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the thinking, theory and practice—and for a forum for debating issues that arise. Authors are encouraged to contribute articles which focus on Europe or focus on Europe in the global context. Each paper submitted to EJM is subject to a strict double blind review process.

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A prospectus on marketing futurology

It’s not just about predicting what the future will be, but about shaping it into the future we want to be.

— Janette Sadik-Khan

Introduction
Although our world is verging on dramatic societal and economic shifts, business in general—and marketing in particular—seems unprepared for them. Consider, for example, Jeremy Rifkin’s (2014) prediction about the rise of a global Collaborative Commons and the eclipse of capitalism. He contends economists, who perpetually welcome marginal cost reductions, have not anticipated a new infrastructure—comprised of the Internet of Things, globally fungible energy, and decentralized production and distribution—that will incite a technological revolution driving marginal costs to “near zero”. In essence, he argues the Communication Internet will converge with the Energy Internet and Logistics Internet to create a technological platform connecting everyone and everything (Rifkin, 2011). As a result, plummeting marginal costs will foster a new, hybrid economy that is part traditional capitalism and part Collaborative Commons (i.e. distributed and decentralized environment that encourages open-source innovation, transparency and community). In a Collaborative Commons, access will be more important than ownership, sustainability will dominate consumerism, cooperation will dominate competition, and “sharable value” will replace “exchange value”.

Whether this futuristic outlook is accurate or not, new technologies will continue to emerge so rapidly that anticipating all their intended, unintended, and synergistic effects will be impossible. Human intuitions honed for eons by an environment that rewarded accurate linear projections (e.g. hunters succeeded by aiming their spears at a fleeing animal’s future location) cannot fully envision the societal consequences of exponential advancements in genetics, robotics, information technology and nanotechnology (Eckersley, 2001; Garreau, 2005; Kurzweil, 2005). If humanity ignores the highly dissuasive rhetoric of the Luddite/technophobe legion, then such technological advances will transform post-industrial society permanently, and the “point of no return” already may have passed (Bell, 2003; Joy, 2000; McKibbin, 2004).

Thinking about possible futures is a learnable skill (Frame, 2018). Futurists, whose field of inquiry is “future studies” or futurology, explicitly and systematically examine and evaluate possible, probable, and desirable futures, inform societal expectations about the future, and promote efforts to shape the future (Bell, 2003). In response to forecasts portending exponential change (Kurzweil, 2005), scholars and science popularizers have advocated “futurizing” technology and the sciences (including social) by incorporating futurology principles into their weltanschauung, theories, teaching, and research (Bell, 2003; Cowen, 2013; Schor, 2010). We concur, and thus urge marketers to “adopt a mindset of professional futurists...[and] embrace whole-system change” (Eckersley, 2001, p. 22).

As futurists urge organizational decision makers to anticipate the future and to control it by preparing for expected trends (W. Bell, 2003), marketers can develop capabilities “to invent the future, to learn the future faster, and to deliver the future earlier” (Pattinson and Sood, 2010, p. 417). Our goal here is not to warn against an impending apocalypse caused by
global warming, hostile artificial intelligence (AI), massive systemic unemployment, errant asteroids, plagues, or other potential disaster inducers (Bostrom, 2009, 2014; Bostrom and Cirkovic, 2008). Nor is it to laud technological breakthroughs that will usher in humanity’s Golden Age. Rather, our goal is to suggest a perspective from which marketers may
- identify and ponder alternative futures and their consequences; and
- effectuate a desirable future for all stakeholders (i.e. circumscribed by a fair distribution of costs and benefits).

In essence, marketing futurology should inform decisions that create a future reflective of humanity’s sustainable preferences. Given its synergies with other social sciences and tech-related disciplines, marketing is the ideal field of scholarship to orchestrate humanity’s future.

Our exposition proceeds as follows. After providing preliminary evidence about the extent and positivity (or lack thereof) that marketing scholars have engaged in futures discourse, we discuss marketing’s unique future-inducing position and offer a research agenda centered around a new aspirational definition of marketing. Next, we suggest an organized set of higher- and lower-order questions and a prescriptive tool for avoiding dystopia-inducing negative externalities. Finally, we introduce the articles appearing in this special issue and close with a brief discussion.

Futures: a content analysis
Although an exhaustive review of the futurology literature is impossible in this short introductory essay, a content analysis of Futures, a leading multidisciplinary futures studies journal, provides preliminary evidence for the extent that marketing scholars have engaged in futures discourse. With an impact factor of 2.26, h-index of 66, and SCImago scientific influence rating of 1.23, Futures is the only futures studies journal rated ‘B’ or better by the Australian Business Deans Council. A search for the term ‘marketing’ in all issues published from 2009 to 2018 yielded 172 articles. After eliminating articles tangentially related to marketing, 69 articles remained. For each article, the following information was recorded:
- type of article (i.e. conceptual, methodological, empirical or meta-analysis);
- explicitly expressed attitude towards marketing’s role in futurology discourse (i.e. positive, negative, or none);
- presence of practical business implications (i.e. either explicitly defined and actionable, or absent); and
- authors’ main field of expertise (operationalized as “discipline of first author’s highest degree”).

Tables I and II, which summarize this analysis, offer several cautionary results. First, marketers (co)authored only 10.14 per cent of marketing-related articles, which implies they contribute only minimally to multidisciplinary discussions about the future, even when those discussions focus on marketing. Perhaps marketers are philosophically detached from contemplating possible, probable, and desirable futures (Bell, 2003) or from using futurology research tools. For example, a recent meta-analysis of research that assessed prospective future scenarios showed only 13.5 per cent from business and management sources (Oliveira et al., 2018).

Second, and likely related to the first result, fewer than half (40.6 per cent) of marketing-related articles featured implications pertinent to marketing practitioners, which hints these practitioners lack the conceptual and methodological tools needed to plan for the intermediate or distant future. Concurrently, long-range enterprise-level planning has grown
<table>
<thead>
<tr>
<th>Main questions</th>
<th>Related values-laden questions</th>
</tr>
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<tbody>
<tr>
<td><strong>Higher-order questions</strong></td>
<td></td>
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<tr>
<td><strong>What is a person?</strong></td>
<td>Should sentient machines be considered persons?</td>
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<td></td>
<td>What forms (i.e. human-like and non-human-like) should complex non-human semi- or fully</td>
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<td></td>
<td>autonomous entities take?</td>
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<td></td>
<td>Should ‘conscious’ AIs be allowed?</td>
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<td></td>
<td>To what extent should humanity re-engineer/enhance itself biologically and artificially? (i.e.</td>
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<td>transhuman/posthuman entails questions about longevity and capabilities)</td>
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<td></td>
<td>Are minds transferred to a non-biological substrate still persons?</td>
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<td><strong>What is the good life?</strong></td>
<td>What is the main goal for sentient life?</td>
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<td></td>
<td>‘Progress’ as a species versus individual happiness</td>
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<td></td>
<td>Unless outcomes are identical, should positive experiences be maximized or suffering minimized?</td>
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<td></td>
<td>Should personkind strive towards greater purposes (e.g. space colonization, terraforming Mars)</td>
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<tr>
<td></td>
<td>or embrace banal contentment (i.e. hedonistic imperative)?</td>
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<tr>
<td></td>
<td>How should various quality-of-life objectives for personkind—flourishing, self-believed</td>
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<td></td>
<td>happiness, societal productivity, freedom—be weighted?</td>
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<td></td>
<td>Can persons live a ‘good life’ in a virtual world?</td>
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<td><strong>Who is in charge and how do they decide?</strong></td>
<td>Should AI and machine learning algorithms ‘choose’ for personkind?</td>
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<td></td>
<td>Should personkind be controlled by systems they cannot understand (e.g. cannot understand</td>
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<td>verdicts of robojudges)?</td>
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<td></td>
<td>What decision rules should prescribe autonomous device behavior (e.g. Asimov’s three laws of</td>
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<td></td>
<td>robotics)?</td>
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<td></td>
<td>Who assesses what is desirable and how (self-report, expert judge)?</td>
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<td></td>
<td>To what extend should deontology or teleology (i.e., intention versus outcome) criteria be</td>
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<td>used to base and assess decisions and outcomes?</td>
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<td></td>
<td>Whose values will be programmed into simulations to determine/ forecast the ‘right’ path?</td>
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<tr>
<td><strong>Lower-order questions</strong></td>
<td></td>
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<tr>
<td><strong>Category</strong></td>
<td>Related values-laden questions</td>
</tr>
<tr>
<td>Philosophical/Ethical</td>
<td>What are people’s basic rights (e.g., universal health care, basic minimum income, broadband</td>
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<td></td>
<td>internet access)?</td>
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<td></td>
<td>Should ‘equality of opportunities’ or ‘equality of outcomes’ be favored?</td>
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<td></td>
<td>Should autonomy and privacy be swapped for technological progress and economic efficiency?</td>
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<tr>
<td></td>
<td>(e.g., pros and cons of big data and biometrics era)</td>
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<tr>
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<td>What are the ethical issues within organizations in the context of possible and probable</td>
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<tr>
<td></td>
<td>futures? (e.g., degree of labor automation in pursuit of increasing efficiency)</td>
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<td>What are the ethical methodologies for assessing consumer and organizational preferences for</td>
</tr>
<tr>
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<td>the future?</td>
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<tr>
<td>Psychological</td>
<td>Even if suboptimal, is there psychological value in personal rather than augment decision-</td>
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<tr>
<td></td>
<td>making?</td>
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<td>Is there value in performing mundane daily tasks (e.g., driving, shaving)?</td>
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<td>How can people avoid the hedonic treadmill?</td>
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<td>Should people have intimate relationships with sentient non-biological entities?</td>
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<td>Should video makers ‘reverse engineer’ their videos based on expert systems that recognize</td>
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<td>current viewers’ biases and preferences?</td>
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<td>Economic (i.e., resource allocation)</td>
<td>Given the effects on current and future generations, what implicit discount rate should be</td>
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<td>used in net present value calculations?</td>
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<tr>
<td></td>
<td>How should positive and negative externalities be weighted in net present value calculations?</td>
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</tbody>
</table>

Table I.
evermore challenging, so future studies are likely to become increasingly important to organizations (Michman, 1984; Oliver-Schwarz, 2008). Hence, we fret marketing scholars are failing to develop and improve the futurology-related research tools marketing practitioners require (Oliver-Schwarz, 2008).

Third, the percentages of marketing-related articles engendering a positive or negative outlook are roughly equal (i.e. 14.5 per cent versus 10.1 per cent, respectively), which implies ‘marketing as a positive influence’ is a strongly rivaled view. Despite a throng of marketing advocates, many social scientists and commentators have argued marketing induces society-harming outcomes, such as:

- squandering limited resources while providing no social value and accounting improperly for externalities (e.g. sustainability issues often are ignored and planned obsolescence is encouraged) (Slaughter, 2018);
- distorting/corrupting marketplaces with problematic practitioner tools like exaggerated/deceitful promotional messages and high-pressure sales tactics using pervasive and manipulative ploys (Krawczyk and Slaughter, 2010; Nash, 2010);

<table>
<thead>
<tr>
<th>Year</th>
<th>Conceptual</th>
<th>Methodological</th>
<th>Empirical</th>
<th>Meta-analysis</th>
<th>Pro-marketing</th>
<th>Anti-marketing</th>
<th>Practical business implications</th>
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<td>4</td>
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<td>0</td>
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<td>2011</td>
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<td>0</td>
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<td>0</td>
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<td>2012</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>2</td>
<td>5</td>
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<td>2013</td>
<td>3</td>
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<td>2014</td>
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<td>2017</td>
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<td>(%)</td>
<td>(56.5)</td>
<td>(17.4)</td>
<td>(23.2)</td>
<td>(2.9)</td>
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<td>(10.1)</td>
<td>(40.6)</td>
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</tbody>
</table>
spurring needless consumption, unhealthful purchases (e.g. cigarettes, junk food), and materialism rather than voluntary simplicity and mindful consumption (Hampson, 2010; Pierce, 2000; Pohl and Kornbluth, 1953, 1984); and focusing on current performance goals rather than the intermediate and/or distant future (Hampson, 2010; Nordlund, 2012; Van der Steen and Van der Duin, 2012).

If only some of these criticisms are justified, then changes within the marketing discipline are warranted (Stoeckl and Luedicke, 2015). In good news for marketers, our field of scholarship is uniquely positioned to resolve these and other issues that pervade a modern consumption-focused society (Hackley, 2009).

**Marketing: supreme social science for realizing a desirable future**

In an invited essay, Malcolm McDonald posited, “the discipline of marketing is destined to become increasingly less influential unless there is some kind of revolution, or at the very least a new beginning. Perhaps some kind of paradigm shift will emerge” (McDonald, 2009, p. 433). He then identified marketing’s lack of a consensus definition as a major culprit in this likely decline. Although unsaid, the lack of a consensus general theory is symptomatic of this definitional shortcoming.

