Article

Enchantment and perpetual desire: Theorizing disenchanted enchantment and technology adoption

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Abstract

Dominant perspectives on technology adoption and consumption tend to be cognitive, instrumental, and individualistic. We offer a desire-centered, future-oriented, and culturally grounded alternative model called the Disenchanted Enchantment Model (DEM). Drawing on historical evidence and revised interpretations of theories of enchantment and disenchantment by Weber and Saler, we show that desire is at the heart of technology consumption's enchantments, and how its fulfilment is temporary, skeptical, and ironic. We provide an important cultural counterbalance to models such as the Technology Acceptance Model, which replace wonder with reason. Instead we theorize the process that drives contemporary technology adoption as centering on desirous senses of wonderment and anticipation. We offer current and recent examples of the DEM process and discuss the implications this model holds for a new understanding of technology, consumption, desire, and broader consumer culture.

What follows could be read as a celebration of technology, unbridled technophilia, technological solutionism, and even technological determinism. Although the consumers of whom we speak

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might well be accused of such utopianism, we well realize the dangers of such a stance. Nevertheless, what we seek to theorize is how we succumb to these seductive sources of hope. Much of the scholarship about technology is still laden with assumptions of consumer rationality and calculation. However, by tracing a historical and cultural path, this article will reveal the mix of desires—for pleasure, the future, spectacle, and liberation—at the heart of technology's perpetual charm to humanity. As consumers, we have long consumed serial goods and epistemic objects whose properties we collectively observe, explore, and anticipate (Knorr Cetina, 1997; Zwick and Dholakia, 2006a, 2006b). Think of annual models of automobiles, fashions, and movie franchises, or daily, weekly, and monthly newspapers, magazines, and television series. Today, we have faster anticipatory cycles of revelation through blogs, podcasts, YouTube channels, social media, and streaming music, television, and films. Our project began with the observation that in the sphere of new technologies, anticipatory consumption has gone into overdrive as consumers have become eager participants in the perpetual marketplace drama that seeks to anoint something as the next new thing. We present a cyclical model of technology adoption and call it the Disenchanted Enchantment Model (DEM). It is a considerably enhanced, more imaginative, more forward-looking, and more emotion-driven alternative to functional Adoption and Diffusion of Innovations and Technology Acceptance Models that still dominate marketing theorization on technology adoption (e.g. Bahlol et al., 2018; Fathema et al., 2015; Mazzarol and Reboud, 2019).

We begin by reviewing prior literature on technology adoption processes and elaborating on why they do not fully explain the cultural climate underlying the current era of technology consumption. We then revisit the Weberian disenchantment thesis and establish a historical link between technology and enchantment. We explain how *disenchanted enchantment* (Saler, 2012) has become central to contemporary consumer culture and especially the consumption of novel technologies. Disenchanted enchantment provides a context for technology consumption's historical and ideological present (Kozinets, 2008; Mick and Fournier, 1998) by introducing the dubious-but-willing consumer driven by a desire to desire (Belk et al., 2003). This jaded and skeptical consumer nevertheless suspends disbelief and continuously plays along with a procession of one technological magic show after another (During, 2002; Saler, 2012). The next section presents our DEM that unfolds through four cyclically repetitive stages: (1) the paradox of the impossible realized, (2) growing promise of gratification, (3) ludic satiation, and (4) normalization and rising sense of loss–and repeats ad infinitum. Throughout our development of these four stages, we track the process's connections to desire, prognostication, the spectacle, Romantic futures, technological utopianism, and their intertwining liberatory promise. Next, the article provides historical and recent examples to illuminate these interconnections. We conclude by discussing our theoretical contributions, differentiating it from earlier useful but incomplete models of desire and contemporary imaginative hedonism, and providing directions for future research.

Process theories of technology consumption

Basing his work on a study of Iowa farmers' hybrid corn adoption, Everett Rogers (1962) provided an early and influential theorization of the technology adoption process via his diffusion of innovations model. He theorized that the population could be divided into distinct groups based on their psychological makeup and willingness to appropriate new technologies: innovators, early adopters, early majority, late majority, and laggards. Not included but implicit in his model are non-adopters. Rogers' model held the behavioral and attitudinal traits of these groups to be

relatively consistent; eager innovators in car shopping should not be hesitant laggards when buying televisions. Younger consumers are often seen as ahead of the curve, as evinced by more recent discussions relating to the so-called digital natives (Prensky, 2008). Rogers' model still enjoys widespread popularity and has had a great influence on, for example, von Hippel's (1986) lead user theories that follow related patterns of psychological profiling.

Rogers also suggested that factors such as observability, complexity, and trialability affected the rate at which innovations diffuse. His work inspired further research that proposed more refined answers to questions of why some technologies are more readily adopted than others. Particularly in the field of information sciences, the Technology Acceptance Model (TAM) became highly influential and soon proliferated into other fields, including marketing and consumer research (Davis, 1989; Mahajan et al., 1990). Early TAM research identified two functional factors that explain both intended and actual technology adoption: the perceived usefulness and ease of use of the technology (Davis, 1989).

Follow-up research further revised and refined the model. For example, the longer technologies were on the market, the more useful and easier to use they seemed to become (Venkatesh and Morris, 2000). Social norms and peers were also identified as key moderators in technology acceptance (Thompson et al., 1991; Venkatesh et al., 2003). TAM pioneers Venkatesh and colleagues (2003) eventually proposed a new model called a *Unified Theory of Acceptance and Use of Technology* (UTAUT) that also incorporated social influences, hedonic orientation, gender, age, and voluntariness of use as key new variables (see also Venkatesh et al., 2012).

Yet, even with revisions, these models are facing growing criticism. Bagozzi (2007), a one-time TAM scholar himself, sees the incremental revisions in TAM/UTAUT research as relatively obvious and he underlined these models' lack of linkages to important social, cultural, and emotional factors. The shortcomings of these utilitarian and functionalist perspectives have become all the more evident in an era of personal, ludic, and hyped technologies (Antón et al., 2013; Hedman and Gimpel, 2010).

Mick and Fournier (1998) provided a cultural twist to technology adoption theories by illustrating how new technologies elicit paradoxical reactions from consumers that draw on Western technology myths. Technology meanings are situated between the extremes of freedom, control, and efficiencies on one hand, and the internal contradictions of dehumanization and environmental and human lifestyle degradation on the other. Most of their eight paradoxes relate directly to these tensions. Others have built on Mick and Fournier by further exploring the historically constructed meanings, ideologies, and discourses around technology that shape consumers' technology expectations and consuming subjectivities (Kozinets, 2008; Thompson, 2004). But these works do not discuss the continuous cultural reproduction of the more general desire for new "technologies/ideologies" (Kozinets, 2008). More specifically, they do not elaborate how consumer views *evolve* when technologies mature or when consumer desires change. As Robinson (2019) notes, consumer researchers often neglect a central element of technology: its future orientation. Innovation is indeed synonymous with the new and a wealth of prior theorization shows that "newness" itself is central to cultivating consumer anticipation and desire (e.g. Belk, 2001; Belk et al., 2003; Campbell, 1987, 2018; Hartmann and Brunk, 2019; Kozinets et al., 2017; Ritzer, 1999; Williams, 1982). But the literature lacks a cultural account of how a technology becomes innovative, new, and exciting in the eyes of consumers, and how consumer revolution and technological revolution drive and produce each other. To remedy these concerns, we present a new process view of technology adoption that we call the DEM.

Before reviewing the model, we elaborate on the historical developments that led to behavior and ideology the model reveals.

