have stopped short of seeing the broader historic pattern of our zealous regard for and fear of new technologies. Take for example, the reverence of Alan Cohen, a vice president of digital service provider Airspace, for the ubiquitous search engine Google:

If I can operate Google I can find anything... anywhere, anytime. Which is why I say that Google, combined with Wi-F, is a little bit like God. God is wireless. God is everywhere and God sees and knows everything. (Friedman 2003)

Or more simply in the words of a University of Maryland sophomore:

Google is the God of the Internet (Foudy et al. 2006).

Although these praises of Google godhood were made ironically, they suggest a serious set of issues. For example, why do we use religious metaphors, analogies, and perhaps literal apotheosis in relating to current and emerging technologies? More broadly, we ask whether belief in science and technology is a new atheistic religion (Johnston 2017). Assuming we are prone to deifying new technologies, have there been techno-religions in prior eras? In order to address such issues, we focus on robots and artificial intelligence (e.g., Midson 2017; Singler 2017). Our premise is that if techno-religion or monstrous constructions of technology are to be found, the creation of lifelike creations should be a prime spawning ground for such reactions.

Robots and Cyborgs

Robots. We are beginning to be offered robots that are approaching humanlike appearance, speech, and actions. Herzfeld (2002) and Oswald (2013) worry they may become our new idols. Western scientists and roboticists have been less focused on developing humanoid robots and more focused on developing the AI that guides them. One example is Amazon's Echo (Alexa) devices. Rather than appearing human, they are simple disks or cylinders that sound human, answer questions, and perform digital tasks like controlling room lighting. In contrast to Western scientists, Asian roboticists have focused on robots that appear as human- and animal-like (Haring et al. 2014; Kamide, Eyssele, and Arai 2013; Klein and Cook 2012; Roberts 2015). They value strong companionate robots rather than merely functional devices (Coeckelbergh 2011; Katsuno 2011; Kim and Kim 2013). This same sensibility has led Japanese and Korean consumers to be more accepting of robots than consumers in the West have been found to be. Human- and animal-appearing robots are increasingly found in Asian homes, care facilities, and retail service positions (Kohlbacher and Rabe 2015; Wirtz et al. 2018).

In part the greater Asian acceptance of robots may be due to the Shinto and Buddhist belief that all objects have souls or *kami*. Japanese roboticist and philosopher Masahiro Mori has suggested that a robot could even become Buddha (Mori 1974). Shinto priests once blessed each new industrial robot until there became the number of such robots exceeded a million rendering such blessings infeasible (Mims

2010; Veruggio and Abney 2012). In Asia robots are ideally regarded as family members (Kaplan 2004; Shaw-Garlock 2009) as was seen with Sony's robot dog AIBO which is often given a solemn funeral when it "dies." This contrasts with the Judeo-Christian West where both a religious and scientific arguments oppose animism (Harvey 2017; Jones and Boivin 2010; Lears 2003; Proctor 2019).

As a result, Westerners are more likely to fear robots than are Asians and our films and science fiction reflects such fears (Lee et al. 2012; Robertson 2007, 2010a, 2010b; Trovato et al. 2012). By contrast Japanese roboticist Fumio Hara thinks that if "you are a good, kind person to the robot, the robot will become kind in return" (Yampolsky 114). Japanese love of manga and anime featuring robots also helps nourish such warm feelings toward robots. The most famous cartoon robot in Japan is the ever-helpful Astro Boy (Tetsuwan Atomu or Mighty Atom in Japan). It is found on nearly every Japanese roboticist's desk (Geraci 2010b). Similar regard for friendly robots is also found in China (Lozada 2011). Because of Cartesian dualism in the West, body and spirit are seen as separate such that disembodied Alexa, Siri, and other devices are not seen as problematic. But in Japan the body and spirit are seen as inseparable and the desire for embodied robots is perhaps natural. This same set of beliefs made it difficult for the Japanese to accept organ transplantation from "brain dead" patients – as long as the body is alive, so is the soul.