The current major candidates for a general theory of marketing – Resource-Advantage or (R-A) theory and Service Dominated Logic (SDL) – disappoint for various reasons. “A general theory of competition that describes the process of competition” (Hunt and Arnett, 2003, p. 4), R-A, which draws from many economic (e.g. evolutionary, Austrian, institutional, transaction cost) but no psychological domains, is merely ‘towards’ a general theory of marketing (Hunt, 2000, 2002). SDL, which circumscribes the ideas of value co-creation and

### Table III.

<table>
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<th>Field of expertise</th>
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If only some of these criticisms are justified, then changes within the marketing discipline are warranted (Stoeckl and Luedicke, 2015). In good news for marketers, our field of scholarship is uniquely positioned to resolve these and other issues that pervade a modern consumption-focused society (Hackley, 2009).
reciprocity in service-for-service exchanges (Vargo and Lusch, 2004), has been criticized for oversimplification, myopic perspective, ethical dim-sightedness, and disconnectedness from consumer culture (Arnould, 2014; Brodie, 2017; Hackley, 2009; Hietanen et al., 2018).

Although the lack of a general theory (Hunt, 1983) has long compromised marketing’s scientific status, marketing’s definitional and general theory deficiencies have created a substantial futurology-related ‘silver lining’. Specifically, marketing is the best-positioned discipline for orchestrating efforts to realize a desirable future because its internal theoretical shortcomings often compelled its scholars to borrow theories and constructs from other disciplines, which amplified its interdisciplinary status. As a result, marketing is not beholden to a single scholarly weltanschauung. Hence, marketing is the apical social science for identifying, pondering and effectuating alternative futures because it can serve as a nexus for futurology-related scholarship.

Moreover, marketers are uniquely positioned to shape the future because they are skilled in molding consumer consciousness and routinely track internal and external signals critical to foreseeing opportunities and threats (Bilgin, 2010; Mendonça et al., 2012). Central to successful business-to-consumer marketing is ascertaining consumers’ preferences accurately despite high uncertainty. Fortunately, the knowledge and tools needed to reveal those preferences also pertain to ascertaining humanity’s preferences for a future world.

**Organizational scheme for marketing futurology**

We considered but rejected several organizational schemes for marketing futurology. For example,

- By technology domain. Because many high-tech products tap into multiple fields (e.g., genetics, robotics, nanotechnology), such frameworks would fail Hunt’s mutual exclusivity requirement for classification schemes (Hyman, 2004). Furthermore, new product decisions should not rely excessively on technical feasibility or profitability, as such criteria do not mitigate producers’ temptation to develop addictive or substantial negative-externality-creating products (Alter, 2017; Foer, 2017).

- By likely societal and environmental pros and cons of future technologies and their sustainability-related production constraints. Again, any tech-centric scheme would fail Hunt’s mutual exclusivity requirement. Furthermore, forecasts needed for such analyses tend towards gross inaccuracy due to ‘black swan’ events (i.e., unexpected and highly disruptive events amenable to retrodiction and post hoc explanation) and confounding societal forces that reduce prediction accuracy (Taleb, 2007).

- By type and magnitude of positive versus negative externalities. As many externalities are unintended and unanticipated, a scheme for organizing flawed expert foresight is useful only as a compendium of wildly inaccurate predictions (Meadows et al., 1972).

- By degree of advisable government and/or industry oversight (with laissez-faire free market as zero degree). Because political processes advance far slower than marketing processes – think lags for new ethical drug introductions – many firms working on state-of-the-art technology and concerned about ‘being scooped’ might choose to ask for forgiveness rather than permission. In addition, government oversight of emerging technologies will differ among jurisdictions. In essence, organizing by degree of external oversight relates more to limiting the damage caused by errant technology than to preventing negative externalities.
Instead, we posit structuring marketing futurology around an aspirational definition of marketing unencumbered by macromarketing-level criticisms (e.g. encourages waste), a set of higher- and lower-order questions, and a basic prescription for avoiding dystopia-inducing negative externalities. Our exposition proceeds accordingly.

**Normative aspirational definition of marketing**
Our proposed aspirational and futurology-concordant definition of marketing is as follows: *Marketing is the interdisciplinary normative social science addressing multi-party, volitional and value-creating exchanges that promote personkind’s sustained flourishing.* This definition is consistent with the late Robert Lusch’s argument that marketing has evolved during the last century from a “to market” philosophy to a “marketing with” philosophy, which “views the customer as endogenous and as a partner in the cocreation of value” (Lusch, 2007, p. 265). As with Lusch’s definition of marketing, our definition includes normative elements, such as sustain[ed] value and exchange. Now consider our definition’s component words in turn.

*Interdisciplinary*
Marketing already is a nexus for the social sciences and business disciplines. To provide insights into (a) consumers’ wants and needs, and (b) producers’ technical and business-related capabilities (e.g. value engineering, distribution), marketers draw from the theoretical and practical archives of marketing, other business disciplines (e.g. management and finance), and other social sciences (e.g. psychology, behavioral economics, sociology, and anthropology).

*Normative social science*
One of us (Mike) has argued ‘positive marketing science’ is an oxymoron. Instead, marketing has been a normative science for the last 75 years because its scholars have grounded their systematic inquiries and theories in normative constructs such as needs, wants, and ownership (Hyman, 2004, 2011; Skipper and Hyman, 1995). “Marketing language is so saturated with value-laden terms and marketing theories are so thoroughly imbued with normative claims that no translation into positive language is conceivable” (Hyman et al., 1991, p. 420). As such, normative human values (related to flourishing) should be central to marketing theory and practice despite misguided attempts to construct a value-free positive science of marketing. Furthermore, a normative definition is consistent with many previous attempts to define marketing. “Normative definitions might contain positive elements but are also concerned with what marketing ought to be” (Ringold and Weitz, 2007, p. 253).

*Addressing*
“Addressing” means thinking about a problem or situation and deciding how to handle it. More than just “considering” or “exploring”, “addressing” embraces marketing scholarship and practice. Like positive psychology and positive marketing (Positive Psychology Center, 2018; Center for Positive Marketing, 2018), our definition is aspirational, as it speaks to marketing’s normative goals rather than specifies a core set of functions or activities (Sheth et al., 1988).

*Multiparty*
Although authors of many self-help books implore readers ‘to sell yourself to yourself’ (Maltz, 2015), our definition assumes marketing requires at least two parties. Multiple parties to value-creating exchanges generally have discrepant as well as congruent preferences, so marketers have extensive experience reconciling at least partly contrary
needs and wants. Because reasonable and informed people will differ in their preferences for a future world, such expertise should prove invaluable for resolving those differences.

**Volitional**
Volitional means intentional, honest, and non-coercive for all value-creating parties. For marketers, it means maintaining “a moral environment wherein people freely agree to mutually beneficial exchanges that promote worthy purposes [. . . ] (and assuming] (1) all affected parties (or their representatives) must be considered and included; (2) participation by all affected parties (or their representatives) must be voluntary, and (3) the distribution of benefits among affected parties must be non-prejudicial” (Hyman and Curran, 2000, p. 326).

For consumers, it means exercising their personal will and making informed decisions. From a philosophical perspective, we assume consumers are self-aware and informed sufficiently to recognize and attempt to adjust their cognitions, emotions, and behaviors in accord with environmental changes (i.e. they have free will; Harris, 2010).

**Value-creating exchanges**
Value co-creation is the joint effort between proactive customers and product providers to co-construct personalized experiences (Bharti et al., 2015; Grönroos, 2012), which implies customers prefer sufficient interaction with providers to ensure an exchange process that best satisfies the former’s needs. In essence, the joint customer-provider effort to co-create value boosts customer self-involvement and self-control, which ultimately enhances consumer satisfaction (Vargo and Lusch, 2004).

Although one of us (Mike) has argued “exchange” is not the core construct of the received “positive science of marketing” (Hyman and Tansey, 1992), it could be the core construct of a normative science of marketing, as “exchange” relates closely to Alderson’s notion of assortment optimization (Alderson, 1965). “Exchange” is preferable to “transaction” because the former need not involve money transfer. Furthermore, “exchange” is concordant with the broadened definition of marketing (Kotler, 1972; Kotler and Levy, 1969) because it assumes neither product acquisition nor consumption.

**Promotes**
Collective intentionality is requisite to a desirable future. Although people’s attitudes and preferences differ, we assume humanity can identify and perform tasks that advance it towards such a future. Societies can conduce an enlightened collective agenda by promoting supportive ideas and behaviors (e.g. “citizens are duty-bound to vote in political elections”). Marketing is well-equipped to undertake a proactive role in this process. However, to satisfy the “volitional” requirement, this promotion must be transparent and educational rather than manipulative (e.g. engineering decision environments to “nudge” consumers’ behaviors in a seemingly positive direction) (Thaler and Sunstein, 2008).

**Personkind**
Although our world’s well-being requires a healthy ecosystem that includes numerous lifeforms, marketing is limited to persons. For example, one of us (Alena) likes to pretend her dogs appreciate the colorful toys she purchases for them, yet these products do much more for her peace of mind during long days on campus than they do for her dogs, which have limited color vision (Coren, 2018).

Due to likely transhumanism- and other tech-related advances, a forward-looking aspirational definition should accommodate more than extant humans (Buchanan, 2011;
Cooney, 2004; Nayar, 2014; Paul and Cox, 1996; Pepperell, 2003). Ultimately, persons would include all entities capable of multi-party value-creating exchanges, such as self-aware androids, cyborgs, and genetically modified humans (Bendle, 2002; Braidotti, 2013; Tegmark, 2017). Hence, our use of ‘personkind’ rather than ‘humanity’.

Sustained
One goal of macromarketing is “to optimize outcomes for the largest number of stakeholders in a marketing system not only now but also for future generations” (Schulz, 2007, p. 294). Sustainability is vital to answering marketing’s eschatological questions hopefully, such as “How many people can market exchange systems enable the Earth to support as population and consumption growth rates increase?” (Fisk, 1997, p. 720).

Flourishing
‘Positive marketing’ has been defined as “any marketing activity that creates value for the firm, its customers, and society at large” (Gopaldas, 2015, p. 2446), or marketing “in which parties—individual consumers, marketers and society as a whole—exchange value such that individually and collectively they are better off than they were prior to exchange” (Center for Positive Marketing, 2018). These and other definitions limit positive marketing to win-win situations. The dearth of positive marketing literature suggests none of these definitions has become the de facto standard embraced by marketing scholars and practitioners. Perhaps the lack of interest is attributable to many firms’ quarterly performance focus or the pressure on many marketing scholars to deliver insights and tools useful to marketing practitioners.

In contrast, positive psychology has generated far more interest. First advocated by Martin Seligman during his term as American Psychological Association President in the early 2000s, positive psychology is “the scientific study of the strengths that enable individuals and communities to thrive. The field is founded on the belief that people want to lead meaningful and fulfilling lives, to cultivate what is best within themselves, and to enhance their experiences of love, work, and play” (Positive Psychology Center, 2018). Positive psychology studies human happiness as “the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions” (Gable and Haidt, 2005, p. 104), and stresses a somewhat Aristotelian approach that focuses on moral virtues and character strengths for sustaining a flourishing life (Kristjánsson, 2013).

Positive psychology focuses on positive subjective experiences (i.e. directly pleasant emotions and more obliquely pleasant flow), positive traits (e.g. character strengths, personal resiliency), and positive institutions (e.g. democracy, supportive families, free press) (Boniwell, 2012; Seligman, 2002a; Seligman and Csikszentmihalyi, 2000). “At the individual level it is about positive personal traits—the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future-mindedness, high talent, and wisdom. At the group level it is about the civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic” (Seligman, 2002b, p. 3). In essence, positive psychology addresses the elements and predictors of ‘a good life’.

Although many consumers believe “more is better”, extensive evidence suggests otherwise; for example, income beyond a certain amount does not increase happiness (Gilbert, 2006; Seligman, 2004; Sison, 2015). Rather than the extrinsic values associated with materialism and the hedonic treadmill, such as financial success and popularity, intrinsic values like affiliation and self-acceptance are more compatible with flourishing (Diener et al., 2006; Jackson, 2017). By speaking to personal values,
materialism is antithetical to the collective values (e.g. family) that promote happiness (Burroughs and Rindfleisch, 2002).

**Higher- and lower-order questions**

To identify and then effectuate a future that promotes humanity’s sustained flourishing, marketers must answer three higher-order questions, which in turn relate to groups of value-laden questions (Table I). The higher-order questions and a few examples of related value-laden questions are as follows. Note these questions do not address agency. For example, neither resource nor instrumentality questions are posed (e.g. affirmative action). Regardless, these are basic questions for deciding about a desirable future.