Enchantment and technology

Revisiting the Weberian thesis of disenchantment

Østergaard et al. (2013) provide a general overview of enchantment theorization within consumer research, drawing a chronological arc from Max Weber to Colin Campbell to George Ritzer. Weber's (1964) famous *die Entzauberung der Welt* is an obligatory point of passage in theoretical discussions of enchantment. Gane (2002) succinctly summarizes Weber's grand narrative as "the elimination of prehistoric forms of magical religiosity with the rise of universal religion, and the subsequent disenchantment of universal religion with the emergence of modern 'rational' science and the advanced capitalist order" (p. 15). Weber (1964) saw modernist rationality making constant gains at the expense of enchantment, magic, religion, and the sacred, which were all at odds with the grand Enlightenment project of solving the world's mysteries through scientific method. In this formulation, magic was seen to be particularly at odds with Enlightenment modernity in insisting that ritualistic incantations have causal effects on nature. Magic and religion were branded as misguided superstitions or pseudo-science by such rationalist luminaries as Freud (1918) and Frazer (1959). And although magic and religion were never eradicated, in Weber's view they became more secular and less sacred, magical, and enchanted.

Campbell (1987, 2018) revisited Weber's grand theory and identified parallel but inverse processes under modernity where the disenchanting growth of production regimes gave rise to enchanting spheres of consumption. Campbell contended that the same ascetic practices of self-control that fostered capitalism also had a paradoxical effect on consumerism. For example, the focus on personal virtue had the unintended consequence of making consumption more inward-oriented, putting more emphasis, with the help of Romanticism, on sensuality, imagined pleasure, and fantasies. As consumption increasingly became located within the arena of imagination and daydreaming (Lears, 1995), consumer goods turned into conduits for enchantment. But only in the internal world of the consumer's mind. Campbell (2018: 123) held that the disenchantment of the external world led to enchantment in the consumer's inner world. He further noted that "the joys of longing rival those of actual gratification" and that "disillusionment is the necessary concomitant of the purchase and use of goods" (Campbell, 2018: 302). But what he fails to consider is how goods become sources of enchantment through external forces.

Ritzer's (1999) later extension of Campbell's theory brought the enchantment discussion to where it is today. He equated contemporary consumer culture with an enchanted disenchantment where "cathedrals of consumption" offer the "enchantment needed to lure consumers, although disenchantment is an ever-present possibility" (p. 10). Ritzer saw a consumer culture full of empty spectacle and endless simulation (Østergaard et al., 2013). Enchanted disenchantment is a frail and diluted version of enchantment that is achieved, as Badot and Filser (2007: 167) write, through "a set of practices initiated by both manufacturers and consumers to incorporate non-functional sources of value in goods and services, and turn them into sources of hedonic, symbolic, and interpersonal value."

However, the disenchantment of the world was never complete. Weber (1964) believed that enchantment never truly disappeared and instead found refuge in high art. As Campbell (2018) showed, some elements of enchantment proved highly useful for the emerging modern orders of

consumer culture: sensory, exuberant, imaginative, Romantic, and bodily enchantments. Leaning heavily on Baudrillard, Østergaard et al. (2013) conclude that "consumer cultures produce and reproduce and simulate enchantment and disenchantment, perhaps at ever accelerating rates and in roughly equal measure, and it is this process of reproduction or simulation that requires further analysis rather than the states themselves" (pp. 343–4). We build on this observation by incorporating the findings of newer studies of enchantment which argue that the oft-told story of modernity disenchanting the world is a mischaracterization (Gane, 2002; Jenkins, 2000; Saler, 2006, 2012). We draw attention to a pervasive form of enchantment that is a defining feature of today's consumer culture. Instead of Ritzer's (1999) enchanted disenchantment, we believe a better concept is Saler's (2012) *disenchanted enchantment*. This seemingly innocuous reversal of terms is actually crucial. Enchanted disenchantment is like a gilded withering husk. Disenchanted enchantment, on the other hand, is a mutation—it is an enchantment that survived and thrived under modernity:

> [M]odern enchantment often depends upon its opposite, modern disenchantment. A specifically modern enchantment can be defined as one that enchants and disenchants simultaneously: *a disenchanted enchantment . . . .* Modernity remains enchanted in a disenchanted way, rendering the imagination compatible with reason, the spiritual with secular trends. (Saler, 2012: 12–3, emphasis in original)

For an individual consumer, enchantment is first and foremost an experience and the literature describes it as a deeply felt yet fleeting set of emotional commitments involving wonderment, anticipation of joy, euphoria, and an expanded sense of human potential (e.g. Bennett, 2001; Gell, 1992; McCarthy and Wright, 2004; Sengers et al., 2008). Yet enchantment cannot occur without consumers' willing participation and suspension of disbelief. It is a reflexive kind of enchantment (Saler, 2012). As Østergaard and colleagues (2013) also write:

> Enchantment . . . becomes a man-made construction and man is aware of that . . . . That is, enchantment is publicly recognized as enchantment and overtly produced and consumed in order to lure, attract and fascinate. (p. 343)

In other words, consumers beguile themselves as much as they are beguiled by enchanting technologies and they are aware of their self-seduction. They do this both individually and jointly by, for example, speculating on the next version of a product on online forums. Disenchanted enchantment is the only possible form of enchantment in a late modernist world. It relies on participatory spectacle, and, more centrally to our investigation, wondrous technologies imbued with promises of utopian progress and the progressive liberation of human potential (During, 2002; Kozinets, 2008; Ritzer, 1999; Saler, 2012). Hyped new technologies have indeed become ideally suited to creating these fleeting sensations of wonder, awe, and surprise—far more so than the static "cathedrals of consumption" or spectacular retail spaces that others have singled out as the engines of awe (Badot and Filser, 2007; Ritzer, 1999).

We also argue that temporality is central to experiencing enchantment. Hartmann and Brunk (2019: 7) write that brands can "create (re-)enchantment by fashioning a particular temporal experience of belonging anchored to a particular (lost and/or utopian) place and time . . . thereby valorizing a particular nexus between past, present, and future." This conceptualization points to the ways that consumers "recover a sense of magic, myth, specialness, and romance—in other words, (re-)enchantment" (Hartmann and Brunk, 2019: 7) by imaginatively inhabiting multiple times, including the future, and multiple places, including utopias. We build on these important

notions by contending that enchantment in consumer culture is linked to this imagined sense of future time and utopian place. When disruptive technologies emerge, they may beget beliefs that we are participating in a future time, a technological utopia, an age of miracles, albeit with an element of skepticism as suspending disbelief is only temporary. And when technological enchantment fades, it always leaves us yearning for more—not as much for more things as for more desires (Belk et al., 2003). The next section further elaborates the historical link between technology and enchantment. We then present our model with its four stages of disenchanted enchantment. We develop each of these four stages with an eye to its prognosticatory role and its links to spectacle, Romantic futures, technological utopianism, and their fleeting emancipatory promises. Then, our discussion section operationalizes a model of capitalist revolution driving a consumer process of perpetual desire—a desire needed to keep the whole model of technological innovation working and nourishing disenchanted enchantment. We then briefly consider some extensions of our model to cover an earlier period of disenchanted enchantment involving American automobiles in the 1950s, the role of magic in the marketplace, and the effects of culture. We conclude with a discussion of related issues for future research.