Cyborgs. The ultimate goal of AI and robotics research and development is to create a non-human being that is superior to us in every way. If this "singularity" ever was to happen, some question whether the AI/robots would have any use for us mere humans (Kurzweil 2005). And one response has been to promote IA or Intelligence Augmented humans. Such artificially enhanced humans, the reasoning goes, would be the cyborg equals of superhuman robots. That is, we ourselves would become superhuman cyborgs (Buchanan-Oliver, Cruz, and Schroeder 2010; Giesler, 2004; Giesler, Luedicke, and Ozergin 2009). Cyborgs (cybernetic organisms) is a term invented Clynnes and Kline (1960). At that time the idea was to equip humans to survive in outer space with the aid of mechanical, surgical, and pharmacological enhancements. The idea of combining humans and machines inspired Haraway (1985) to view the cyborg as collapsing binaries such as male/female, self/other, and mind/body. However, keeping up with the robots and collapsing binaries are likely not the goal of most would-be cyborgs. Rather, cyborg modifications will more likely be sought in order to make us smarter, more attractive, more physically powerful, more sexually capable, and more long-lived. Present and future modifications to achieve this include organ replacement, prosthetic limbs, plastic surgery, genetic modification, mechanical and electronic prostheses, and chip-enhanced cognition (Barfield, 2015). Nevertheless, Kurzweil (2003, 2012) sees such enhancements as too slow to avoid being eclipsed by AI/robots which might well learn to reprogram themselves and grow smarter and more capable at an exponential rate. He suggests instead that nanotechnology of the future may provide a competitive advantage through the cellular reinvention. Still, current nanotechnology is far from allowing the massive cell re-creation by tiny molecular assemblers that Kurzweil envisions (Bess 2016; Drexler 2013).

All of this is not to say that consumers will welcome cyborg modifications. Lai (2012) found in a study in the UK that people worried about natural and synthetic organ transplantation, They feared that the dignity and purity of the human body would be violated by such procedures, that commodifying organs would profane the sacred human body, and that a market in new or synthetic body parts would cause a division between rich and poor since only the rich could afford such enhancements. This has been a theme in dystopian science fiction films like *Gattaca* and *Elysium*. In their netnographic study, Bhattacharyya and Kedzior (2012) distilled three perceived threats from cyborgs: that we will give up control to technology, that some people will use cyborg technology to control other humans, and that we are losing our essential humanity when we adopt such modifications. But where some saw monsters, others saw gods. Bhattacharyya and Kedzior (2012) also found three more favorable reactions to cyborgs: that they will overcome the flaws of nature, that they are a part technological evolution, and that cyborgs have the potential to become godlike. There is some technological determinism in these latter views, but they do suggest that there are rationales that may cause some people to embrace and pursue technological enhancement. After all, we don't balk at eyeglasses, hearing aids, spell checkers,

calculators, anti-depressants, or “outsourcing our memory” to search engines. Such enhancements, some suggest, are just the beginning.

HISTORIC COMPARISONS AND IMPLICATIONS

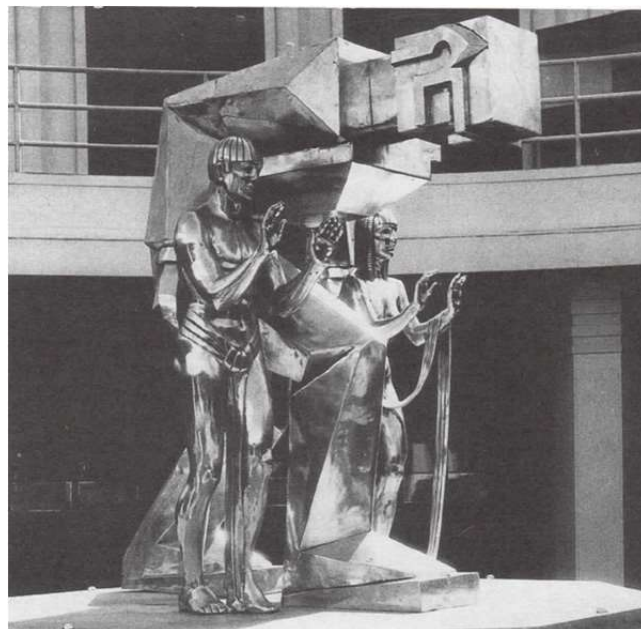
We Have Been Here Before

Stepping back to consider the broader history of the ways in which technology has been promoted and received in the past suggests that 1) there are some recurring patterns of fear and awe in the reception of new technologies, 2) monster and god projections are eventually overcome and forgotten, and 3) current debates about new technologies are neither the first nor the last of humanity’s techno-religious reveries. In interviewing media theorist Fred Turner, Nora Khan (2018) asked him whether AI and algorithms employed by technology giants like Amazon and Google aren’t just using Big Data and sophisticated technology to shape our buying behavior. Turner responded:

Everything that you just said about the AI, with the exception of how we interact with them, could’ve been said about the Sears Roebuck catalog in 1890. The Sears catalog was a desire analogy, a desire mirror that was carefully tweaked. The products were carefully removed and inserted to produce desires in people on the prairie and to give the means of satisfying those desires. It also gave them the means of interacting with Sears as a company. What’s changed since then is the speed at which the interaction between the user and designer occurred, as it does now in virtually real time.

Turner also noted that people at the time were as excited and disturbed by this new yearly print technology as they are today by AI and algorithms. Then as now, there is a tendency to project and exaggerate fears and hopes of where current and future technologies may be leading us. For instance, one vision is of “transhumans” who will live forever by uploading their consciousness to a computer or robot (Tirosh-Samuelson 2012).

FIGURE 1
“SCIENCE ADVANCING MANKIND,”
CENTURY OF PROGRESS EXPOSITION, CHICAGO 1933–34



The history of “yesterday’s tomorrows” (Benford 2010; Corn 1986b; Corn and Horrigan 1996; Heimann 2002) affirms that in terms of god-like regard for technology, we have indeed seen this pattern before. For example, Figure 1 shows the statue “Science Advancing Mankind” at the 1933–34 Chicago Century of Progress Exposition near the entrance to the expansive fair grounds before visitors entered the Hall of Science (originally planned as the Temple of Science; Rydell 1993). The robot figure in the photo at once embraces the smaller human figures and, by virtue of its size, menaces them. The humans hold their hands in front of themselves seemingly at once to be worshipping the robot while attempting to protect themselves from it. Likewise, in the medical section of the Exposition, visitors viewed the Transparent Man that exposed bones and veins and they “saw themselves transposed before a powerful deity—the modern god of science. If nothing else, the shrine had been to instill in visitors a faith in the power of science” (Rydell 1993, 102).

Illustrations of technological determinism and overly grand or dire expectations for emerging technologies exist for many prior inventions. For example, steam locomotives and railroads of the industrial revolution were touted as a cornucopia of blessings and markers of civilization, but they also raised fears and came to be seen as monsters, emblems of hell, and objects capable of driving people insane (Jennings 1985/1995; Midson 2017; Nye 1994). There was fear that electrical telephone and telegraph cables would increase lightening in the air, cause tornadoes, and imbalance nature (Marvin 1990).

On the positive side, the telephone was touted as a device that would save businesses, liberate women, provide safety for the family, eliminate the need to write, facilitate shopping from home, and reduce anxiety, nervousness, and fatigue (Martin 1991). It would also eliminate the need to dress up in order to communicate with others, eliminate the need for face-to-face meetings, and spawn democracy because everyone is equal on the telephone (Mosco 2005). When the transatlantic cable was completed in 1858, the British ambassador rhapsodized over the peace-making capability of the telegraph and celebrated “the telegraph wire, the nerve of international life, transmitting knowledge of events, removing causes of misunderstanding, and promoting peace and harmony throughout the world” (Standage 1998, 91). Standage notes that the telegraph was the Victorian Internet and was lauded for its ability to unite distant lovers, provide the latest news, and reduce the time needed to replenish merchant inventories (Peters 1999).

At the same time, the telegraph fostered crime, hackers, and scams (Nye 2007). Even photography elicited fears at first. “Still photography originally generated grave suspicion due to its seeming uncanny resemblance to its subject and the apparently automatic nature of its production” (Gunning 2003, 49). Thomas Edison boasted that his phonograph would ruin the market for books (Gitelman 2006). Yet it was also unsettling for consumers to hear voices of the dead and Edison struggled to find uses for phonographs beyond talking dolls (Gitelman 2006; Peters 1999). Nevertheless, Edison’s dolls inspired extreme reactions. An 1878 issue of *Engineering* magazine described them as creating “a feeling of wonderment, recalling to one’s mind perhaps the feelings of Pygmalion” (Wood 2002, 124), while a reporter from *Toys and Novelties* described a visit to the doll factory as “awful, uncanny, hypnotizing. Indeed, the whole sight was grim and monstrous” (Wood 2002, 117). Radio was initially expected to alienate us from one another (Ellul 1964; Mosco 2005; Nye 2007; Streeter 2011). But it was also acclaimed as another means of achieving world peace, a vehicle for virtual education and a means of revolutionizing culture (Mosco 2005). It was forecast to be an antidote to war, a guarantor of free speech, a promoter of the free exchange of ideas, and a wireless telegraph for point-to-point professional communications. The radio was initially conceived as a point-to-point wireless communication device. Fortunately, hacker-like amateur “radio boys” opened illegal stations that spawned broader consumer markets (Douglas 2004).