*What is a person?*

This question has inspired science fiction novels (e.g. *Do Androids Dream of Electric Sheep* and *We Can Build You* by Philip K. Dick), movies (e.g. *Blade Runner, Her, AI, Ghost in the Shell*), and television series (e.g. *Star Trek – The Next Generation*, with its android officer Lt. Data; *Star Trek – Voyager*, with its holographic doctor; *Doctor Who* and its Cybermen) for almost a century. To achieve a desirable future, humanity must decide the necessary and sufficient conditions for personhood, which requires answering many questions (Bendle, 2002). For example, does a genetically and/or mechanically enhanced human qualify as a person? In essence, at what technological stage would an enhanced human or cyborg become a non-human? Are minds transferred to a non-biological substrate still persons? Does AI capable of passing a Turing test qualify as a person? What forms (i.e. human-like and non-human-like) should complex non-human semi- or fully autonomous entities take? Answers to such questions will help realize a desirable future by deciding ‘who has a vote’ (Braidotti, 2013; Buchanan, 2011; Tegmark, 2017; Malapi-Nelson, 2017).

*What is the good life?*

Another set of questions addresses the type of existence universally (or at least overwhelmingly) preferred by personkind. Determining the importance of many (often contrary) quality-of-life objectives (e.g. individual happiness, progress as species, etcetera) will pose a substantial challenge to orchestrating a desirable future. For example, Universal Basic Income (UBI) advocates argue that employment should not be requisite to satisfying essential life needs in an anticipated largely jobless (due to automation) future society (Covert, 2018). These advocates contend such an allocation of financial resources offers true freedom by encouraging people to follow their passions and to lead a good life devoid of personal financial concerns (e.g. becoming an entrepreneur without facing risks typically associated with this endeavor) (Widerquist, 2013). Yet, voters in many countries (e.g. Germany, Switzerland) rejected UBI partly because they feared it would destroy most humans’ work motivation. Without work-related duties and responsibilities, many people may experience an existential crisis.

*Who is in charge and how do they decide?*

To what degree should Big Data, AI, and machine learning dictate persons’ lives? In a way, this question, which entails far more than privacy concerns, addresses an issue marketers have debated since Packard’s (1957) hidden persuaders and Dichter’s (1964) use of depth interviews and Freudian/psychoanalytic analyses. Answering this question can help organize the debate about the light-side versus dark-side of the marketing concept: Do marketers’ efforts to understand consumer psyches help consumers maximize their
Lower-order value-laden questions organized around four categories now help set the research agenda for marketing futurology.

**Philosophical/ethical**
Marketing scholars may be best suited to answer ethical questions that arise from new technologies because they tend to consider the “positives” and economic/commercial benefits along with the “negatives”, such as threats to existing value systems and consumer culture. Thus, a marketing perspective should be better balanced than a tech-centric perspective.

Questions in this category focus on consumers’ and organizational decision makers’ philosophical and ethical responses to possible and probable futures. For example, in an era of widespread AI use, what will most consumers agree are ethical boundaries for personal data collection? In contrast, what degree of AI-enabled labor automation will most marketing practitioners believe is ethical? This area of inquiry also entails ethical methodologies for consumer and organizational ethics investigations.

**Psychological**
Marketing scholars have adapted many psychological theories and methods applicable to exploring consumers’ and other stakeholders’ mental responses to alternative futures. Ubiquitous high-tech will raise many personal and collective self-identity issues. Consumers’ emotions will affect their adoption and use of highly interactive technologies, such as fully immersive virtual reality and AI assistants. Policy makers must anticipate the evolution of attitudes related to new technologies requiring universal, or at least overwhelming, acceptance (e.g. autonomous vehicles).

Is there psychological value in making personal decisions even if suboptimal? Assuming AI can make superior decisions, what types of decisions will persons defer to AI? These questions – which could relate to trust, fun and other psychological notions – represent the obverse of the libertarian paternalism/nudging debate (Aguirre and Hyman, 2015). Nudging proponents (Thaler and Sunstein, 2008) assume consumers will make suboptimal product-related choices (relative to themselves and society) unless social scientists engineer marketing environments to encourage “good” decisions and discourage “bad” decisions. Perhaps persons will prefer to make their own mistakes, provided those mistakes do not harm other persons.

**Economic**
These research questions address economic actors’ behaviors when interacting with emerging high-tech. Based on marketing and economics insights, optimal consumer behavior and organizational strategies for various viable futures may be identified. For example, how should managers weigh the anticipated positive and negative externalities of introducing a new-to-the-world product? Could possible futures and their probabilities be incorporated into decisions that heavily rely on anticipated financial outcomes? These types of questions and suitable methodologies for answering them lie within this domain.

**Political**
Data about the political and legal consequences of consumers’ and organizational behaviors under alternative futures can help to select among them. Most possible futures will incite
whole-system change that will affect personkind (Eckersley, 2001). Should modern democratic governments be re-imagined in accord with challenges posed by a desirable future? Should a small meritocracy with AI expertise operate a highly automated economy (Cowen, 2013)? Although political scientists are best suited to scrutinize a society’s political organization, marketers can provide insights into consumer preferences as well as the effects of political changes on organizational strategies and the market.

**Anti-dystopia prescription**

Marketing’s futurology-related role includes preventing dystopian outcomes, which may be created by design or accident. As expert forecasts are prone to substantial error due to well-known obstacles such as psychological biases (e.g. confirmation bias, status quo bias) and ‘black swan’ events (Bostrom, 2009; Gardner, 2011; Taleb, 2007; Yudkowsky, 2008), totally avoiding the unintended negative consequences of ever-advancing technologies – despite the harm their failures may cause – is impossible. Given this constraint, is there a prescription marketers can adopt to avoid dystopias by design? We posit an anti-dystopian future depends on society avoiding an extreme focus on either intrinsic or extrinsic values.

Independence and interdependence vary among cultures. Many Western cultures tend to praise independence and focus on personal emotions; in contrast, many Eastern cultures embrace the communal aspects of their people’s lives and derive happiness from socially-engaged affect (Markus and Kitayama, 1991). When describing happiness, Westerners mention social experiences far less often than their Asian counterparts, yet members of all cultures tend to be happier when they embrace other members as sources of happiness and life satisfaction (Shin et al., 2018). Under Maslow’s (1943) classic hierarchy of needs, only lower-level needs exclusively entail personal well-being (e.g. physical comfort). In contrast, higher-level needs entail human interactions and rely on other people for social belonging, social recognition, and the like. On this view, self-actualization through a “meaningful life” (Seligman, 2004) cannot be achieved without other people or social institutions.

A societal focus on extrinsic values – sacrificing personal happiness for the greater good – has been the subject of many literary dystopias, from Orwell’s 1984 to Bradbury’s Fahrenheit 451. It also was the focus of the U.S.S.R.’s ‘social experiment’, in which Marxist and Leninist ideology guided Soviet society towards the common goal of ‘svetloye budushcheye’ (roughly translated as ‘better future’). Soviet propaganda included slogans exhorting societal rather than personal goals; for example, “This train is going from station Socialism to station Communism. Experienced train engineer is comrade Stalin,” “First think about the Motherland, and only then about yourself”; and “We are building our future together!” Much like the dystopian novels that explored similar notions, there was no happy ending for the U.S.S.R.

At the other end of the values spectrum, a focus on intrinsic values means prioritizing personal preferences and well-being above all else. For example, catering solely to personal convenience can deter consumers from minimizing their carbon footprint, recycling, or other environmentally friendly behaviors. Embracing such unsustainable behaviors can produce apocalyptic outcomes, including the end of intelligent life on Earth (McGuire, 2004).

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**Figure 1.**

Outcome continuum
As advocated by many sages since ancient Greek times, ‘moderation in all things is important’. Although humans are social animals (Aristotle, 2000), total reliance on other people as a source of happiness can produce a life of sorrow and disappointment. Spanish poet Judah Halevi wrote, “‘Tis a fearful thing to love what death can touch.” Neither an excessive focus on others nor an excessive self-focus promotes personal happiness. To prevent (or at least mitigate) a dystopian future, marketers must navigate a golden mean between intrinsic and extrinsic human values. Pursuit of this careful balance can lead to a desirable future. In practical terms, this prescription implies studies of possible, probable, and desirable futures are needed at many levels (e.g. consumer, organizational, regional, macro-level).

**Special issue overview**

The six articles included in this special issue address several of the previously broached research questions. In “Markets, Consumers and Society in the Age of Heteromation,” Dholakia and Firat tackle the higher order question “what is a person?” They discuss ethical, social and economic implications of human coexistence with advanced machines. More specifically, they compile a set of possible automation-related futures, analyze consequences for consumers and organizations, and speculate about the role of marketing in the age of AI-powered devices. Although their speculations about the specifics of marketing’s future are debatable, we concur that the unique challenges posed by alternative futures requires marketing be redefined.

In “Future Thinking: The Role of Marketing in Healthcare,” Anderson, Rayburn and Sierra present an example of marketers’ possible new agenda. The article illustrates how marketers’ viewpoint can help shape a desirable future. Specifically, they assess the future of US healthcare organizations from the collective perspective of various stakeholders (i.e. healthcare professionals, scholars, and patients) by investigating psychological and economic outlooks in the context of alternative paths for the entire industry.

“Making the World a Better Place by Making Better Products” shows how marketing devices can promote societally beneficial agendas. Paparoidamis and Tran discuss eco-product development with increased adoption rate in mind. Their analysis focuses on the psychological aspects of consumer interaction with emerging green technologies. Rather than merely suggest a desirable future, they provide a proactive outlook that includes marketing tools for shaping that future.

“Prioritizing Marketing Research in Virtual Reality: Development of an Immersion/Fantasy Typology” offers an in-depth investigation of emerging technologies. Cowan and Ketron propose a framework for research questions related to virtual reality (VR). They outline four basic types of VR applications as well as research questions and methodological considerations for each of these four types. Given VR’s potential to explore possible futures and people’s psychological and behavioral responses to those futures, their article is timely and provides a useful structure for VR-related scholarly research in marketing.

“How Real are Virtual Experiences?” also considers the blurring borders between physical and virtual. Trabelsi-Zoghlami and Touzani investigate the effect of virtual experiences on single consumers and consumer groups. Their research is crucial from two perspectives. First, as VR is incorporated into more marketing activities, the systematic effect of virtual interactions on society needs to be understood. Second, the methodological approach can serve as a template for researchers planning to use virtual simulations to study possible futures.

“LARPnography: An Embodied Embedded Cognition Method to Probe the Future” also focuses on futurology research methods. Orazi and Cruz propose a data collection method for researchers studying possible and probable futures. Their approach—which includes...
observation and exit interviews–overcomes limitations of cognitive abstraction and allows simulation participants to experience life in the ‘brave new world’. Perhaps the main advantage of their methodology is its ability to collect behavioral (as opposed to attitudinal) data from consumers and producers useful for assessing alternative futures.

In closing

Given likely structural, technological, economic, and social shifts, we urge marketers to recognize, support, and advocate for marketing’s role in creating a desirable future. Reactive strategies based on expert forecasts are problematic, as such forecasts – whether positive or negative – are prone to substantial error. For example, most experts repeatedly mis-predicted world oil prices for the last century despite such forecasts merely requiring accurate supply and demand estimates (i.e. few additional confounding and interacting variables) (Gardner, 2011).

Marketing futurology can be contemplated from either or both of the following perspectives:

- What is technically possible?
- What is in personkind’s best interest?

Most non-fiction-based futurology tends to address the former. Typically, the first step is to formulate a technology typology/first-letter mnemonic such as GRIN (i.e. genetics, robotics, information technology, and nanotechnology) or a previously unrecognized driving force (e.g. near-zero marginal cost) (Garreau, 2005; Rifkin, 2014). Instead, we contend a better first step is to ground marketing futurology in an aspirational definition that focuses on personkind’s best interests. In turn, we can relate that definition to a set of researchable questions.

The American Marketing Association (AMA) currently defines ‘marketing’ as “the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large” (American Marketing Association, 2018). Unlike the current AMA definition, our definition implies morality and ethics (Mick, 2007) by including the words normative, volitional, sustained, and flourishing. Our definition, like the definitions of positive psychology and positive marketing, is aspirational because personkind’s sustained flourishing is an ideal. However, our definition makes one huge assumption: posthumanist technology will not change basic human nature.

In closing, we leave you with this quote from Kuo (2012):

In the end, prosperity resides in our ability to flourish as human beings–within the ecological limits of our finite planet. Anyone concerned with planning for a better future must take account of the totality of human experience and be aware that sustainability can only be maintained through balancing human aspirations with the physical limitations of our environment (p. 18).

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**Further reading**


Markets, consumers and society in the age of heteromation

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Abstract

Purpose – The purpose of this paper is not to present a crystal ball, but to outline the conceptual strands – some already evident, others only dimly perceivable in emergent forms – that might drive the coming transformations and to weave the strands into a preliminary framework. The stance (and the political perspective) of the paper is informed by critical marketing studies (Tadajewski, 2010), the subfield of marketing that is vibrant in Europe but not yet well developed in other regions of the world.