How technology became enchanted

Ample historical evidence links technology to enchantment even before modernity. Pre-Enlightenment Christian thought had already embraced mechanical devices and technological disciplines as central means for humanity to overturn the "lack" caused by the Fall and sought to achieve a "perfected state" through technology (e.g. Harrison, 1999, 2008; Kozinets, 2008; Robinson, 2019). Others see the Christian embrace of technology as an essential precondition for the modernist project altogether (Botez, 2017; Harrison, 2008; Peters, 2011). Yet the key cultural changes behind the enchantment of technology took place during the industrial age. Starting from the mid-19th century, the sheer scope of emerging technologies like railroads and telegraphs necessitated complex systems that bound together corporations, institutions, machines, infrastructures, labor, and consumers (Marx, 2010). These systems became dominant in Western economies between 1870 and 1920 and altered the discourse around technologies toward a "technocratic commitment to improving 'technology' as the basis and the measure of—and all but constituting—the progress of society" (Smith and Marx, 1994: 20). Technology became complex, ephemeral, and uncontrollable—a "virtually autonomous, all-encompassing agent of change" (Marx, 2010: 564). What followed is an ironic twist of modernist rationalism: on one hand working hard to rid the world of magical enchantment and its ambiguity, while simultaneously infusing technology with ambiguity and wonder (Pels, 2003). Modernity has enchanted technology by reimagining it as miraculous and wonderful—providing a shiny new God for humankind to worship (Davis, 1998; During, 2002; Nye, 1994; Stivers, 1999).

This view of technology as an enchanted mechanism for societal progress would not last. Two devastating World Wars granted technology a "declining status amid a growing disenchantment with material success and with all forms of social and political engineering" (Segal, 1994: 3). The rise of the military industrial complex and related fears of technology spinning out of human control made technology seem like more of an instrument of destructive power than a societal good (Ellul, 1964; Nye, 1994; 2007; Smith and Marx, 1994; Segal, 1994). The resurgence of technological enchantment in contemporary consumer culture owes itself to technology shedding its large-scale, industrial, corporate, governmental modernist "grand project" baggage (Firat and Venkatesh, 1995), and its relocation in the realm of personal and expressive consumption objects.
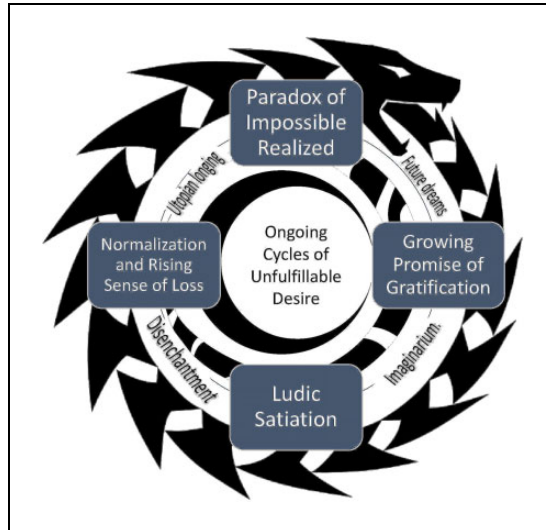
Figure 1. The Disenchanted Enchantment Model.

The resulting proliferation of personal computers and digital technologies starting from the early- to mid-1970s marked a turning point for enchantment.

The Apple I computer in 1976 proved seminal. The birth and early history of Apple and Steven Jobs has no doubt been mythologized (Belk and Tumbat, 2005). Yet, according to Streeter's (2011) analysis, it sparked a romanticist humanist revolution. The computer became a source of delight and surprise, imbued with the enchanted promise of self-expressive (or "techspressive," Kozinets, 2008), creative, and autonomous consumption (Black, 2002; Streeter, 2011; Turkle, 1995). With Steve Jobs and Stephen Wozniak as chief among the swashbucklers of the new era, computers also became rebellious (Trentholm, 2015; Turner, 2010). Popular culture also embraced consumer-oriented technological enchantment. Comic books, sci-fi, fantasy, and superhero movies linked technologies to the promised unleashing of an enchanting new "super" self (Morrison, 2011; Possamai, 2006).

In summation, prior studies establish a deep historical link between enchantment and technology. Yet they do not explain how individual technologies become enchanted in the eyes of consumers, and how those views evolve during the proliferation of these technologies. We offer such a perspective by showing how various marketplace actors collaborate to enchant technologies. We discuss this next by elaborating our cyclical process model of technological enchantment that we call the DEM, outlined in Figure 1.

Disenchanted enchantment: The cycle of technological enchantment

The paradox of the impossible realized

Elements of the first stage. Technologies do not enchant upon arrival without some high-tech prevarication, preparation, and anticipation on the part of consumers. In this first stage of our model, we highlight the role of popular culture and the media in calibrating consumer expectations and then serving as messengers for the newly crowned king gadget. There are five distinct cultural

connections within this stage, each of them affecting individual psychological, conscious and subconscious imagination processes, and also collective cultural experiences: (1) science fictional and fantasy foretelling; (2) spectacular stagings at magic shows, theaters, and world fairs; (3) Romantic reimaginings of the future; (4) utopian excitement; and (5) the promise of liberation and transformation. In all, these sections change enchantment theory by developing the first stage of the seduction and presenting its connections to prognostication, the spectacle, Romantic futures, technological utopianism, and the promise of freedom.

Science fictional and fantasy foretelling. The arrival of enchanting technologies is often foretold: many gadgets we use today were prophesized in sci-fi or fantasy novels, comic books, and even fairy tales—influences that their contemporary marketplace editions allude to or explicitly reference (e.g. Dinello, 2005; Kozinets, 2008; Rose, 2014; Robinson, 2019). Thirty years before the iPad hit the marketplace, it was a standard tool for Starfleet officers in the technologically utopian and globally influential Star Trek media franchise (Foresman, 2016). Apple's Siri replies in mock outrage if you ask it to "open the pod bay doors, HAL," referring to the treacherous supercomputer HAL 9000 in the science fiction classic motion picture *2001: A Space Odyssey*. The imaginary and nonmaterial elements of technologies interpolate their nonmaterial essence into objects both physical and virtual, as Shields' (2003) "virtualities" and Molesworth and Denegri-Knott's (2013) "digital virtual consumption" remind us. Disruptive technologies move into the marketplace dramatically, prophetically, and usually with much marketer and media fanfare. Those that are hyped the most tend to be seen as the most enchanting. As with the "this changes everything" tagline from the introduction of Apple's first iPhone—reprised with the iPhone 4 by adding "again"—the transition from futuristic fantasy to the reality of an enchanted object is increasingly marketed as *an event*—for example, Apple (2010).

Spectacular stagings at magic shows, theaters, and world fairs. The introductions of early technological innovations such as rudimentary robots were staged with utopian spectacle between 1840 and 1920 at popular events such as magic shows, theater, and world's fairs (e.g. Bailey, 2005; Cook, 2001; Debord, 1970; Rydell, 1993). These events used technologies like magnetism and electricity to create applied scientific productions that seemed both like modern marvels and sideshow attractions. They evoked wide-eyed amazement, but also invited participants to engage in participatory guesswork to understand the illusions. As Saler (2012) asserts, these technological shows bore all the hallmarks of disenchanted enchantment's dominant sensibility of *ironic imagination*—a double-minded consciousness and a deep engagement within an imaginary world that "yield[s] a form of modern enchantment that delights without deluding" (p. 30) because the basis of its delight presumably lay in some sort of scientific reality rather than illusion.