As we have seen with contemporary technologies, there was also an implicit and sometimes explicit godhood template in the reception of prior technologies. Corn (1986a, 221–22) observes that “with the incandescent bulb mere mortals could flick a switch and, in effect, say ‘Let there be light.’ It is not surprising that prophets invested this technology with messianic promise, and greeted it as a force for universal betterment.” Likewise, with the airplane:

Over the centuries, religious ideas linked flying to omnipotent powers and heavenly bliss. ... Flying seemed miraculous, aviation a holy cause, and the airplane a veritable messiah. Prophets glimpsed the dawning air age in which planes would conquer distance, abolish national boundaries, and make men brothers (Corn 1986a, 221).

In each case, new technologies strip away powers thought to be reserved for gods and in so doing make humans more godlike. We have seen, however, that technology can also strip away human powers and abilities that come to be supplanted and exceeded by those of machines.

Spiritual experiences with and interpretations of new technologies are not unusual. Katz (2006) relates incidents of using mobile phones to communicate with the dead, eliciting fear of calls from “evil numbers,” having phones blessed by the popular Chinese goddess Matu, and using mobile phones for sorcery in Saudi Arabia. In McIntosh’s (2010, 348) study of mobile phones in a Kenyan village, village elders considered the phones to be a type of white person witchcraft that works via magic: “older anxieties surrounding velocity are grafted onto telecommunications, which make voices and words (already ontologically mysterious) ‘fly’ by invisible means—a new kind of terror, perhaps.” Other researchers have observed mysterious beliefs and supernatural accounts emerging from owners of other digital devices (e.g., Sconce 2000; Walters 1997). Gunning (1995) has suggested a parallel between nineteenth-century interest in “spirit photography” and contemporary interest in high-tech spiritualism (Kelly 1999).

The way that a technology is received also depends on the cultural milieu of the era in which it occurs. The telephone was heralded as a device to bring the family together, in part because it was introduced at a time when divorce laws were liberalized, women were entering the workforce, contraception became easier, and geographic mobility was increasing (Corn 1986a). In the late 1940s and 1950s, the American press heralded atomic energy as leading us to atomic powered planes, trains, and automobiles and as making energy too cheap to measure. Because the U.S. was in a Cold War with the USSR, atomic energy was touted as a mark of American superiority (Del Sesto 1986). In the World’s Fairs and Disneyland at the time, there was an attempt to rally national spirit to support the atomic power and the military-industrial complex that create and use it. Such promotion to consumers is seen in efforts such as Disney’s *Our Friend the Atom* (Haber 1956), aided by Westinghouse. Today’s Silicon Valley technologies and ventures are promoted as nationalistic symbols for similar reasons.

Despite occasional dystopian views, visions of the future in America have been overwhelmingly positive and utopian (e.g., Kihlstedt 1986; Kozinets 2008; Segal 1986), starting with Edward Bellamy’s (1888/1926) highly popular novel *Looking Backward*. In the novel, Julian West falls asleep in Boston in 1887 and wakes up in 2000. West finds a super-efficient world in which people work until age 44 and retire to enjoy this world of abundance. Bellamy forecast credit cards, long distance telephones, radio, and an absence of pollution. All cultural and spiritual needs were met by technology. In his analysis of popular future visions from 1880 to 1930, Segal (1986) found that science replaced religion in future visions:

Religion in utopia was to consist of little more than a demythologized belief in brotherhood and the love of man. Gone would be churches, rituals, creeds, ministers, and concerns for transcendent matters such as the afterlife. Technology and science would be the gods, their deification based mainly on their efficiency. One author states succinctly, “Real science is true religion.” Another labels the discoveries of science the modern version of revelation and prophesy. Another unabashedly declares engineers the “new priests of the new society” (131).