Design/methodology/approach – This is a theoretical contribution, relying on discursive analysis.

Findings – Before an era of full and all-pervasive automation arrives, there will be a decades-long transitional stage of heteromation. In the heteromation, machines and humans will have to coexist adaptively. The spheres of production and consumption will be affected radically by the patterns of people-machine interactions, including coexistence, cooperation, adaptation, adjustments and conflicts. As the connective tissue between the spheres of production and consumption, marketing would also undergo major transformations in the age of heteromation.

Research limitations/implications – The paper lays out the grounding concepts useful for how heteromation and the subsequent era of full automation could impact organizations and markets. It provides the stepping-stone for further work on how marketing could, would or should transform in relation to the challenges of heteromation and automation.

Practical implications – The paper offers some guideposts for public policymakers, public intellectuals and thought leaders and social activists. It also points to action options for visionary corporate leaders and for researchers wishing to explore the heteromation–automation futures from critical-social perspectives.

Originality/value – Using the concept of heteromation, this paper presents hitherto unexplored and critical implications of potentially epochal transformations for marketing.

Keywords Marketing, Future, Automation, Artificial intelligence, Transformation, Heteromation

Paper type Conceptual paper

Introduction

Before an era of full and all-pervasive automation arrives, we can expect a decades-long transitional stage of heteromation. In the heteromation stage, machines and humans will have to coexist adaptively. The spheres of production and consumption would be affected radically by the patterns of people-machine interactions; including coexistence, cooperation, adaptation, adjustments and conflicts. Marketing – which constitutes the connective tissue between the spheres of production and consumption – would also undergo major transformations in the age of heteromation. The intent of this paper is not to present a crystal ball, but to outline the conceptual strands – some already evident, others only dimly perceivable in emergent forms – that might drive the coming transformations; and to weave the strands into a preliminary framework. The stance (and the political perspective) of the
paper is informed by critical marketing studies (Tadajewski, 2010), the subfield of marketing that is vibrant in Europe but not yet well developed in other regions of the world.

This paper is about the future of marketing. The future is never possible to know with any certainty. Although we can analyze the present and its history that created it, observe the dominant trends that seem to anticipate the future, history has taught us that what unfolds deviates from what is forecast: variations, diversions and even disruptive transformations are possibilities. Consequently, all discussions of the future entail a degree of speculation about potentials and alternatives. This paper is inevitably guilty of this.

While massive technological changes – in the form of pervasive automation seeping into all aspects of life – are unfolding and will accelerate, it is safe to project that machines and humans will continue to coexist into the foreseeable future, in work as well as consumption settings. Prior to an eventual future of near-total automation of production processes and daily life activities, a challenge for the decades to come is to understand a transitional future of heteromation (Ekbia and Nardi, 2017). In an expanded sense than the one used by the term’s creators, heteromation is the period when machines and humans coexist and interact in wide and often deep ways while – at the same time – the human is increasingly being supplanted by artificial intelligence (AI) possessing non-human entities, whether they be cyborgs or machines. Ekbia and Nardi (2017) use heteromation in specific senses of humans providing free or minimally compensated labor to essentially automated systems – such as self-serve kiosks or detailed web-based reviewing or “gold-mining” in online gaming. In consumer culture studies and marketing, a well-known critique of such uncompensated labor is available from Zwick et al. (2008). We want to use heteromation in a more comprehensive manner than Ekbia and Nardi (2017), to refer to the entire broad range of joint machine-human laboring patterns, on production and consumption sides – in the sense of heteromation being the transitional phase toward pervasive automation.

Ekbia and Nardi define heteromation as “the extraction of economic value from low-cost or free labor in computer-mediated networks” (2017: Kindle edition). In their definition, computer-mediated technologies are utilized to extract value from human labor in ways that exclude compensation to humans who labored, or granting them minimal compensation – in essence, automation being used in ways that exploit (some) laboring humans. We want to recognize the logical extension of this trend where human labor is made increasingly obsolete. Non-human or posthuman entities supplant human labor, thus not only making human labor unpaid or minimally paid, but such labor is also increasingly completely disregarded or degraded. As a consequence, people who have nothing but their labor as a resource to maintain their lives get further and further marginalized. Yet, since the origins of AI-imbued non-human or posthuman entities contain what Marx (1939/1973) discussed as “general social knowledge” or “general intellect”, this extension still maintains the extraction of value from human labor as inscribed in the concept of heteromation. In our extended use of the term heteromation, the human labor provider is pushed farther and farther away from the productive act – but remains an ultimate (but receding, oft-undetectable) source of value extraction.

Our purpose in this paper is to explore the nature of markets and consumers, and hence the future of marketing, in the age of heteromation (and eventually the follow-on era of all-encompassing automation). As technologies of automation – AI, machine learning, deep learning, robotics and their successors – usually enter the sphere of production before they enter the sphere of consumption, it is necessary to explore both these spheres in an interactive way. Practices and theories of marketing, of course, span and connect both these spheres.
The scenarios of the future of automation appear and change faster than the actual states of automation. In many cases, thus, a scenario account may lose its relevance before appearing in public, published form. Therefore, the starting point of this paper is to propose, rather than any specific scenario, a frame for the scenarios of automated futures. Such a frame helps in identifying the tugs, pulls and diversionary forces that could shape the tech futures. Our discussion then turns to the possible automated futures of production and consumption – and the connective marketing processes. We approach such discussion from a critical political economy perspective as well as from a social and cultural theory perspective. Towards the end, we provide an integrative discussion and concluding comments.

Frame for the scenarios of automation
As the technologies of automation advance, so do the scenarios of automated futures. Depending on the domain interest – e.g. technological and/or policy domains – and the sociopolitical leaning of the scenario presenter, these scenarios are taking forms ranging from utopian to dystopian, and every shade in-between. As mentioned, the specifics of any particular scenario are likely to become irrelevant in short order, as technologies advance and morph. Therefore, it is useful to develop a typology of some of the dimensions that many of the scenario presenters are using. Table I presents some main dimensions and examples of scenarios using such dimensions.

In the next two sections, we review – albeit rather concisely – some of the critical political economy perspectives and some of the social-cultural theory perspectives that may help us in getting a conceptual handle on the fast-evolving phase of heteromation and the more distant future of pervasive automation.

Critical political economy perspectives
To explore the futures of heteromation and automation, we turn first to critical political economy perspectives, focusing on the spheres of production and consumption, and then briefly to the discipline that connects the two spheres, namely, marketing.

Sphere of production. In the critical political economy view, a key question – in the sphere of production – is this: What do automated, highly dexterous devices represent? Are they capital investments, or a new type of workforce? In Marxian parlance, are these devices the new means of production or a new mechanized proletariat? From the political left, the majority view seems to be that, finally, new and liberating methods are around the corner – to relieve humans of the abject necessity to toil and labor, to free multitudes from the imperative to strive hard for mere subsistence. With all-pervasive automated devices under the control of the society as a whole, and decent guaranteed incomes for all (a strong advocacy voice for guaranteed universal basic income is that of the young Dutch intellectual Rutger Bregman, Bregman (2017)), the socialist utopia would arrive. The devices, at least as of current conventional “left” thinking, are not the new slave-like proletariat. Of course, as we discuss later, the cultural theorists on the left take a somewhat different and more nuanced view.

From the right-and-center of the political spectrum, the view of the devices is closer to the idea of a new, uncompensated proletariat – under the control of capital. A “mechanized working class” is emerging that does not complain or take sick days. This robo-class, however, also does not pay into social security pensions and old-age health plans – programs that (the dwindling) human workers would (still) need, in the heteromation age – thereby endangering the nicely working models of capitalist welfare states. Indeed, there are
<table>
<thead>
<tr>
<th>Dimensional concept(s) or polarities</th>
<th>Explanatory comment</th>
<th>Example</th>
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<tbody>
<tr>
<td>Trust-distrust</td>
<td>Many deep learning systems are highly effective and accurate in their tasks but cannot explain how they did the tasks. The current philosophical recommendation is not to trust these systems any more than trusting a top human expert</td>
<td>See Knight (2017) article in the <em>MIT Technology Review</em> about the “dark secrets” of AI. For a different view, of “distributed trust” – including among humans <em>and</em> bots – see Botsman (2017)</td>
</tr>
<tr>
<td>Moral-ethical judgments</td>
<td>Humans have developed capabilities for moral and ethical judgments in complex situations (run over a child, or crash the car?). How will robots (self-driving cars) make such judgments?</td>
<td>See Lin <em>et al.</em> (2017) book on robot ethics</td>
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<td>Value creation-extraction-compensation-exploitation</td>
<td>Humans are making extensive contributions of labor, often totally uncompensated, into automated systems; ranging from game design to reviewing to microwork</td>
<td>Ekbia and Nardi (2017) book provides detailed cases; and discusses new political and economic policy issues that arise in such cases. For marketing examples, see also Zwick, Bonsu and Darmody (2008)</td>
</tr>
<tr>
<td>Socialist dystopia</td>
<td>With full robotic automation, people will get guaranteed incomes and have no motivation to improve, excel or innovate – and will therefore lapse into dystopic socialist lathargic lives</td>
<td>Investment blogger Wilson (2016) wonders if robots pose an existential threat to capitalism; and portend a slide into dystopic socialism. See also Istvan (2016)</td>
</tr>
<tr>
<td>Socialist utopia</td>
<td>With full robotic automation, it should be possible – assuming robots are under social control – to minimize toil and work hours (10-hour workweek?); and make work cerebral, creative and supervisory; while providing abundant material comforts and leisure to all</td>
<td>Roberts (2016) offers a hope and makes a plea for such a socialist utopia while Marr (2016) proffers just the idea, inviting comments from readers</td>
</tr>
<tr>
<td>Capitalist dystopia</td>
<td>Robots are employed increasingly to boost productivity. To maintain a rising rate of profit, however, capitalist owners of robots do this by laying off people; and (still) continuing to shift laborious tasks – including skilled tasks – to low wage locations or to immigrant workers. Massive unemployment, inequality, political upheaval and social unrest would continue</td>
<td>Roberts (2016), while favoring the socialist utopia scenario, also points out that under prevalent political economic conditions, the ‘capitalist dystopic’ outcome is the more probable one</td>
</tr>
<tr>
<td>Capitalist utopia</td>
<td>With robotized methods increasingly substituting for hard and/or complex labor, new ‘conscious’ and ‘caring’ models of capitalism (Mackey and Sisodia, 2014) will evolve and take center stage. The emphasis will shift from consuming, competing and relentless capital accumulation to ‘caring’ and ‘sharing’</td>
<td>Slaughter (2017) provides a very brief overview of such models of conscious-caring-sharing capitalism, ending on a mixed note, observing that under the prevalent conditions “of profound populist anger and social and political turmoil in many countries, any of these futures may seem Panglossian. But the seeds of each one are already germinating, and imagining feasible futures can help us shape and attain them.”</td>
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*Table I.* Selected dimensionalities of automated futures
suggestions from some, including Microsoft cofounder Bill Gates, that robot workers should pay income taxes.

Whichever position one takes – automatic devices as the toil-eliminating “means of production” or the docile-reliable “mechanized proletariat” – the question that remains is how the fruits of production by these devices are to be distributed. Who will share in the fruits of such labor, and how much share will they take? As Brynjolfsson and McAfee (2012) investigate, the rate of loss of the desirable types of work – work that pays decent salaries to humans – will likely accelerate due to the technological developments that produce automated, human-labor-substituting devices and cause larger segments of the human population to face problems of sustaining their livelihood. This trend will continue, even accelerate, unless new systems of income provision and distribution emerge (Bregman, 2017) that enable the disenfranchised laborers to have means of decent levels of consumption. As long as consumption remains dependent on one’s ability to exchange in the market, those who lack ownership of the means of production and who cannot find work have to receive incomes through some other system to maintain decent lives. Currently, discussion of such a need for guaranteed universal income does not seem to be in public discourses or in the public consciousness of large economies such as USA. There are, however, incipient small trends towards basic income guarantees in Europe (Hamilton, 2016, for a view of a guaranteed-income experiment in The Netherlands) – and these may perhaps gather momentum as automation intensifies.

As is evident from recent discussions of the Marxian concept of general intellect, continuing advancements in AI and automation are creating increasingly more uncertain consequences regarding the condition of human labor. While, for example, Virno (2007) and Vercellone (2007) see an obsolescence of the Marxian labor theory of value as a result of these changes, Smith (2014) has argued that since “capital treats the knowledge produced by the general intellect as a free gift” (p. 254), the Marxian labor theory still applies. In this sense, the circuit of exploitation-extraction of value is no longer inside the factory walls; it diffuses to the larger society and institutions such as schools, malls (including virtual), hospitals, parks and more. We observe that corporations, as the key agents constructed by capitalism and now increasingly in control of determining trends and social choices, are in possession of and employ general social knowledge or general intellect for their own aggrandizement and interest, thereby continuing to exploit – even while sideling it – historical human labor that created the “general intellect”.