Romantic reimaginings of the future. Yet this was before the post-truth era. In fact, science was performance then as much as it is now, and technology devices were all a part of the spectacle. These spectacles were highly sensorial and drew from counter-modernist Romantic ideals that privileged imagination, captivation, and charismatic visualization as means for re-enchanting the world in some near-future moment (Black, 2002). The Chicago spectacles of the Columbian Exposition of 1893 and the Century of Progress Exhibition of 1933 appropriated the legacy of these technological magic shows by celebrating "the novel in the guise of the eternal, and of the technological in the form of magic" (Gunning, 2003: 40). The 1939 New York World's Fair was an unabashedly technologically utopian "futurama" that explicitly evoked a connection between new

gadgets and mysticism in its Hall of Science (originally planned as the Temple of Science) (Rydell, 1993). Indeed, scientists at the time were concerned that the fair was used by large companies to promote consumption and that these companies "narrowly defined science in terms of gadgets, commodities, and magic" (Kuznick, 1994: 341).

Utopian excitement. Contemporary events draw on an established legacy of utopian excitement layered onto carnivalesque spectacle that blends contemporary Palo Alto venture capitalist technology/ideology into a worshipful new religion of stock market singularities and ever-increasing consumer multiverses. There is a giddy excitement seen in the press coverage of annual events like the Consumer Electronics Show (CES) in Las Vegas:

> Tech faithful gather to worship at mecca of innovation ... As tech industry players converge in Las Vegas for the 2018 Consumer Electronics Show, an overriding theme is that gizmos, artificial intelligence, cloud computing and superfast internet connections hold answers to many if not all ills—the new religion ... enchanting us with ... vows to end urban congestion, treat cancer and depression, and help us live fitter and more productive lives. (Lever, 2018)

Using terms such as "tech faithful," "worship," and "mecca" makes the obvious link to religion, enchantment, and future miracles. Apple's annual World Wide Developers Conference (WWDC) is another focus for press hoopla and live links to consumers who devour demonstrations of coming attractions. Many avid followers blog and comment about the event before, during, and after.

The new religious lingo relates to hope and expectations. In principle, "the sociology of expectations" (Borup et al., 2006) and "the moral economy of hope" (Rose, 2007) include both positive and fearful imaginings and worries about forthcoming technologies. But Borup et al. (2006) show us that hype and the strong aura of utopian progress tend to excite entirely positive and often hyperbolic expectations. As the avid attention to coverage of the CES and WWDC suggests, many of today's technology consumers now anxiously anticipate the next "new thing" to rejuvenate their desires and lead them into the promised positive future (Burkert, 2017; Forbes Technology Council, 2018).

The promise of liberation and transformation. Freedom, in the so-called Free World, is everything. This is particularly true mid-coronavirus, when even basic freedoms became restricted, and when social technology and surveillance became enchanted. The chances of a technology becoming enchanted are greatly improved if it promises consumers some kind of an enhanced or liberated experience, possibly an experience of the self (Macdonald, 2005; Rose, 2014), an experience of Other, or of community, and if it seems to situate that self, Other, and community in a future and better world. Design scholars McCarthy and Wright (2004) provide examples of a "technology that enchants" that include: "a computer that allows me to question what it is to be a computer; ... objects or installations that are sensitive to ... my sense of wonder and emotional integrity. Technology that enables me to change" (p. 90). Enchanting technology, in the view of these design scholars, is transformational. It is agentic: it is something that enables and spurs the self, the Other, and the civilization to change.

Added to the transformative elements, and intertwined with them, is a spiritual element. A demonstration of the spiritual and transformative possibilities of technology design is the first iPhone introduced in 2007 (Clayton et al., 2015). Although Apple's intentions to introduce a phone were widely rumored, Steve Jobs' reveal surpassed expectations both among the press and

consumers. Jobs even promised the awestruck crowd that the iPhone would "work like magic" (Block, 2007). The tech blog Gizmodo coined the term "Jesus phone" in mocking the iPhone's frenzied reception (Campbell and La Pastina, 2010). Yet the term proliferated and was used in earnest in post-launch hype.

The first stage of the Apple iPhone. Now, we come to the conceptual development of enchantment theory, with which we began, and to which we seek to contribute. We can now unpack the role of psychology, subconscious imagination processes, and also collective cultural experiences. We can see the role of fiction, fantasy, and spectacle. We can read the significance of foretelling, World Fairs, and utopias, their promises of liberation and transformation that encompass a brand-new self in a brand-new world. In all, the first stage of the cycle is the most powerful and most important: it is here that the seduction happens, that the technology, when it first appears, is at the height of its attractiveness.

The term "Jesus phone" offers a perfect way to understand not only technology's spiritual magnetism, but the inevitability of its death and return, except that here it occurs in endless cycles. The appropriation of the ironic term reveals the functioning of the ironic imagination (Saler, 2012) and suggests the willing suspension of disenchantment and disbelief in the consumer marketplace (Morgan, 2009). With each successive model, consumers want to be enchanted. And then, they expect to become disenchanted and re-enchanted again. The iPhone made it easier to believe in miracles, in a participatory guise where consumers co-create the magic. More than that, it made it easier to believe that the consumer tech cornucopia would continue to spawn more miracles that would find a ready consumer congregation that believed in the perpetual provision of technological objects of desire.

If the technological reveal is indeed like a magician's illusion, the next stage of our process involves collective sensemaking for the new technology. This sense of sensemaking further fans the flames of collective and utopian desires (Belk et al., 2003), but it also begins the process of disillusionment, the ending of the utopian technology futuristic illusion behind the initial seduction.

The growing promise of gratification

The second stage. The second stage, which we term *the growing promise of gratification*, moves into promises, speculations, and then hype. The paradox realized in the first stage pierces the barrier between belief and disbelief, building an enormous tension, a combined desire for the utopian future and for the device. Once an innovation has been revealed, but prior to its market entry, consumers quickly channel their individual and collective astonishment into speculation about the technology's meanings and capabilities (e.g. Gell, 1988; Stivers, 2001). Such speculation often turns into consumer-generated hype and rising expectations for the technology's transformative potential (e.g. Jun, 2012; Rotololo et al., 2015). The notion is cleverly captured in Gartner Consultancy's "peak of inflated expectations" in their "hype cycle" (Borup et al., 2006). The long queues at Apple Stores full of devout pilgrims aiming to be among the first ones blessed by acquiring each iPhone incarnation are a quintessential illustration, as are the many worshipful expressions of amazement that make their way onto social media platforms at these sacred pre-launch times. We consider this stage to be directly related to the development of hype, and thus we provide a short history of hype in order to understand this term. Then, our model recognizes the important role of the media in mystifying technologies, technology consumption, and technology consumers. Finally, we consider the properties and materialities of the devices themselves. These

technological consumer devices are complex affordances that maintain a sense of magical authority and mystery through their black box designs

A short history of hype. Since the Industrial Revolution, there have been many historical examples of pre-introduction hype and growing utopian expectations about the possibilities of new technologies. The telephone was originally 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). Telephones, it was believed, would eliminate the need to dress up in order to communicate with others, eliminate the need for face-to-face meetings, and foster a more democratic society because everyone would be equal when conversing by phone (Mosco, 2004). Radio was similarly acclaimed as a means of achieving world peace, a vehicle for virtual education, and a force capable of revolutionizing culture (Mosco, 2004). With the development of cable television even greater benefits were forecast. Shrinking size and growing portability for radios, televisions, telephones, stereos, calculators, and computers were tied to lifestyles of "freedom." Together with the Internet, GPS, and Wi-Fi, we began to imagine ourselves as not only free but almost godlike.