If science fictions like these are thought experiments (Schneider 2009), we need to consider their potential implications and determine what alternatives there are to these visions (Rescher 2005).

There are numerous dystopian visions of the future. For example, in the era of big computers and post-WWII Cold War anxieties, Clarke (1979) details how science fiction of this era took one of three forms: the scientific romance, dystopian tales of war-to-come and the all-controlling god-in-the-machine, and utopian prophesies of the perfect state. Notably, each of these types of tales anthropomorphize the machine as being not only humanlike, but godlike or monsterlike (Black 2016; Winner 1977).

The vision of science supplanting religion is found in both prior fictional treatments of the future and in contemporary treatments. Kozinets (2008) calls this “the technological gospel of progress.” In a detailed analysis of popular press coverage of personal computers during the 1979–88 period when the machines were being introduced, Stahl (1999) found that 36 percent of 175 *Time* magazine articles reporting on personal computers contained explicitly magical or religious language, and younger consumers using computers were often referred to as “computer whizzes,” “magicians,” or “wizards.” Religious terminology used included consumers being in “communion with their machines,” “computers were gospel,” new users were “baptized,” and users found themselves in “high tech heaven.” Aupers (2002) did a thorough analysis of the content of *Wired* magazine from 1993–2000 and found more evidence of religious reverence as the internet was introduced. Articles evinced feelings of fear, fascination, and awe, and the technical community was described as being “technoanimists” and “technopaganists.” These non-religious technologists regarded the AI with which they were working much like animists would, attributing life to lifeless robots and computers (Harvey 2017). They had exaggerated expectations and characterized the new technologies in utopian terms that mystified and enchanted their view of the tech world. Stahl (1999) found that personal computer enthusiasm peaked in 1982–84, with the personal computer user featured on the *Time* cover in 1983 as “Person of the Year.” Both the total number of articles and references to magic and religion declined after that, but resurged with the internet and mobile devices (Aupers 2002).

We have become accustomed to anticipating the next new thing with excitement and trepidation, only to have it become normalized, domesticated, and no longer seen as worthy of our attention. Although science fiction author Arthur C. Clarke’s third law states that “Any sufficiently advanced technology is indistinguishable from magic” (Beech 2012, 189), magical spells dissipate like rainbows. As McCarthy (2007) notes, when something works, it is not called AI any longer. Nor is it still seen to be magical. Thus, the cycle of religious and magical enthusiasm and religious reverence that greeted the last technological marvel fades, only to be redirected to the next disruptive innovation. This is the third (change the self) strategy of Smits (2006) for greeting technological monsters, and it is by far the most common.

Implications for Theory and Research

We have considered robots and AI as either technological monsters and gods. It is not surprising that in late 2017, the billionaire former Google engineer Anthony Levandowski registered the Way of the Future (WOTF) church with the U.S. Internal Revenue Service and received non-profit tax-exempt status (Burke 2017; Harris 2017). The focus of the church is the worship of AI. Levandowski explained that when AI reaches a level of intelligence equal to that of humans it “could design and program additional AI programs all on its own, read data from an almost infinite number of data sources, and control almost every connected device on the planet” (Brandon 2017). He argues that at this point—the singularity—AI will rise in status to be like a god that can write its own bible and draw humans to worship it. “It’s not a god in the sense that it makes lightning or causes hurricanes. But if there is something a billion times smarter than the smartest human, what else are you going to call it?” (Harris 2017). Levandowski hopes to prepare people for this eventuality and to help assure a peaceful transition of power. This theology of the WOTF is explained succinctly in the church’s official website <http://wayofthefuture.church>: unlike conventional religions, it emphasizes that “There is no such thing as ‘supernatural’ powers.’ Rather, this is a religion of science and scientific ‘progress.’”