We, as authors located in the critical marketing stream, are not convinced by the “dystopian socialist” visions of a lazy, indolent, uninspired and non-innovative humankind in the era of pervasive automation – essentially a doped humanity wasting away, earning guaranteed incomes, and served by machines. We do bring some attention, however, to political-economic as well as social-cultural challenges in terms of automation of consumption that need some critical attention. This topic is taken up next, when the consumption sphere is the focus.

**Sphere of consumption.** The parallel questions in the sphere of consumption are similar to the questions in the production sphere. Are the automated, dexterous devices the equivalent of assistants (handmaidens, butlers, slaves – a kind of neo-feudal household retinue) that do our bidding, and wait upon our every wish? Or, are they simply the extensions of time-saving and effort-minimizing technological devices that have been around for a couple of centuries (Dholakia, 2012)? Furthermore, in either case, who will be able to afford these automated assistants if people themselves have lost their means of earning decent incomes? The system of distribution based on markets, be they labor markets or commodity markets, can clearly not resolve the major disruptions that will arise...
from the current increasing concentration of the means of production and wealth on the one hand, and the loss of work due to substitution of labor-power by automated devices on the other hand.

The substitution by intelligent, sentient devices begins to take on ontological characteristics different from timesaving and effort-minimizing technological devices. A process of code switching gets underway (Table II). We have to start analyzing technological entities as more than mere devices. Some may be akin to future humans: creatures made by humans, originally, but now able to have stature equal to humans, able to replicate themselves, and even spawn successively superior versions of themselves. We have to consider the possibility of a new race or a new species that can begin to share the Earth with humans – with cognitive and creative capacities equal to or better than humans – and with consumption needs of their own to maintain, upkeep, reproduce, and improve their “bodies”.

As AI increasingly infuses into human existence, the potential of producing a species that is a competitor to human beings also increases, an issue already widely discussed in science-fiction literature (Egan, 2015; Aaron and Cooper, 2017), if not yet so widely in scholarly literature. What is largely missing in these discussions related to AI is the definition of intelligence. In its current forms, AI is envisioned – rather mechanically – as the capability of accomplishing specific goals. Yet, are all goals “intelligent”? If AI-beings begin to find humans to be pests and hurdles in achieving a certain goal (such as preserving ecological balance), for example, is it intelligent to erase humans? Or, conversely, is it intelligent for humans to become neoteric-Luddites, squashing and squelching AI developments as potential menaces?

Assuming automated assistants in the consumption sphere are available widely and fairly, the issue of new post-consumer subjectivities needs attention. Early evidence is already emerging of artificially intelligent machines that could trigger some form of backslide into a quasi-precapitalist and quasi-aristocratic phase or become overly intrusive (Ramaswamy, 2017; Palmer, 2017 for a somewhat different take). To date, sufficient conceptual and policy attention has not been paid to aid in the flourishing of a richly creative next-wave post-consumer subjectivity – what has been variously termed as the “produser” (Bruns, 2016), “maker” (Hatch, 2013), and “construer” (Firat and Dholakia, 2017). If such policy attention is not forthcoming, some population groups might experience a slide back into a quasi-faux-aristocracy of Siri and Alexa and Cortana doing everything for them. In other words, like in the sphere of production in the age of automation, it is necessary to spawn and nurture conditions for human creative engagement and advancement.

<table>
<thead>
<tr>
<th>Dimension or aspect</th>
<th>Assistive</th>
<th>Substitutive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td>Smart car with human driver</td>
<td>Fully autonomous driverless car</td>
</tr>
<tr>
<td>Technological goal</td>
<td>Save effort, assist the human</td>
<td>Replace the human</td>
</tr>
<tr>
<td>Agency</td>
<td>Human</td>
<td>Automaton</td>
</tr>
<tr>
<td>Teleology</td>
<td>Minimize human errors</td>
<td>Transcend the error-prone human</td>
</tr>
<tr>
<td>Ontology</td>
<td>Human; Superior to animal. Created in the image of, but not quite, divine</td>
<td>Posthuman: Finally, approximating divine?</td>
</tr>
<tr>
<td>Cosmology</td>
<td>Human-scaled: Finite, limited is human; and infinite, unlimited is divine (hence unachievable by mortals)</td>
<td>Posthuman-scaled: AI would become as infinite, unlimited as any god-concept, hence possible god-substitute (Harris, 2017)</td>
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</table>

Table II: Process of code switching: from assistive to substitutive, automated systems
Implications of political-economic perspectives for marketing. The connective cords between the spheres of production and consumption are provided by the practices (and theories) of marketing. What does the unfolding era of hyper-automation imply for the future of marketing? If the system of distribution of the fruits of production does not change from its current dependence on the market, hyper-automation signals problems of over-production and under-consumption.

Baran and Sweezy (1966) explained how a similar problem was developing following the 1930s economic depression – a downturn so severe that it led to the collapse of discretionary incomes and demand. This abjectly hopeless economic state could be transcended only by the advent of the Second World War. Such a ghastly solution to collapsing demand – a devastating global war – is not something anyone wants.

Is modern marketing – the creator and operator of institutions that connect production and consumption – likely to, then, have to take on a new charge, a new social role of redistributing the outputs from production? Are there qualities in the current nature of marketing that will enable such a transformation and the taking up of a new social charge? In principle, such transformation of the productive and consumptive spheres, aided by technology, including the transformation of marketing, are clearly possible (see Table III, for hypothetical Nano-technology examples). In practice, however, what we get in the science fiction visions of the future are dystopic portrayals of automated but apocalyptic futures of rogue robots (the movie “I, Robot” being a good example) or of mutual exploitation of robots and humans (the movie “Ex Machina” being a good example).

Why have such dystopic visions when humanity could have all it needs and wants, with automation not creating dystopia – but, indeed, nudging us toward utopia? The reason seems to be a lack of faith in human beings’ capabilities of sharing, or their voracious appetite for hoarding as much as possible for one’s ownership. Technologies may provide the potentials for paradise, but they cannot account for human behavior using technologies. Could marketing play a role in this domain by guiding human behavior toward saner and engendering more civil empathy for – and considerations of – each other, for greater

<table>
<thead>
<tr>
<th>Dimension or aspect</th>
<th>Food</th>
<th>Mobility</th>
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<tbody>
<tr>
<td>Need</td>
<td>Hunger</td>
<td>Mobility</td>
</tr>
<tr>
<td>Want</td>
<td>Food</td>
<td>Vehicle</td>
</tr>
<tr>
<td>Demand</td>
<td>Bread</td>
<td>Personalized helicopter</td>
</tr>
<tr>
<td>Product</td>
<td>Quantities of atoms that constitute wheat flour and other ingredients for bread are picked up from the surroundings (air, earth, etc.) by nano-technology machines and integrated into molecules: flour, yeast, oil</td>
<td>Quantities of atoms that constitute the molecules that make up the constituent materials for a helicopter (e.g., iron, carbon) are picked up from the surroundings (air, earth, etc.) by nano-technology machines to produce the molecules: steel, plastic, titanium</td>
</tr>
<tr>
<td>Production</td>
<td>These molecules are then used by three-dimensional printing machines to constitute bread</td>
<td>These molecules are then used by three-dimensional printing machines to ‘print’ the helicopter</td>
</tr>
<tr>
<td>Supply system; Pricing; Promotion; Distribution</td>
<td>These will depend on the evolutionary trajectories of heteromation and automation. As an essential consumable, bread should be available as and when needed</td>
<td>These will depend on the evolutionary trajectories of heteromation and automation. As a major durable good, a personal mobility helicopter should be available via a sharable system</td>
</tr>
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Table III.
Technology futures where scarcity is obsolete
harmony in a world of plenty? There is no simple answer here, but this key issue does require some exploration and discussion, provided later the paper.

Social and cultural theory perspectives
There are also cultural concerns beyond the technological ones we have discussed. How will the seemingly relentless concentration of the world’s wealth and resources in fewer and fewer hands, and other cultural trends, such as globalization and multiculturalism, affect the modern institutions (e.g. nation-state and family) and modern principles (e.g. democracy and civility) we currently seem to hold dear? How will their effects mold and shape the market, the core institution in which modern marketing practices have taken shape and are exercised? It is not a coincidence that marketing contains the stem “market” in it. If, indeed, cultural and technological trends are changing the nature of the market through, for example, transforming consumers into co-creators of experiences, products and value (Vargo and Lusch, 2006), then the constitutive elements and practices of the market cannot be assumed to remain static.

Some conceptual background. The transformations we can expect for the future do need to be discussed in order to begin formulating thoughts regarding what the future holds for marketing. Perhaps the first question to ask regarding the future of marketing is whether it has a future as marketing. We cannot ignore the fact that prominent in the name of the discipline and set of practices, marketing, is the stem term market. Yet, if the market is undergoing transformations, if it is no longer the same entity that modern thinkers named and conceptualized as the market, then the set of practices, and the disciplinary conceptualizations and the body of knowledge we call marketing, if it does continue to exist, will also transmogrify. In the future, “marketing” may refer to theories and practices different from what we have now. When we do keep using terminology that refers to a phenomenon that has changed its nature – even when we provide new or re-definitions for it – such semantic overhang continues to carry a baggage that may thwart a precise understanding of it.

We use a term or signifier, such as “satisfaction”, to refer to a specific phenomenon. These signifiers change with times – “satisfaction” in the 21st century, in the late capitalist stage, is quite different from what “satisfaction” was in the feudal sixteenth century. Sometimes, present-day signifiers are extended to the past. For example, we sometimes use terminologies of modern international trade and modern supply chains (such as “globalization”) to refer to the perilous adventurer-traders of the ancient Silk Road. There are dangers in keeping signifiers static, or in applying them in inappropriate historical contexts.

A good contemporary example is the signifier market itself. The market as a phenomenon did not exist eternally, and is unlikely to exist forever into the future. Yet often, without much concern, we use the term market to refer to past phenomena, such as the agora or the bazaar, which were significantly different in nature from the market. The bazaar and the agora were social gathering spaces where much more than exchanges occurred. All kinds of political, social, and economic activities – in effect, all kinds of cultural (i.e. all humanly created) activities – occurred in these spaces rather than simply exchanges of resources and commodities (Cameron, 1973).

Central to the concept of the market is the concept of exchange (Samuelson, 2004). Market exchange is a specific form of exchange, as Polanyi articulated in the last century (Polanyi, 1944). The most specific principles of market exchange are these:

- Resources belong to different parties.
- Selected resources are traded.
- The economic values of the traded resources ought to be equal.
As well explained by earliest classical economists, if the economic values of the exchanged resources are not equal, the allocation of resources will not be efficient (Ricardo, 1817/1911; Smith, 1776/2004). As discussed by Ricardo (1817/1911) and further articulated by Marx (1867/1976), exchange values of the commodities exchanged needed to be equalized in the long term if not in their immediate market prices.

Inefficiencies in resource allocation are extremely obvious today, as for example in the tons of food items wasted and trashed even as many go hungry. The reasons seem to be that the distribution of surplus values accrued in production are highly unequal between capital and labor, and also in the late modern consumer culture, sign value (Baudrillard, 1981) rather than exchange value determines market prices. We shall bring automation into this discussion later, but it should be obvious that – unless drastic changes occur in distribution mechanisms (Bregman, 2017; Brynjolfsson and McAfee, 2012) – automatons programmed by present-day logics would only exacerbate the prevalent inequality and waste.

A historical-theoretical perspective. As well recognized by multiple scholars of various disciplines, the “modern” culture and its central tenets are exhibiting signs of waning (Baudrillard, 1975; Bauman, 2000; Featherstone, 1991; Harvey, 1989; Jameson, 1984; Lyotard, 1984; Rorty, 1979; Žižek, 2002) . Given these observations about the general erosion of modernity, it is reasonable to expect that significant transformations will also take place related to the market, a central institution of modern culture, and modern marketing, the institutionalized practices of the market (Firat and Dholakia, 2006; Firat and Venkatesh, 1995). Of course, such transformations would accelerate and intensify with heteromation and eventually with pervasive automation. While the impending transformation is clearly evident, it is more difficult to gauge the precise forms that these transformations will take (and hence, even at the very center of technology sectors, including in the Silicon Valley, some are turning to AI-linked mysticism; Harris, 2017).

Changes in cultural sensibilities and trends in technologies – trends that are of course socio-politically pushed and thrust into prominence – are most often mentioned as reasons for what some consider as epochal transformations leading to the waning of modernity (Angus, 1989; Foster, 1983; Best and Kellner, 1991; Ross, 1988). Significant impacts on multiple fronts have resulted from these changes and developments, and as Firat and Dholakia (2006) articulate, consumption behaviors and marketing practices have not escaped these impacts. As a result, the marketing literature regarding the expected consequences of these impacts is growing. Since the changes and developments are faster than in earlier periods in history (Brynjolfsson and McAfee, 2012), estimating how marketing – both as a discipline and as an institutionalized set of practices – will react to the changes and how it may itself change is not a simple task. Still, it is necessary to be prepared for a fast approaching future.