The important role of the media in mystification. Media play a key role in mystifying the technologically utopian meaning making at this stage as well. As Stivers (2001: 137) concludes, "the media express the deepest religious beliefs of [our] civilization—in the sacred power of technology." Stahl (1995) found that 36% of *Time* magazine articles reporting on the introduction of personal computers contained explicitly magical or religious language. The articles described consumers seeking "communion with their machines," "computers were gospel," new users were "baptized," and users found themselves in "high tech heaven." Aupers (2002) analysis of the content of *Wired* magazine from 1993 to 2000 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." Davis (1998) writes brilliantly that technology's basis in Gnosis lends it a genuinely mystical aura. And religious discourse infuses social media, where online conversations have become the primary forum for consumers' collective speculations about contemporary enchantment and its technological sources (e.g. Jenkins, 2006; Schroll, 2013). These groups help suspend disbelief through known enchantment mechanisms creating collective effervescence (e.g. Morgan, 2009).

The devices themselves: Complex affordances and black box designs. New tech objects' complex affordances and "black box" designs increase the likelihood of speculative reactions of both exaltation and suspicion (Pasquale, 2015). Borgmann (2000) writes that consumer culture is now dominated by the paradigm of devices that represent "the distinctive conjunction of an easily available commodity and a sophisticated and impenetrable machinery" (p. 420). This impenetrability shrouds technologies in mystery. Or, in the words of Stahl (1995): "when a technology is a 'black box,' it becomes magical" (p. 252). When the intended purposes of a technology are elusive, consumers' imaginations can take over and they may well conjure new meanings and purposes for these technologies. And it should come as no surprise that many of these meanings partake of the unmistakably utopian ideological underpinnings of technology consumption (Kozinets, 2008). This differs from Latour's (1999) concept of blackboxing which makes the workings of the device invisible and of no concern.

Schroll's (2013) analysis of the Apple-centric MacRumors community further affirmed that a large part of the community's engagement revolves around ludic speculation and what-if fantasizing about yet-to-be-released products. In addition to excitement and fun, it provides a communal salve: "For passionate Apple fans, the wait for a new Apple product release is pure pain" and collective speculation about product features "is a way of releasing this tension" (Schroll, 2013: 414). And as that building tension is finally released at the end of the second stage, we have the denouement of ludic satisfaction in the third.

Ludic satiation

The ludic saturation situation is the post-utopian orgy stage of release. Once a technology hits the market, consumers finally get to play with their new toys and see for themselves if their expectations were met. Like all orgies, the results are a combination of ecstasy and repose. First, there is the pre-stage, the anticipating of satiating the desire to be playful, to let loose, and to release energy. Then, it explodes. The energy dissipates. Next, because we are still talking about technology, there is more technology: influencer reviews on social media, unboxing videos, livestreaming of first use consumer experiences. Much of it seems to be romantic, revolutionary, and transformative. There is positive anticipation for the future, but utopia is still a romantic affair, a fling away from our own personal and collective dystopias. Eventually, the affair becomes a relationship, and things at this stage normalize. Consumer tribes rush in like flies to domesticate and colonize brands, lifestyles, and devices. But by now some of the devices themselves have begun to use randomness or more advanced AI and machine learning algorithms to create an impenetrable barrier of mystery surrounding science. And then, after this stage is over, the thrill is gone. In the following 10 elemental and connective theoretical subsections, we explore the stage we call ludic satiation.

The pre-stage. Anticipatory ludic desires for satiation begin in the previous stage with anticipatory speculations about the new thing or new model: the person begins imagining themselves with the product, playing with it, letting it transform them in a Huizinga and Callois sense of transformative play being like a game, but a game with few rules, most particularly a game of seduction. When consumers actually get their hands on new technologies, their magical qualities become even more apparent. The seduction can continue, indefinitely, as in the case of our multiple mobile phones, apps, and OS upgrades. This is when an innovation like the smartphone as a category delivers on its promise, and consumers do not feel like they were victims of hype (e.g. Jun, 2012; Schroll, 2013)—as say in the prior stage. Consumers should see themselves not just as rubes, the duped dummies who satiate their desires too soon. The consumption objects become transformative transportation devices. They may inspire serendipitous discoveries of new uses, new tricks, and new consumption stories shared with likeminded peers, sustaining the feeling of enchantment for a time.

What comes after the post-desire explosion? Wild satisfaction is followed by the crescendo of release and dissipation. Where there was interest, there is contentment. Where it was solid, now it turns liquid yet again. But soon we begin to long for more. Eventually, the utopian promise turns out to be just around the corner, and still somewhere in the future. We crave the whole perpetual promise of consumer technological enchantment, the activation of our imagination, the excitement of possibility, and the anticipation of the next new thing. We hunger for the dreamlike sense of

futuristic possibility that pervades these technological objects, perhaps even more than we desire the things themselves (Belk et al., 2003; Campbell, 2018).

Technological fixes and titillations. Livestreaming, influencer reviewing, and unboxing rituals prolong and chronicle the consumer excitement for social consumption and the need for social connection following post-desire release. Even vicariously getting your hands on a new technological device can prove enchanting. Influencers regularly hype followers by reviewing new products in the ritualistic practice of consuming unboxing videos on YouTube and Facebook or streaming these out as live events. The unboxing events of concern involve technology objects and gadgets (e.g. Belk, 2016). The unboxer is a sacred mystery figure, an enchanter or enchantress. The unboxer is "a kind of priest in the polytheistic faith of merchandise, a mediator between the congregation of consumer subjects and the numinous object itself. The task that he sets himself . . . is the task of revelation" (O'Connell, 2013: npn).

But the enchanter or enchantress is not necessarily so wholesome. Mowlabocus (2018) characterizes unboxing's slow vicarious titillation as arising from the strip show, a genre that resonates with desirous sexual innuendo and pornographic alignment and that is fully committed "to discovery and revelation" (p. 4). We see the various unboxings of scientific technologies, including grand reveals and trade show magical events, as performances unpacking the sensual mysteries of a personal future, a better future that commercial culture endlessly promises to deliver. Even if the objects of our desire later seem frivolous or forgettable things, we do not soon forget the excitement of the enticing strip shows that preceded them, and the various elements of the seduction itself.

Capturing and chronicling initial use experiences: The First Browser. Initial use experiences with a new technology can equally enthrall and are also well-represented in YouTube videos such as "user's first experience with Linux Ubuntu". Let us roam together for a moment with Streeter (2011) who takes us down memory lane to his early encounters with Mosaic—the first browser for the world wide web, which used a graphical user interface (GUI) browser and was created at the University of Illinois in 1993—and its enchantingly promissory, romantic, revolutionary, and transformative appeal:

> Mosaic enacted a kind of hope; it did not deliver new things so much as a sense of the *possibility* of new things. Surfing the web using Mosaic [was like] the early stages of a romantic affair or the first phases of a revolutionary movement; pointing, clicking, and watching images slowly appear generated a sense of anticipation, of possibility . . . an endless what's next? (p. 127, emphasis in original)

There are several important insights, beyond the theoretical connections to the concepts of the promissory, romantic, revolutionary, and transformative. First is the role of anticipation and possibility pointed toward the future: something we call *positive anticipation* for the future with a limitless sense of "What's next?." It is not simply the abundance of accessible social worlds and contacts, stories and information that excites, it is also the potential for surprise and delight to have this wealth of access at our beck and call.

Even after the initial flush of desire is spent, the relationship continues. Consumers act as loyal lovers. They continue to stay in relationships with the *idea* of technology, as well as with particular devices offered to them in the market. The analogy to a romantic affair or a revolution suggests the heart-stopping thrill that is created by this access. Although we are aware that Mosaic has now

been superseded by better browsers and other new "new things" that would render the original Mosaic experience unenchanting and frustrating, we consider it a timeless reminder that what was once almost godlike eventually becomes so mundane and superseded as to become unknown to the next generation: an inevitability for all once-"complex" technologies, perhaps.