A sobering thought about all the projections for fully autonomous superintelligent robots, the singularity, all-powerful AI algorithms, and transhumanism, is that in all probability, they are never going to materialize (Coeckelbergh 2012). Drawing on Knuth (1968), Heffernan (2018) observes, “If you come up with something that makes a little bit of sense and has a little bit of mystery to it, you can fool a lot of people.” High-tech machines suffice to introduce a little bit of mystery and give rise to imaginations of borderline and liminal figures that threaten to go out of control; this induces horror (monsters) and awe (gods) (Buchanan-Oliver and Cruz 2011; Campbell and Saren 2010). Our predictions of the future are based on the fears and concerns of the present (Clarke 1979). As a result:

Science fiction movies ... are morality plays. Space operas, more than most divinity schools rehearsing the key questions that humans as a species are grappling with. What are humans for? What is the difference between humans and machines, between humans and other animals, between humans and spirits and virtual beings? Where does God fit into our world? Where do we fit into the universe? (Kelly 1999, 391).

As Marcel Mauss (1902/1972) observed, magic is about wish fulfillment. We want to believe in magic and technology, and technological futures offer idols to believe in. As a result, we dream much more of technologies as gods than as monsters.

The major implications of our theory of greeting new technologies as monsters or gods lie not in pursuing these predictable reactions and the future prophecies of horrors or utopias that they invoke. Rather, the reason to study these phenomena is that they reveal reactions to our present conditions and our projections of our current hopes and fears for the future. Our receptivity to present technologies tells us more about these hopes and fears than about technologically feasible futures. Our focus on the extremes of invoking culture-specific technological gods and monsters helps expand prior treatments of the technology paradoxes of rationality versus fear (Mick and Fournier 1998), machine ideology versus neo-luddite ideology (Kozinets 2008), and attributions of scientific control versus god-ordained fate (Fischer, et al. 2007). The templates of gods and monsters also incorporate the effects of perceptions of aura (Fernandez and Lastovicka 2011), filtered through magical thinking (St. James, et al. 2011), with the help of anthropomorphism (Hoffman and Novak 2018).

We believe that in the future, probing the nature of related reverence and fears will be a pathway to understanding current cultural concerns and receptivity to major new technologies. Some of the fears we have discussed are old fears—fear of the unknown and the unsuspected dangers that new technologies may bring, fear of loss of control to these technologies (Duchaney 2015), and fear of the sin or hubris of creating life or modifying it genetically. But there are also new fears—fear of surveillance by new technologies (e.g., Zuboff 2019), fear of losing status when superintelligent machines best us (e.g., Ford 2015; Markoff 2015), fear of addiction and over-reliance on technology (Turkle 2011), and fear of being controlled or exterminated by our technologies (Singer 2009). Likewise, some of the awe toward new technologies echoes ancient idolatry (Nelson 2001), while other reverence envisions new technological gods (Graham 2002).

Stahl (1999, 105) notes that while the contemporary world has ostensibly rejected myth in favor of science and technology, it inadvertently made science and technology its new field of mythology. For example, Belk and Tumbat (2005) show how the classic hero journey myth (Campbell 1991) has been transposed from Odysseus and Christ to Steve Jobs. Geraci (2008, 2010a, 2010b, 2012) explores how the Judeo-Christian eschatology of Revelations maps onto contemporary transhumanism, robotics, cyborgs, cryonics, and genetics research. And Stahl (1999) explains how the introduction of the personal computer displayed the characteristics of what he terms redemptive technology—finding salvation and redemption through the religion of technology. Geraci's apocalyptic interpretation of transhumans living on in a computer or robot body goes farther than this. As Biles (2013, 149) summarizes:

The "salvation" promised by this vision of technology simultaneously elevates and erases the human; immortality and death coincide. From this point of view, the very technology that promises perfection and immortality is a sacred monster that kills the master.

That is, the liminal transhuman supplants the human and becomes a monster-god.

Seeing futurists and technology experts not merely as forecasters, but as seers, oracles, and prophets fits them into a template with broader roots and implications. Science fiction is also akin to prophesy and sometimes inspires technological innovations. The search for meaning in life through the use of search engines is similar to prayer. These entreaties and the quest for self-extension through searches and the devices on which we make them are an indispensable part of the quest for self. They are all potential elements in the current but ever-evolving religion of technology. Obtaining a smartphone is considered a rite of passage in this religion, while switching operating systems is akin to religious conversion. We replace wearing a crucifix, hijab, or kipper with a visible branded smartphone, smartwatch, tablet, or laptop. And we now pay our tithes to providers of subscription music, films, television, and cloud storage.