Visualizing the future. The future possesses both positive and apocalyptic potentials. The coming generations may inhabit an Earth where scarcity has ended; and technologies are available that provide peaceful, healthy, and worry-free lives. In this benign future, the fruits of technological developments are distributed in ways that diffuse distrust, inequity, discrimination, and all other reasons for war. Cultures of tolerance, understanding, and empathy flourish. Conversely, there is the potential that political-economic-cultural distribution systems will not change. In this (malign?) future, all fruits of technology, including knowledge of technologies, and therefore the ability to design the world, will concentrate in the hands of a few corporate entities that will possessively hoard and create scarcity for most of the human population. Those who are not in useful service of corporations would face increasingly intense discrimination, and hopelessness. Rising resentment would lead to increasing instances of strife, terror and wars. Of course,
permutations across these two visions of the future are also possible. Unless, however, something close to the benign vision is realized, future generations will unfortunately not have much to look forward to. Is there, can there be, a role for marketing in approaching alternatives that are similar to the positive vision of the future?

Future perils. Contemporary marketing is a product of modern market capitalism. This has produced and is continuing to advance the conditions we discuss in this paper. If we extrapolate from current trends, we can predict rising levels of heteromation and automation, reinforcing a future—led by AI and the supremacy-of-corporate-interest logic—that eliminates the human from the equation. We can envision, as is envisioned in many sci-fi novels and films, a future of cyborgs and machines serving and aggrandizing the only agents left, the corporations (and the few humans that might retain—though there is no certainty of this—some mastery over these).

For humans this is an apocalyptic future. For corporate entities, it is the natural culmination of the ends-means switch created by original human agency, which was interested in building institutions that serve the sole logic of economic affluence—presumably to benefit all humanity, hopefully and eventually. The process could culminate in auto-absorbing itself totally and self-dissolving into the accumulative-growth logic that was supposed to serve humanity. Some evidence of such tendencies is emerging. Technology corporations such as Google and Facebook—founded and led by idealistic young men (who wanted to “do no evil”)—firms that are at the forefront of the AI-automation future, are now engulfed in their own inexorable-inescapable logics of monopolization and massive-pervasive encroachments into human lives (Duhigg, 2018; Wong, 2018).

Will the humans inevitably continue to serve the current trends and abandon their agency and sovereignty to corporate entities, their fated “offsprings” that they created, and fade from existence; or, can we envision disruptive transformations in these trends?

Integrative discussion: The future and marketing
Marketing—as it has been conceptualized and defined mostly in the second half of the twentieth century—is very much a product of modernity, although it has been suggested that it imbues many of the postmodern sensibilities (Firat and Venkatesh 1993). The institutionalized practices of the market (which is a modern institution par excellence) form the substrate for the practices that constitute modern marketing. The goals of such practices are creating and expanding the market economy. The modernist idea behind this goal is that as the market expands so will humanity’s welfare by all standards, an idea that culminated in the neoliberal ideology (Brown, 2015).

Humanity’s struggles have been largely about the organization of life. Classes formed on varied bases and political interests have acted and often fought to institute their preferred vision of an organization of life. The contemporary dominance of the market and corporations—representing the logical culmination of the bourgeois vision of organizing life—show no signs of waning. There is also no certainty of revolutionary change when the realization sinks in that continuing on this course may endanger ecological systems and the very existence of humanity. Such fears are resulting in some prominent voices urging us to become a multi-planetary species (Musk, 2017)—though, this, in a sense, represents a cop out from our collective responsibility to humanity and ecology.

A possible transmodern future for marketing. Given the graveness of potential ecocide and the hopeless tentativeness of space habitation, what we intend to do here is to propose an alternative possibility of development, to be on the lookout for possibilities for disruptive transformations that may appear in the current course. Specifically, we are interested in
marketing implications, which can be a subset of a solution or answer to humanity’s
difficulties.

When and if the market’s centrality in accomplishing the distribution of the fruits of
production wanes, marketing’s generic modern role as facilitator and promoter (creator,
deliverer, communicator) of market exchanges, as well as its core idea of exchange (Bagozzi,
1975; Kotler, 1972) – key concepts that reappear in contemporary definitions of marketing
(American Marketing Association, 2013) – are also likely to wane. As technologies have the
potential to make human labor and scarcity matters of past, in principle, access rather than
exchange could become central to human beings’ ability to satisfy desires. This is likely to
expand the communication responsibilities of marketing, but in ways that integrate those
who used to be consumers or customers as partners in designing and disseminating
communications.

In this envisioned future, much of access to technologies and their fruits would be based
on partnership in “platform organizations” constituted on and through the web. While firms
like Facebook and Uber are touted as “platform” organizations, in reality these are not yet
truly participative platforms. In truly participative platform organizations, all parties and
partners are relatively equally responsible for and active in communicating availability and
means of access. Clear distinctions between organizations and their markets, producers and
consumers, will continue to blur. Instead, on these platform organizations, all parties
interested in the design, production, distribution, and consumption of products will
participate as partners – to provide information and access, collectively and cooperatively.
Some examples are beginning to appear in sectors such as healthcare (Vicdan et al., 2017).

Table IV provides a contrast – of necessity, at this stage, a speculative contrast – of the
present socioeconomic system based on market exchange and a possible socioeconomic
system based on a future “marketing” based on access, partnering, and cooperation. In what

<table>
<thead>
<tr>
<th>Dimension or aspect</th>
<th>Present form of marketing: market exchange based, competitive advantage seeking</th>
<th>Possible future marketing: access based, reliant on partnering and cooperation on platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epochal characterization</td>
<td>Modern marketing</td>
<td>Transmodern marketing</td>
</tr>
<tr>
<td>Central principle</td>
<td>Exchange</td>
<td>Access</td>
</tr>
<tr>
<td>Need recognition</td>
<td>Via market research, or corporate or founder vision (Apple)</td>
<td>Via discussion on a partnering platform</td>
</tr>
<tr>
<td>Want specification</td>
<td>Engineered to appeal, to achieve Brand competitive advantage</td>
<td>Via multi-party engagement on a partnering platform</td>
</tr>
<tr>
<td>Demand formation</td>
<td>Via market development (product), and Brand positioning</td>
<td>Aggregation on the partnering platform</td>
</tr>
<tr>
<td>Product design</td>
<td>Via market research, or corporate or founder vision (Apple)</td>
<td>Via discussion, debate, engagement on the partnering platform</td>
</tr>
<tr>
<td>Production planning</td>
<td>Efficiency seeking and profit maximizing</td>
<td>Cooperatively planned on the partnering platform</td>
</tr>
<tr>
<td>Supply system</td>
<td>Cost saving</td>
<td>Ensuring fair access to all</td>
</tr>
<tr>
<td>Pricing decision</td>
<td>Based on Brand profitability</td>
<td>Based on access and need categories</td>
</tr>
<tr>
<td>Promotion and</td>
<td>Designed to position the Brand as a winner</td>
<td>Sharing experiences on the partnering platform</td>
</tr>
<tr>
<td>communication</td>
<td>Efficiency seeking and profit maximizing</td>
<td>Ensuring fair access to all</td>
</tr>
<tr>
<td>Distribution method</td>
<td>Often Brand-led (e.g. “recyclable” cars from Mercedes, Toyota)</td>
<td>Cooperatively planned on the partnering platform</td>
</tr>
<tr>
<td>Post-consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>disposition</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
follows, we use the term “modern marketing” to refer to the prevalent exchanged-based system; and the term “transmodern marketing” to refer to a possible (but by no means guaranteed) future marketing system based on access, partnering, and democratically cooperative platforms.

In modern marketing, once the need/desire is assessed, then the product development and design technologies, as well as management and engineering knowhow – techno-resources that are internal to and controlled by the brand marketing organization – are put to work to come up with product ideas and prototypes, which are then tested in labs and in simulated markets. These product offerings are evaluated by the marketing organization on the bases of profitability, competitive advantage, competitive vulnerability and survivability, and likelihood of achieving long-term market dominance. In the end, the branded product that is selected and introduced to the market is the one deemed to have the highest level of these financial and strategic qualities. In modern marketing, powerful corporate brand owners carry out these activities and processes. The relationship between corporations and consumers is based on surveillance; consumers are surveilled by corporations to discover what they will be most willing to purchase and consume. Extrapolating the trajectory in which this form of “modern” marketing continues to be the determinant of corporate-consumer relations, marketing will become an even a greater surveillance tool, with greater technological capabilities of “observing” the consumer through AI-enabled gadgets and digitalized databases (Hengstler, Enkel and Duelli, 2016; Pridmore and Zwick, 2011). Furthermore, collection and analysis of such data, the surveillance and the simultaneous analytics, are likely to be performed increasingly by AI-infused mechanical, robotic entities (Vermesan et al., 2017). The small openings to consumers, in the form of seeking their co-creation inputs, are essentially limited to some final tweaks in terms of design and delivery.

By contrast, the (potential) transmodern situation is radically different. In the transmodern case, not a finished product but a (relatively open) process (Firat et al., 1995) is offered to the “partners”, on a platform designed for (democratic) consultation and cooperation. The partners on such a platform include the post-consumers or trans-consumers (indeed, transcending the “consumer” is an essential step to such a future; see Firat and Dholakia, 2017) as well as design, production, and supply system experts. The platform enables all to cooperatively engage in coming up with product ideas, formulating the design parameters, developing the production and delivering methods and launching a continuing dialogue for improvement and post-consumption disposition.

In the modern marketing era (the present), people in general do not have knowledge about the latest technological developments and what potentials the techno-capabilities present for the future. Marketing organizations – possessors and hoarders of this privileged knowledge – steer developments allowed by these technologies into avenues that bring market success to the brands that they control, success being measured in terms of profits for these brands. The iconic technology brand Apple is the prime exemplar of such processes.

In transmodern marketing (the potential future), conditions emerge such that – through technology-suffused platform organizations – the potentials of the emerging technologies of the future are more generally and comprehensively knowable. Indeed, household AI-robotics could become assistive and aiding in terms of helping people understand, comprehend, and evaluate the complexities of ever-evolving technologies. The designs of such platform organizations would allow many – indeed allow all who are interested – to have access to information about future techno-possibilities. The platforms will provide the means of utilizing the knowledge in engaging with technologies. The platforms will
facilitate participation in the construction of new ways or forms of living, and the design of democratically discussed and designed products. Multiple possibilities will open up for the construction of what is or will be desired by people. We know what is made available by technologies and production systems influences what people want in their lives – a good modern example is the way that smartphones have reshaped, rearranged, and reorganized people’s desires and lives. In modern marketing, powerful brands (Apple and Samsung in case of smartphones) have done such reshaping. In democratic transmodern marketing, we could expect a wide variety of transformations, with communities on the platforms self-shaping their lifeways. The idea of “dominant design” will be eclipsed by the flourishing of varied, multiple, decentralized, multi-splendorous designs.

In transmodern marketing, then, we are looking at practices that provide access, engagement, participation; rather than remote research and surveillance, manipulative analytics followed by targeted promotion, and facilitation of brand-based exchange – as was the case in modern marketing. So, then, the technologies in use in transmodern marketing will be the ones that allow access to platforms on and through which partnership and participation in engaging with each other and with systems of production are made possible and effectuated. More significantly, these technologies would allow all parties – engaged in cooperating with each other in production – to be able to participate effectively in designing the platforms themselves. At this point, we mostly have the platforms that are designed, operated, and maintained by those in control of the platform – such as the generic platform of Facebook or the specialized, fairly open, but yet centrally controlled platform like Patientslikeme.com (Vicdan and Dholakia, 2012).

While Table IV does not include heteromation/automation explicitly, the nature of automated systems would be very different in transmodern marketing, compared to modern marketing. In modern marketing and modern business organizations, heteromation and automation have strong tendencies to become unfair, even exploitative systems. Since brand dominance and profit maximization are the organizational as well as systemic (economy-wide, society-wide) goals of modern marketing, automation methods are designed to get as much work out of willing or vulnerable humans as possible, with as little recompense as possible (Ekbia and Nardi, 2017; Zwick et al., 2008). In transmodern marketing, the decisions on heteromation and full automation methods are made cooperatively, on the multi-party platform. The views of one group (e.g. owners or managers) do not ride rough shod over the views of other participants. The emerging heteromation and full-automation systems of the future transmodern marketing age would therefore be human-friendly, and not susceptible to exploitative or dystopic pressures.