Consumer tribes domesticate and colonize technology consumption in the post-purchase phase. Consumer tribes can intersect with brand communities and brand publics in interesting ways. Star Trek fans see technologies like flip phones and matter-antimatter engines differently from Doctor Who fans or Walt Disney millenarians. The enchantment of technology by particular consumer tribes is particularly the case with the groups of engaged consumers who explore the limits of technologies and call forth new and surprising uses through creative tinkering (Muñiz and Schau, 2005)—a tradition dating back to electric clubs, ham and citizen's band radio enthusiasts, "radio boys," and computer clubs (Rosner and Turner, 2015). These enthusiastic lead user collectives also become primary arenas for sharing narratives of consumption experiences with new technologies. Such stories often feature animistic and magical descriptions (e.g. Aupers, 2002; Carolus et al., 2018; Davis, 1998; Stahl, 1995; Turkle, 1995).

The devices themselves. Technological abilities for "randomness" continue to enchant by creating unpredictable mystery and pave the ground for AI. For instance, in the early years of portable devices, after Apple released the iPod, its portable digital music player, consumer reactions often focused on its seemingly magical shuffle play mode as an endless source of serendipity and surprise. Michael Bull, as one of Kahney's (2005: 21) informants, described how the iPod's music collection became "a treasure trove full of hidden delights which the magic of the machine throws at [you]." One of Bull's (2007: 47) own informants similarly related: "as it's on shuffle I don't know what's coming up next, and it often surprises me how the same street can look lively and busy and colourful one moment and then—when a different song starts—it can change to a mysterious and unnerving place." The mysteriousness of the shuffle mode was boosted in the blogs of early users who claimed that the iPod was actually sensing their moods and programming or counterprogramming accordingly. Similar mysticism has recently shrouded Amazon's voice-controlled personal assistant Siri after Twitter rumors began to circulate that the module sometimes bursts into an unprompted witch-like cackle. But, unfortunately, whether we like to admit it or not, most houses are not haunted. And many technologies and products are just products. Any Alexa-like cackling, any iPod mood reading algorithms aside, many innovations quickly normalize, and they stay that way: in stasis. They cease to be able to arouse desire (until, of course, perhaps one day with retro nostalgia behind them, they do again). But, for now, the thrill is gone . . . at least until the old iPhone XX becomes the new iPhone XX+1!

Summarizing the substages of ludic satiation. In sum, the process moves from the anticipatory pre-stage of excitement, to excitation, to letting loose, to the release of energy, and dissipation. Then technologies take over: influencer reviews on social media, unboxing videos, livestreaming of first use consumer experiences. It is romantic, revolutionary, and transformative. The affair between utopian consumer dreams and the actual device or service becomes a relationship. The consumer relationship normalizes. Then, various lifestyle cultures and consumer tribes bounce up against the devices themselves, their design, their randomness, and their AI algorithms. All of this points to a need to increase and maintain a sense of mystery, of enchantment. This section detailed these ten elemental and connective theoretical subplots in the third and penultimate stage of ludic satiation.

Normalization and rising sense of loss

A technology can only surprise and delight for so long before it becomes normal and we await the next new thing. What's next? The next new thing, of course. We already know that this evanescent quality is part of the intrinsic appeal because consumers are fully aware of it. And yet, it captures us nonetheless. Stivers (2001: 138) chalks up this alarming gullibility to our shared sense of irrationality and schizophrenia: we are "split between intellect and emotion" by the powerful impact of the sacred" in modern technology's conjuration of ancient "myth and ritual." Despite our supposed rationality, we are still, as human beings, suckers for religious iconography, myth, storytelling, spirituality, and mysticism. We are addicted, in other words, to enchantment.

Explaining the final stage. By definition, enchantment cannot last. After "the pixie dust settles" (Davis, 1998) on each innovation, a process of normalization and then disillusionment takes place (Gitelman, 2006; Nye, 1994, 2007). After their normalization, technologies establish a new baseline expectation and understanding about what a particular technology can do—its capacities, abilities, and affordances. And not every innovation will rise again to greatness and mystery. Most instantly become mundane and, commonly, forgotten. In order to perpetuate enchantment, as Apple has done with the iPhone, our favorite case study example, innovations must surpass the mark established by their technological predecessors if they wish to enchant consumer devotees. And with some consumers' unending desires for both the new and the enchanting (Belk et al., 2003; Kozinets et al., 2017), this process of rapid normalization spurs the market for further innovations. The need to animate and populate the future with new technologies seems to be everlasting.

The final part of the final stage: The sense of loss. The process of normalization also produces a sense of loss. New technologies displace old technologies, but they also displace the magic. They displace established traditions and meaningful practices (Borgmann, 2000; Kozinets, 2008). For example, digital music streaming displaced the necessity of having shelf space for one's music collection, but it also destroyed the social practice of going to a music store with friends. When we are enthralled by new technologies, the upcoming loss of these practices is often not evident to us. Yet the sense of loss always comes, eventually. Heffernan (2016) describes this mix of "magic and loss" in the context of the Internet:

> The Internet is paradigmatic magic. It turns experiences from the material world that used to be densely physical—involving licking stamps, say, or winding clocks or driving in cars to shopping centers—into frictionless, weightless, and fantastic abstractions . . . . And yet it's still here, the persistent sense of loss. The magic of the Internet—the recession of the material world in favor of a world of ideas—is not pure delight. It seems we are missing something very worthwhile and identity-forming from our pre-digital lives. Is it a handwritten letter? Is it an analog phone call? Is it a quality of celluloid film, a multi-volume encyclopedia, or a leather-bound datebook? Is it a way of thinking or being or even falling in love? Between two discourses, two languages, two regimes, something is *always* lost. (p. 17)

This sense of normalization and then loss perpetuates the cycle of the technology enchantment revolution, feeding interest in the next fix.

Starting the cycle anew. Like the pointed teeth of the tail-devouring snake's head of the Ouroboros in our Figure 1, the sense of loss and the hunger for a new sense of a desirable and utopian future

drive the push for new technologies that open the doors for the cycle to run anew, based on yet another paradoxical possibility for a realized, yet impossible, technological miracle. We might argue that the very idea of novelty, the concept of innovation, and the notion of what counts as a "technology" must move through normalization and disillusionment stages. Unless it offers miraculous new features and designs and is marketed as a spectacular new advance, a new object is just another object. It becomes relegated to the status of the normal and may never enter the cycle of enchantment again.

Considering the Apple iPhone case in your present. For the last stage, we stay with our iPhone example, but we fast forward past the death of the black turtle-necked one. The mass business press has frequently questioned Apple's ability to innovate post-Jobs. A 2019 Forbes story speculated that Apple had "lost its innovation mojo" (Cohan, 2019). The company and its new CEO Tim Cook had not come out with a new platform and most of its innovations were around style: new software tweaks, sizes, and colors. Genuinely astonishing innovation may be increasingly difficult to maintain for any company, perhaps for any civilization, because our expectations continue to rise. But the Apple you know, the Apple of your present, this is the one to judge. Does it even exist in your time as a producer of magical products, or has it already begun to disappear or evolve into a service company? Here is where consumers' perpetual push for new desires comes in. So long as there is something seemingly new each year, and a collective hunger for a utopian future world of new technologies, we will continue to line up to play our part in purchasing, speculating, and meaning making. As the example of taking the Apple iPhone from historical times into our current time shows, this disenchanted enchantment of technology model reveals that it is highly contextualized and flexible to interpretation. However, we propose a number of explicitly developed parts to the fourth stage.