While these theological, eschatological, soteriological, and apocalyptic visions are mostly Western, we have seen similarities in other cultures, including the influence of Shintoism and Buddhism in Japan and Korea. The influence of Buddhism, Confucianism, and Daoism is likely to be important in the religious templates underlying technology reception in China as are Hinduism and Islam in South Asia. In the past, Western encounters with other religious systems attempted to frame them and their worship of artificial or imaginary gods as retrograde, primitive, and Other (what Harvey 2017 calls the “old animism”), as opposed to monotheistic reverence for the One True God. Anthropologists and sociologists invoked and developed concepts like paganism, animism, fetishism, anthropomorphism, and totemism to characterize the Other as being superstitious, childlike, and inferior. Encounters with other “advanced” civilizations with different religious practices were often viewed through a colonialist or orientalist lens as *ganz andere*—totally Other. One implication of the varied practices of world religions is that we need to be sensitive to the dominant religions of an area in order to detect techno-religious practices in the secular interests of that region’s people. Another implication is that we need to be attentive to the global spread of many of these same mythologies and practices in our own secular realm of technology.

There are now hundreds of consumer research articles invoking the concepts of myth, ritual, fetishism, sacredness, and anthropomorphism using methods including qualitative research, experimental research, structural equation modeling, conceptual formulations, and neuroscience. Yet consumer research has likely just scratched the surface of the applicability of techno-religion in analyses to date. None of this work has employed the concepts of gods and monsters in an effort to understand consumption phenomena involving technology. This includes articles on consumer encounters with technology (e.g., Belk 2013; Kozinets 2008; Mick and Fournier 1998). A key advantage of the gods and monsters framework is that it helps to recognize patterns that lie beneath the surface of our technology engagements. Once this framework is superimposed onto findings, other manifestations become evident and a more macro perspective emerges. It also suggests the broader set of beliefs and practices that we should look for.

Given our tendency to anthropomorphize even rudimentary humanoid or animalistic features of an object (e.g., Aggarwal and McGill 2007), Belk (2017) considers the potential status of humanoid robots as persons. While he considers effects of anthropomorphism, sex with robots, and the legal implications of granting certain human rights to AI or humanoid robots, he fails to consider the religious frame that may surround such developments. While Belk (2017) includes what we consider to be life, humanness, personhood, and perhaps even godhood, he does not consider the surrounding rituals, rites, and rights of personhood. These potentially include AI and robot naming, baptism, voting rights, property rights (both as property and as property owners), coming of age, income, retirement, death, death rituals, bequests, and many others. These considerations are extrapolations of some of the scenarios discussed here including transhumanism, cyborg modifications, humanoid robotics, and AI. This is an illustration of the broader implications of applying the concept of deific mythology to otherwise incomplete treatments of consumer technology. Illustrations of applying the monstrous template can be seen in our receptions of fracking, data theft, and military robotics.

Religions arguably emerge to give us a feeling of control over the uncontrollable, to answer questions involving the meaning and purpose of life, to offer moral guidelines, and to offer guidance and comfort in facing traumas, injustices, and death. It is not surprising that in the absence of explicit religions, techno-religion emerges mimetically in a variety of foci, even though we are often oblivious to invoking this template. We believe that this framework offers a powerful lens through which to see and understand the broader impetus for a variety of consumer activities and call on consumer researchers to further explicate our techno-religions.

We need to look for technological monsters as well as gods in technology reception, science fiction, and futurism. As Shildrick (2002) argues, our fear of monsters is really a fear of a side of ourselves. Marshall McLuhan (1998, 43) also theorized that electronic technologies represent an “exteriorized” or prosthetic extension of ourselves and that humans are inevitably “fascinated by any extension of themselves in any material other than themselves.” This includes both hubristic fantasies of being gods and our darker fears of being monsters (Nakamura 2007). In creating, anthropomorphizing, and personifying technologies, we are ultimately seeking to find the self, albeit in the form of a technological

other. As Bailey (2005, 195) observes, “The more we imagine machines to be like humans, the more we imagine humans to be like machines.” This is not Descartes’ view of the body as a dumb machine for the mind or Andy Warhol’s professed desire to be a machine that thrives on repetition, but rather a romantic and celebratory view of humans as being the equal of our wonderful machine gods (Black 2016; Selzer 1992/2015; Suchman 2007).

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