**Concluding observations**

We used the term transmodern marketing in an attempt to differentiate modern marketing from the set of practices that may evolve from the current forms of relations among producers and consumers. The current forms are the result of cultural and technological developments in the second half of the 20th century. In the heteromation-automation era of the twenty-first century, if dystopia is to be avoided, there is a need to deconstruct the categories of consumer and producer, such as discussed in the constitution of platform organizations. The few contemporary platform organizations that exist are too nascent and formative at this stage – they have not completely and qualitatively transformed relationships as we discussed. They only present visions of the potential changes that seem possible in the future – but, at least, the corporatist platforms of today have opened the channels of imagination for partnering platforms of the future.
An extrapolation and extension of “modern marketing” – as we articulated in this article – promises dystopian implications for the future of marketing and of humanity in general. Marketing becomes a technologically finer tool for corporations to surveille and monitor large proportions of the human population, with the humans increasingly removed from design and production, and resigned to a role of absorbing the products of an increasingly automated corporate industry. A significant unknown in this scenario is how corporations will recover their costs of production if those who have only their labor power as a resource are unable to earn incomes due to being substituted by robots and thus are unable to purchase in the market. We know that currently marketing does not serve demand unless it is effective demand, that is, there is purchasing power behind the demand. Consequently, as we mentioned earlier, many who have great demand for food go unfed, while, at the same time that much food is wasted and trashed. There is a chasm-like internal contradiction between the impulse to improve returns on investment by replacing salaried workers with automated labor while at the same surveilling and searching frenetically for consumers to purchase branded products of corporations. If this gaping contradiction is not resolved by, most urgently, a restructuring of distribution systems (including a redefinition of marketing), what role “modern marketing” can play is in doubt.

Should the promise of a technology-suffused and democratic future of platform-based, cooperative future be realized, marketing may (have to) become one of the most important, though not the only, transformational agents in informing people about the potentials of the future and preparing them for the unprecedented changes in organizations of life to come. Taking on this responsibility will require a degree of separation from the “market”, which will remain as only one of the institutions through which access is actualized alongside other institutions, such as the partnering platform organizations, enabled by evolving technologies. Although impossible to know the exact form and substance that marketing (either retaining its current name or renaming itself to fit its new identity better) will take in the future, we think that it is likely to develop highly in terms of enabling partners in participating fully as designers of products and their communication and distribution systems. In effect, it will evolve as an enabler such that all can become “marketers” in its new sense.

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**Further reading**


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Future thinking: the role of marketing in healthcare

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Abstract

Purpose – The purpose of this paper is to discuss how, using a futures studies perspective, marketing is uniquely positioned to address future challenges facing health-care service systems.

Design/methodology/approach – The futures studies perspective involves predicting probable, preferable and possible futures. Using digital and face-to-face data collection methods, health-care professionals, academics and patients were asked about their perspectives and expectations of health care’s future. Using grounded theory, responses were analyzed to a point of thematic saturation to expose the immediate probable future and a preferred future of health care.

Findings – Patients expressed a desire to participate in health-care delivery, impacting caregivers’ roles. Thus, co-creation of value in this context is contingent on the relationship among stakeholders: patients, patients’ families, caregivers and health-care organizations. Concordance, a type of value co-creation, is an effective way for physicians and patients to ameliorate health outcomes.

Research limitations/implications – Although a more diverse sample would be ideal, insight from health-care professionals, academics and patients across global regions was obtained.

Practical implications – To achieve a preferred future in health care, practitioners should implement a three-pronged approach, which includes health promotion and prevention, appropriate use of technology in health care and concordance.

Originality/value – Using patients, health-care professionals and academics, this research broadens the concept of value co-creation in health care. Additionally, paths (i.e. promotion and prevention, technology use and concordance) to a preferred health-care future are uncovered.

Keywords Technology, Health care, Qualitative research, Grounded theory, Value co-creation, Concordance

Paper type Research paper

Future thinking the role of marketing in health care

Analogous to the competitive dynamics that have emerged in other industries (e.g. banking, airlines and retail), the health-care industry is experiencing a rapid evolution from its traditional business models (Hwang and Christensen, 2008). For example, increasing market pressures have caused the US health-care system to shift from “fee for service” to “fee for value” (Schroeder and Frist, 2013), while the European Union, where single-payer systems are the norm, is also implementing a performance-based reimbursement structure (European Commission, 2015). As the health-care industry is accelerating its evolution...
toward a market orientation (Huang et al., 2014; Lonial et al., 2008; Wrenn, 2006), it is placing greater emphasis on marketing to survive in an increasingly competitive environment. Unfortunately, research on this trend is lacking.

Given the dynamic nature of the health-care industry, health-care organizations face unique challenges. To start with, consumers are transitioning from passive to active participants in the health-care service delivery process (Danaher and Gallan, 2016; Osei-Frimpong, 2017). Moreover, consumers are increasing their use of digital apps, wearables and other technology that enable them to take a more direct role in their own care (Bantau and Rayburn, 2016). Patients’ expectations for value, satisfaction and experience are on the rise (Ouschan et al., 2006; Russell et al., 2015); however, health-care organizations are struggling to keep pace. Finally, the ever-increasing technological and regulatory environment is changing the way care is delivered, evaluated and reimbursed (Lyles et al., 2017; Song et al., 2017). These current drivers of change in the health-care industry are expected to influence health-care service delivery in the foreseeable future. Smith et al. (1998) proposed that marketing skills will be one of the key tools for success in the health-care industry. Similarly, Anderson et al. (2018) stress the importance of service research, service design and strategic aspects of marketing as vital to the future of health-care service design and delivery.

To explore the effects of marketing on the future of health-care delivery, we adopt a futures studies perspective as it embodies a broader range of possible impacts than is usually considered by marketing alone. The futures studies perspective involves pondering probable (i.e. likely future state given current trends), preferable (i.e. enhanced future state) and possible (i.e. ideal future state) futures. A business is defined by its purpose. A purpose that “[…] must lie in society since a business enterprise is an organ of society” (Drucker, 1954, p. 37), and whose purpose is not to remain static, but continually change as society’s needs change (Levitt, 1975). Although these concepts apply to all businesses, being “[…] an organ of society,” coupled with continual change as society and its needs change, has never been as important as it is for the health-care industry. As the perception of a firm’s purpose in society is shaped in large part by marketing, we assert that viewing marketing as fundamental to shaping consumers’ perception of health-care delivery is consistent with marketing’s historical impact in other consumer-related industries. In fact, as health-care executives and hospital administrators are realizing that marketing has a greater role to play in their success, there is a growing acceptance that marketing concepts can and must be applied to the health-care sector (Berry and Bendapudi, 2007; Kim et al., 2006). In response, researchers are concentrating their efforts on applying marketing concepts to the health-care industry (McColl-Kennedy et al., 2012; Senot et al., 2016).

Therefore, the goal of this paper is to discuss how, using a futures studies perspective, marketing is uniquely positioned to address future challenges facing the health-care industry. To accomplish this goal, we gather information from health-care professionals, scholars and patients that represents a view of the future that focuses on marketing’s role in health-care delivery. We integrate data with existing literature to present paths to a preferred health-care future.

Drawing on futures studies enables us to shed light on the likelihood of future events and trends in health care. We lean on a transformative service research (TSR) perspective to illuminate the co-creation of value and well-being for both providers and patients in health care. As a result, we make multiple contributions to ongoing health-care marketing and service research and practice. We expound on three interactive paths to a preferred health-care future based on stakeholders’ perspectives. One of these paths is concordance, which we introduce to services marketing scholars and practitioners.
Literature review

A futures studies perspective

Change is occurring at a progressively accelerated pace, driven— in no order of magnitude— by social, economic, technological, competitive and regulatory forces. Compared to other business fields, it is well known that marketing is most favorably positioned to cause, respond to or attempt to predict change (Plassmann et al., 2015; Wedel and Kannan, 2016). Future studies, on the other hand, focus solely on prediction (Inayatullah, 2008); thus, the field of future studies uses a systematic and formal analysis of probable, preferable and possible futures and comprise methods of insight development for individuals, groups and society (Inayatullah, 2008). Futures work includes research and participation processes, often aimed at defining and creating preferred futures or visions with key stakeholders. In general, it is considered one of the social sciences and is analogous to the field of history. While history studies the past, futures studies examine the present for clues to changes that the future may bring. In this research, we focus on exploring the present to describe and advance the marketing discipline’s role in ensuring preferred (i.e. enhanced future state) and possible (i.e. ideal future state) futures in health care.

All organizations attempt to predict the future in various ways. In fact, many organizations employ “futurists” as risk management strategists to analyze emerging issues and to identify “wild cards” (i.e. low probability and potentially high-impact risks) and “black swans” (i.e. high probability and potentially high-impact risks) (Orlik and Veldkamp, 2014). Moreover, to anticipate both consumers and competitors’ behavior, organizations expend vast resources on research and development, data collection and innovation. Thus, both marketing and future studies emphasize the importance of developing strategy and communicating the steps needed to implement plans that will lead to an ideal future. Finally, future studies are advancing from a purely academic exercise to a more practitioner-oriented discipline (Bell, 2003; Cowen, 2013), which should aid in providing actionable managerial implications.

Transformative service research and co-creation of value

TSR plays a critical role in advancing health care as it highlights the interaction among service and consumer entities while stressing its impact on individual, collective and societal well-being (Anderson et al., 2013). Specifically, the TSR framework seeks to “inform how social services affect the well-being of individuals, their families, and their communities by examining consumers’ (and collectives’) interaction with social services and the resultant outcomes” (Anderson et al., 2013, p. 1208). TSR is particularly significant to the future of health care as the well-being outcomes are largely contingent on the quality of interaction among the multiple actors such as patients, health-care professionals and families (Danaher and Gallan, 2016; Sweeney et al., 2015). Examining such interaction is important given the increased complexity of health-care systems (Keeling et al., 2017).

Both the marketing (Beirão et al., 2017; Elg et al., 2012; Sharma and Conduit, 2016; Sweeney et al., 2015) and health-care literature studies (Nambisan and Nambisan, 2009) have shown increased attention in customer participation in health care. McColl-Kennedy et al. (2012) explore what health-care consumers do in the value co-creation process and discuss several facets of value co-creation. These various styles include team management (patients help determine medical team’s composition), passive compliance (“accepting without question information provided by the doctors, complying with basic requirements”, p. 383), insular control (interactions primarily with medical team members) and pragmatic adapting (“[...] positive thinking and reframing and sense-making”, p. 382). Beirão et al. (2017) reveal the value of co-creating factors that facilitate actors’ efforts to integrate resources in
dynamic interactions, involving both “population well-being and ecosystem viability” (p. 227). Elg et al. (2013) developed and assessed a patient value co-creation and learning model based on information gathered from patient diaries. The authors suggest that value can be co-created when developing health-care services via three learning methods (i.e. patient ideas, a summary report and patient narratives). Sweeney et al. (2015) examine co-creation of value in health care. The results of their study show that customers exert varying levels of effort when co-creating value.

To extend knowledge in this domain, the current study broadens the concept of the co-creation of value in health care by introducing the concept of concordance (Chatterjee, 2003; Stevenson et al., 2004) to the marketing literature and positioning it as a specific type of value co-creation. In this research, we use Chatterjee’s (2003) view of concordance as a negotiated, shared agreement between provider and patient regarding treatment(s), patient behaviors and outcomes, which represent a more collaborative relationship than one based on compliance or noncompliance. Importantly, this definition is congruent with our participants’ perspective of concordance.

Concordance differs from compliance in two fundamental ways. First, concordance eschews paternalism in favor of a shared approach to decision-making (Stevenson et al., 2004); thus, concordance is demonstrated when power is shared in the provider–patient relationship. For instance, for patients with chronic diseases, concordance values the patient’s perspective by acknowledging that the patient often brings a high level of expertise about his or her response to and ability to comply with a prescribed treatment. Therefore, both the provider’s expertise (e.g. treatment selection) and patient’s expertise (e.g. response to and ability to adhere to the prescribed treatment) are equally relevant and valuable. A concordant interaction is the one in which the primary goal is to co-create value via the decision-making process. Second, concordance focuses on provider–patient interaction rather than patient behavior. For example, compliance refers to specific patient behaviors (e.g. did the patient take his/her medicine as prescribed?), whereas concordance refers to the interactions between health-care providers and patients (e.g. how can the interaction be designed to increase the likelihood the patient will take his/her medicine as prescribed?).