The fourth stage, which we call normalization and the rising sense of loss began in some sense in the third stage, where normalization and the device and what it does become the status quo. It can start to seem old-fashioned, even ridiculous. Here in stage 4, technologies wither, they atrophy so that they can begin the cycle once again, renewed and re-enchanted. The sense of loss overcomes those who are in the process of re-enchantment, it creates a sense of depression and grayness (Belk et al., 2003), so that consumers can once again desire and start the cycle anew. Each of us likely has fascinations with technologies, however wrought. One case of mass hysteria which we illustrated again in this chapter, in the final stage was the iPhone, bringing the device up to the present.

Discussion

Leon Trotsky (2010) theorized that in order to be successful, the Communist Revolution had to be perpetual and global in scope. We now live in an era in which the Capitalist Revolution of technological upheaval is perpetual, global, and arguably far more successful and durable than the Communist Revolutions that already have faded from popular memory. Although some attention has been paid to the fate of the worker in the Capitalist Technological Revolution (e.g. Davis et al., 1997), less attention has been paid to the fate of the consumer. It is our article's central contention that the global consumer of technology must be seduced into perpetual desire for the next new technological wonder, and that the consumer is a willing participant in this seduction.

Belk et al. (2003) also deal with consumer auto-arousal and self-seduction as does Campbell (2018) who shows us how consumers became "day-dreamers" for new consumer goods. But

Campbell (2018: 4) chastises his critics for assuming that this meant "that such individuals are 'deluded'; inhabitants of a fantasy world largely divorced from the reality that surrounds them." Belk et al. (2003) Campbell (2018), and Deighton and Grayson (1995) are all so intent on showing us the self-seducing internal processes of consumers, that they give short shrift to the marketers creating the images of wonder that so entrance contemporary consumers. Nor do they detail the processes of disenchanted enchantment that we theorize, which act to predictably reignite consumer desire for the next new thing in the perpetual cycle of consumer desire.

We focus on the early 21st century digital technology cycles of perpetual consumer desire, focusing especially on that computer-in-your-pocket, the smartphone. But there are other examples like the mid-20th century consumer anticipation of the next rocket-finned American automobile (Bayley, 1986; McCracken, 2005). Self-seduction is still involved, but we give attention to the key role of marketing and, perhaps more important than either of these examples, the seeming juggernaut of rapid technological and aesthetic innovation that keeps the Ourobouros perpetually consuming its own tail.

Contemporary technology consumption and the neo-romantic desire for magic

Our presentation of the four stages, their various substages, interconnections, overlaps, disparities, connections, and sub-elements of the DEM is intended to highlight the one central element at the model's core: desire. The desire to continually and perpetually desire, to be more precise. Our model conceptualizes and highlights the role of desire for perpetual newness in the process. In particular, it offers a new understanding of the role of desire and future orientation in the cultural imagination. In this section, we discuss how this contribution alters our understanding of the historical and contemporary basis of technology consumption by focusing on the neo-romantic desire for magic. We consider the contributions of our model's cultural orientation to understanding technology consumption. Finally, we discuss how it enables future researchers to pose novel and important questions about technology consumption.

Contemporary technology consumption has parallels to the Frederick Pohl (1963) story *Midas World* wherein future corporations produce so many wonders that consumer demand can no longer keep up with supply. So the "poor" must live on large estates, consume huge quantities of food, and buy all of the latest gadgets in order to keep the robotic factories that produce these things humming. Only the "rich" are allowed to lead simple lives of austerity and modesty. Although the many homeless in America and the hungry around the world might find these predictions ridiculous, it is undeniable that many middle-class contemporary consumers do seem hungry to gobble up the latest electronic marvels in an effort to match the robots' and the Third World factory workers' prodigious output. None of this would be possible without the considerable efforts of marketing. But today's consumers have not been lulled into mere zombie-like consumption. Contemporary consumers have instead become complicit even as they regard the cornucopia with irony. They know they are being seduced by technology and marketing, but it just feels so good.

Hegel might have called this marketed sensation a "techno-Romantic subjective irony" as opposed to Socratic or universal Irony (Žižek, 2018). Nota bene that Hegel was critiquing Romantic irony (Reid, 2014), whereas we see this irony as a mechanism that keeps the possibility of magic alive and thereby (ironically) perpetuates the ongoing so-called "technological revolution." Although universal irony is more dialectic and potentially powerful, Romantic subjective irony is less serious and more playful. It allows us to mock that which we avidly consume. Our subtle humor betrays a realization that we are being consumed as we become the desiring

machines that Deleuze and Guattari (1972) highlighted. But whereas Deleuze and Guattari (1972) envisioned mechanical bodies somnambulating through a fixed world, we see posthuman pros-thetic consumers fully participating in the creation of their own fluid serial desires. By keeping the possibility of magic alive through disenchanted enchantment, the capitalist system sustains itself through the consumer's ongoing and seemingly limitless desire for ever-more desire (Belk et al., 2003; Kozinets et al., 2017). Thus, throughout the model we read the desire for desire as a neo-Romantic desire for magic. And although magic was not a part of Lacan's original formulation of unfulfillable desire without an object, the net effect is similar (Belk et al., 2003; Gabarron-Garcia, 2012) but enhanced by the addition of a future-looking sensibility and imagination. By invoking technology, magic, and an orientation to the future, a market-induced material desire only inflames our passions for more magical objects.

Turner (2010) and Streeter (2011) remind us that the rise of Silicon Valley and its mythic startup culture since the late 1970s moved technology away from the clutches of big government and into the sphere of consumption, recharging technology with populist excitement and a popular sense of wonder. From peer-to-peer markets to social media, from projected slides to post-coronavirus videoconferences and televised classrooms, from autonomous vehicles to smart home devices, the world has never been more deluged by high technology affordances (Gibson, 1966) nor more dependent upon them. Many times, these technologies deliver—they offer new capabilities that those in the know find miraculous. Yet, as our brief overview of the history of technological enchantment suggests, there are, and have always been, cultural crosscurrents that question the newness of these developments; only their pace has changed.

Contributing cultural underpinnings to theoretical accounts of technology adoption

Technologies and innovations are novel product and service offerings. They are as old as the first baker baking a better bun. Prior theories of the technology adoption processes emphasize individual appraisals of technologies' perceived usefulness and ease of use (e.g. Davis, 1989; Venkatesh and Morris, 2000) and how individual and situational variables like gender, age, voluntariness of use, and personality traits moderate these appraisals (e.g. Antón et al., 2013; Venkatesh et al., 2003, 2012). As recent papers emphasize, culture has been notably absent from these adoption descriptions (e.g. Bagozzi, 2007; Fernandez and Beverland, 2018; Hedman and Gimpel, 2010).

Our model puts culture center stage by showing how technologies become the subject of intense collective desires, anticipations, and a future-oriented cultural imaginary of enchantment. We highlight the uncoordinated yet synergistic work of various marketplace actors (marketers, influencers, the media, and consumer collectives) in elevating some technologies as the next big thing that will bring the marvels of the future—and perhaps of utopia—into being. In contrast to the models of TAM and UTAUT theories, we apply and extend theories of consumer desire. The four steps in our DEM are cyclical, underlining the continuous renewal of consumer desires for new technological marvels. Inside these cycles, a future orientation and drive for progressive utopia fills the cultural imaginary and spills out as consumer demand. Our model also comple-ments recent studies of the romantic appeal of "retro" technologies and agrees that their appeal derives from a sense of temporality that suspends differences between past, present, and future (e.g. Fernandez and Beverland, 2018; Hartmann and Brunk, 2019; Humayun and Belk, forth-coming). We also stipulate that ours is not a universal model and that not all technologies are viewed as enchanted. As with all cultural understandings, the contexts of technologies and their consumption, and the contexts of their contexts, matter.

Consumer enchantment is not new; it is frequently evoked in consumer research in a variety of forms and contexts (e.g. Badot and Filser, 2007; Belk et al., 1989; Campbell, 1987, 2018; Firat and Venkatesh, 1995; Hartmann and Brunk, 2019; Hartmann and Östberg, 2013; Ritzer, 1999; Thompson and Coskuner-Balli, 2007). But prior studies often relegate enchantment into a niche role in consumer culture, a feature of either marketers' inflated purchase appeals (e.g. Østergaard et al., 2013; Ritzer, 1999; Williams, 1982) or a romantic yearning for better times or ways of being through re-enchantment (e.g. Thompson and Coskuner-Balli, 2007; Hartmann and Brunk, 2019). For us, enchantment is anything but niche—it is very often the central feature of an appeal of the new, of the marketing and cultural reception of innovations, and of the many forms and aspects of technology consumption, from hardware and software to devices and services. In focusing on future orientation, we extend and develop recent arguments that enchantment never disappeared under modernity (there is thus no need for *re*-enchantment) and instead colonized new spheres of influence under market capitalism (e.g. Jenkins, 2000; Gane, 2002; Saler, 2012).

Our model emphasizes that an enchanting technology has to be new. After all, if one follows well-established conceptualizations of technology as socio-material arrangements that serve given ends (Heidegger, 1977; Marx, 2010), the mechanically made wooden table is as much a technology as IBM's Big Blue and Watson or Alphabet's DeepMind. Only novel, disruptive, and seemingly scientifically sophisticated technologies can truly captivate the romantic public imagination. Or as Arthur C. Clarke (1979) put it, "Any sufficiently advanced technology is indistinguishable from magic." Magical technologies hiding in black boxes invite curious consumption through collective speculation, exploration, narration, and innovation, further fueling the technology enchantment cycle (Pasquale, 2015), causing the Ourobouric desire in the mouth of our model to swallow itself yet again. Yet as our model teaches us, future-oriented consumers also remember the past. They know full well that, eventually, the enchantment will fade. The futuristic wonder device of the present will one day soon be a relic of the past. Before that happens, consumers are already searching for the next enchanting thing. This is not merely a case of serial enchantments; those of us who are technophiles and techspressives (Kozinets, 2008) are polymorphously perverse enough to be simultaneously enthralled by multiple technologies. As our theory of newness and its appeal hints, it is an old process, perhaps an ancient one. But contemporary capitalism has found great use for it.

Indeed, the enchanting properties of technology are simultaneously modernist utopian, post post-modern, but also pre-industrial and nostalgic (Gallardo and Russell, 2014). In Kozinets (2008), we can see how ideologies of productivity, work, logic, and efficiency give way to those of self-expression, pleasure, and connection. In similar vein, Belk (2001), Kozinets et al. (2017), and Stevens and Maclaran (2005) detail and implicate the role of vast technology-human assemblages in contemporary life in the amplification of desire and the polarizing of human cultural positions. Our article points out the combinations of historical developments, future-oriented temporality, endless desire, and cultural imaginaries that, together, drive these transformations. We suggest that any characteristic of technology, and perhaps even our modernist fascination with technological solutions itself, might be subject to an enchantment cycle. Our current high hopes for technologies may turn to a rising sense of loss and a completely new view of technology altogether. As we write this, the world is mired in a climate quagmire and a coronavirus calamity. Treatments may require new devices, and solutions to these problems require new technologies such as novel vaccines. Even in times of pandemic, collective hopes for the future continually draw on the need for new technology and become subject to the cyclical workings of the DEM. Time will tell how such monumental shifts will alter consumer views of technology.

Novel questions for future research about technology consumption

Consumer and marketing theorists and empirical researchers may use the many conceptual gaps, theoretical articulations, and linking points of the DEM to locate areas for further investigation. For instance, our model reveals only basic processes but says little about how they might differ by disposition, by culture, by consumer group, by different products or services, or by time. We have little idea thus far about whether these stages might take moments, months, or years although we contend that the length of the periods is inversely related to the speed of technological change.

Future research in new contexts needs to investigate the elements of the DEM in order to understand how they operate and to identify the subtle differences between different contexts and environments. For example, we could envision studies that examine the speed at which particular new technologies are appropriated into particular groups of people in a culture, the future orientation of particular novel products, the elements of a social media group's predictive imaginarium of their highly anticipated and favored new product's launch, or the degree of transnational desire and disruptive effects that emerge from a progression of new technologies into particular countries or regions. Are there cultural differences, for example as Chinese consumers adapt to the pervasive surveillance of their society's emerging Social Index system (Botsman, 2017; Kostka, 2019) versus the often oppressive and racist algorithms that drive credit scores in the West (Noble, 2018)?

Speed is of interest as well. Is the acceleration of innovation more of a subjective sense than an actual phenomenon? Are technologies actually developing more rapidly than they did in the past? Is our civilization's need for enchantment in decline? Is the speed of social life accelerating as some have suggested (Husemann and Eckhardt, 2019; Rosa, 2003)? Or perhaps these apparent occurrences are all artifacts of increased media exposure to technological news in a globalizing world. As Rosa (2003) notes, periods of rapid technological development are usually followed by a subsequent rise in the "'discourse of acceleration', in which cries for deceleration in the name of human needs and values are voiced but eventually die down" (p. 6).

Finally, we believe that there is still much more to investigate behind these cultural and historical processes. We agree with Max Weber, David Noble, and Erik Davis that technological enchantment derives from a secular society in which wonderment is displaced into material and virtual worlds and away from spiritual worlds. Can humanity in its current state turn away from technology as a source of enchantment without some power—religious, spiritual, or even existential—as a counter-source of enchantment? In our current environment of ecological and virological devastation, human beings seem to be continually disenchanted by what our enchantment with Technology has bequeathed. Perhaps the skepticism accompanying our enchantment with new products, with its utopian elements and future orientation, has dulled our ability to think beyond new products as solutions for future problems and for a more utopian society. Perhaps it has rubbed off into a disenchanted post-ironic cynicism without future-oriented promises, one where all desires for a more utopian world are discounted as impossible dreams. Technological solutionism breeds the hope that new technologies can solve the problems that technology has brought. And yet technological solutionism and its disappointments may only produce more technological disenchantment. All of this hope and despair are layered onto what Walter Benjamin identified as "capitalism as religion," the unwavering belief that the best solution to local failures of capitalism is to make them even more capitalist (Benjamin, 1999; Kozinets, 2019). Indeed, when combined with capitalism, hope, and despair, the enchantment of technology creates a powerful gravitational field of ideology.

If our DEM of technology reception is valid then, as individual consumers, each of us will likely continue to imagine a better future through innovative products, to desire the next new thing, to react skeptically to promises of magical devices, and yet still to seek enchantment through the purchase of those same numerous and numinous objects. Will the actual processes of the DEM ever catch up with and apply to the notion of novelty, the concept of technological inoculation, and the idea of enchanted technology itself? Is this an ongoing cycle of enchantment and disenchantment, or is it a spiral that has some logical endpoint from a thoroughly and irredeemably cynical viewpoint, or even from a more critically informed desire for a realized technological utopia? We hope that our article opens some space in our imaginarium about our future, digital and material, as well as innovative and spectacular enchantment processes. We would like for it to cast some illumination on the conceptual cave of wonders that may be useful for additional research, contemplation, and discussion of these vital issues for our technological times.

Declaration of conflicting interests

Funding

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