These perspectives diverge from the paternalistic approach underlying compliance in which the patient is assumed to accept a passive role in provider–patient interactions by simply complying with the health-care provider’s advice. For instance, Strull et al. (1984) argue that caregivers often inaccurately presume that patients prefer a paternalistic approach in health care, which is supported by Stevenson et al.’s (2004) conclusion that communication between professionals and patients often is asymmetric, which produces paternalistic professional–patient interactions. It is still possible, however, for paternalism to exist in a concordant relationship provided it considers the patient’s preference for a given level of involvement in the decision-making process. For example, a patient may prefer to allow the physician to decide the best course of treatment with little or no input as to whether the patient believes he or she will respond well to or be able to comply with the physician’s prescribed course of treatment. Nevertheless, a review of the concordance literature provides evidence that two-way communication in the provider–patient encounter improves patient satisfaction, condition and treatment knowledge, compliance and health outcomes (Cox et al., 2003). Concordance allows consumers to co-create value in health-care services, leading to improved consumer well-being. Value, for consumers and providers, is also reflected in improved relationships and trust; this approach to health care has potential to benefit health-care providers and patients.
Methods

Research design

As the goal of this research is to gain knowledge of health-care professionals, researchers and patients’ perceptions of a probable and preferred future of health care, the methodology used is qualitative (Creswell and Poth, 2018; Gummeson, 2005). Qualitative research is useful when attempting to understand key stakeholders’ experiences, expectations and preferences, particularly when the context is not yet well-understood. To accomplish this goal, this research uses a qualitative approach built on the tenets of grounded theory (Strauss and Corbin, 1990; Turley and Geiger, 2004). Grounded theory is valuable based on its ability to offer nuanced explanations of actual problems in real situations and extend, beyond description, to explain networks of effects (Charmaz, 2000; Goulding, 2005; Strauss and Corbin, 1990; Turley and Geiger, 2004). In many cases, this results in a theory or framework, grounded in data, that explains the core phenomena. We use an adaptation of grounded theory due to its structured and iterative approach to qualitative data collection and analysis with the goal of explaining not just what is occurring but more importantly how and why (Creswell and Poth, 2018; Goulding, 2005). In this study, we use this approach not to develop a theory or framework but to expose a practical and applied process to move from one possible future state to another. This approach results in the illumination of a process model, grounded in both data and existing literature, from which academics and practitioners can launch efforts to create a preferred health-care future.

Data collection

Taking an exploratory, knowledge-development approach and attempting to capture a broad view of marketing’s role in the future of health-care delivery, we solicited perspectives from various health-care providers, academics and patients. Responses were received from frontline employees (nurses, therapists and physicians), backstage employees (IT professionals and human resource managers), upper management (health-care administrators), marketing and health profession academics who conduct health care-related research and patients.

Data were collected in two rounds to allow for refinement of the data collection instrument (Creswell and Poth, 2018). In Round 1, participants were asked to answer open-ended questions that speak to the probable (i.e. likely future state given current trends), preferable (i.e. enhanced future state) and possible (i.e. ideal future state) future of health care. In Round 2, two additional open-ended questions were included concerning concordance and technology applications in health care. These questions were added to expand on key themes that had risen from the first round of data collection.

Data collection was both digital and face-to-face. Digital data collection is an appropriate data collection method in both qualitative and health care research (Creswell and Poth, 2018; Martinez and Lo, 2008). Digital data collection offers comparable data to face-to-face data collection and is particularly useful in three ways directly related to this research: when collecting data concerning potentially sensitive information, when collecting data from dispersed and difficult to reach participants and when participants experience time constraints and may need flexibility answering questions (Creswell and Poth, 2018; Schieck and Ullrich, 2017). This process allowed us to collect data from participants in appropriate health-care roles across the world.

Starting with personal contacts, we used a snowball method for data collection to reach a wide array of participants. Snowball sampling is particularly useful to identify and engage targeted populations (Biernacki and Waldorf, 1981; Creswell and Poth, 2018). Initial recruitment emails were sent to 32 potential participants in Round 1 and...
35 in Round 2. Each email asked recipients to forward the request. Face-to-face interviews were conducted with seven individuals. Data collection was anonymized; no identifying personal information was requested during any data collection process. Data were collected to a point of thematic saturation (i.e. no new insights emerged). The total sample \((n = 42)\) included 19 health-care professionals (e.g. physicians, nurses, administrators and physical therapists), 12 academics who conduct health care-related research.

<table>
<thead>
<tr>
<th>Participant description</th>
<th>Gender</th>
<th>Years of experience</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician 1 - Infectious Disease</td>
<td>Female</td>
<td>12</td>
<td>USA</td>
</tr>
<tr>
<td>Physician 2 - Oncology</td>
<td>Male</td>
<td>5</td>
<td>USA</td>
</tr>
<tr>
<td>Physician 3 - Pediatrics</td>
<td>Male</td>
<td>40</td>
<td>Peru</td>
</tr>
<tr>
<td>Physician 4 - Internal Medicine</td>
<td>Female</td>
<td>16</td>
<td>Peru</td>
</tr>
<tr>
<td>Physician 5 - Nuclear Medicine</td>
<td>Female</td>
<td>18</td>
<td>Peru</td>
</tr>
<tr>
<td>Physician 6 - Ophthalmology</td>
<td>Male</td>
<td>17</td>
<td>USA</td>
</tr>
<tr>
<td>Nurse 1</td>
<td>Female</td>
<td>8</td>
<td>USA</td>
</tr>
<tr>
<td>Nurse 2</td>
<td>Female</td>
<td>6</td>
<td>USA</td>
</tr>
<tr>
<td>NP</td>
<td>Female</td>
<td>12</td>
<td>USA</td>
</tr>
<tr>
<td>Nurse and Researcher</td>
<td>Female</td>
<td>14</td>
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<td>Physical Therapist</td>
<td>Female</td>
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<td>USA</td>
</tr>
<tr>
<td>Respiratory Therapist</td>
<td>Female</td>
<td>18</td>
<td>USA</td>
</tr>
<tr>
<td>Genetic Counselor</td>
<td>Female</td>
<td>5</td>
<td>USA</td>
</tr>
<tr>
<td>Radiation Technician</td>
<td>Female</td>
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<td>Peru</td>
</tr>
<tr>
<td>Administrator 1</td>
<td>Male</td>
<td>40</td>
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</tr>
<tr>
<td>Administrator 2</td>
<td>Female</td>
<td>15</td>
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</tr>
<tr>
<td>IT Professional 1</td>
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</tr>
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<td>Academic 11</td>
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<td>Patient 2</td>
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<td>Patient 9</td>
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<td>Patient 10</td>
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<td>USA</td>
</tr>
<tr>
<td>Patient 11</td>
<td>Female</td>
<td></td>
<td>USA</td>
</tr>
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</table>

Table I. Research participants
research and 11 patients; 45 per cent of the participants are female. No additional demographic data were collected (Table I). Data were collected from participants from seven countries (i.e. Colombia, Germany, Israel, Japan, Kenya, Peru and USA), representing insights from Africa, Asia, Europe, the Middle East, North America and South America.

Data analysis

Data were analyzed with an adaptation of the grounded theory approach, which is useful for exposing processes within data about specific contexts. We followed this approach to build our process model (Figure 1). When asking participants about a preferred future, they often discussed how to get there without being prompted. Just as the concepts presented in Figure 1 interact, participants’ answers were often interrelated.

Data analysis began with thematic coding, which allows the identification and analysis of patterns in the data (Braun and Clarke, 2006). Specifically, based on tenets of grounded theory, two of the researchers explored the data for open codes (nascent themes). The researchers subsequently used open codes in a process based on first axial and then selective coding, and finally on memoing, to build the process model (Creswell and Poth, 2018; Strauss and Corbin, 1990). While most coding (+92 per cent) resulted in agreement between the authors, minor interpretive disagreements were settled through discussion.

The open coding process, using participant voices, identified bits of data that represented themes across respondents. Axial coding allows the convergence of open codes into higher order themes that are representative of participants’ experiences and expectations. Finally, a selective coding approach was used to connect axial themes through higher levels of aggregation (e.g. coding scheme in Table II). Findings were subjected to systematic comparison with existing literature to develop both new knowledge and to ground the research findings in existing context-specific understanding (Wagner et al., 2014). Through identification of processes, across time (from probable to preferred futures), memoing was used to build a narrative that can move health care from a probable to a preferred future, resulting in an applied process model (Figure 1). Findings were mainly consistent across the data, despite participants having diverse life experiences. Research participants in different roles – physicians, academics and patients – describe a largely congruous preferred future. Minor differences emerged not on national context but based on the level of economic development experienced by research participants. Differences that did emerge were not in overarching themes about a preferred future of health care but in how these

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**Figure 1.** Probable future to preferred future process model
themes would manifest in specific contexts. These differences, when present, are introduced throughout the findings and discussion, though they are minimal.

**Findings and discussion**

Findings are organized around three future health-care themes: immediate probable future, preferred future and paths to a preferred future. Within each theme, several subthemes emerge (see themes and participant voices in Table III). In general, respondents expressed negativity toward the immediate probable future. These negative experiences and expectations point directly to where marketing and service researchers can contribute to a preferred health-care future. Not surprisingly, the concerns of participants are addressed in their preferred futures. As is common in qualitative research, we combine participant voices with the existing literature to interpret the data and inform the paths to a preferred health-care future illuminated by our participants (Raggio et al., 2014; Turley and Geiger, 2006; Wagner et al., 2014).

**Immediate probable health-care future**

Participants in the study are largely negative in their outlook on the immediate probable future of health care. They see a context of continuing disparate access and turbulence and express hopelessness about the potential for change:

<table>
<thead>
<tr>
<th>Open codes (participants' voices)</th>
<th>Axial codes</th>
<th>Selective code</th>
</tr>
</thead>
<tbody>
<tr>
<td>If nothing changes, disparities in the access and quality of health-care services depending on socioeconomic status will continue (Patient 1)</td>
<td>Access disparities</td>
<td>Probable future</td>
</tr>
<tr>
<td>It's getting harder and harder to get health care (Academic 1)</td>
<td>Complexity and disruption</td>
<td></td>
</tr>
<tr>
<td>Like many industries, it is also apparent that health care, while already a complex context in which to do business, is becoming even more complex (Academic 7) technology will disrupt much of health care (Academic 2) […] patient power will continue to exert its influence over health care decision-making (Academic 3) Patients want to have a physician available 24/7 to meet their needs and at times they become upset when they cannot speak with a physician when they want (Nurse 1) I also see the role of the “patient navigator” increasing to help patients and family manage chronic and complex health issues (nurse and researcher) I believe nurses could make a big impact, here they only call patients and seek appointments. They could be a person that teaches patients about health care, they could take blood pressure, weigh patients, they have training (Physician 4) There is an app that can tell me I might be getting sick [based on this data] and this can be integrated with the system so the doctor can also see it (Patient 9) We have a telemedicine medical network with Spain, Africa, Mexico, and Peru for sharing information about infectious diseases (Physician 3)</td>
<td>Informed and demanding consumers</td>
<td>Changing caregiver roles</td>
</tr>
</tbody>
</table>

**Table II.**

Example coding scheme
<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-theme</th>
<th>Participant voices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate probable health care future</td>
<td>Access disparities</td>
<td>Patients will be underserved and will have a harder time accessing the health care they need, which will make our society less healthy in the long run (Nurse Practitioner)</td>
</tr>
<tr>
<td></td>
<td>Complexity and disruption</td>
<td>It's getting harder and harder to get health care (Academic 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Like many industries, it is also apparent that health care, while already a complex context in which to do business, is becoming even more complex (Academic 7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disruption . . . the health-care sector has embraced dynamism, and this will not change in the near future . . . technology will disrupt much of health care, in that it will provide data that were never before available (Academic 2)</td>
</tr>
<tr>
<td></td>
<td>Informed and demanding consumers</td>
<td>. . . patient power will continue to exert its influence over health care decision-making (Academic 3) with a greater level of [information] than ever before, tools like WebMD (and many others), are allowing patients to self-inform. This may lead them to seek compliance to their pre-formed ideas from their dr. or to avoid going to the Dr altogether (Academic 7)</td>
</tr>
<tr>
<td></td>
<td>Changing caregiver roles</td>
<td>As primary care doctors see more older patients and more people with long-term health issues, nurse practitioners are being given more and more responsibilities (Nurse Practitioner) I also see the role of the “patient navigator” increasing to help patients and family manage chronic and complex health issues (Nurse and Researcher)</td>
</tr>
<tr>
<td></td>
<td>Advancing technology</td>
<td>Technology is leading to some interesting developments. The presence of virtual appointments (where a patient meets with a physician via skypie or some similar technology) is quite interesting (Academic 7) I use my Fitbit every day and I track my heart rate. There is an app that can tell me I might be getting sick [based on this] and this can be integrated with the system so the doctor can also see it (Patient 9)</td>
</tr>
<tr>
<td>Preferred future</td>
<td>Universal access</td>
<td>Is health a medical problem or a social problem? If it is a medical problem, then give medicine. If it is a social problem, we must focus on the whole person, the community, and society (Physician 3) We must move to a wellness model. (Academic 8)</td>
</tr>
<tr>
<td></td>
<td>Patient responsibility and engagement</td>
<td>We do a lot of our own research, it empower us, we read everything we can get our hands on about [disease] (Patient 10) more educated in the behaviors they should take to care for themselves (Patient 1)</td>
</tr>
<tr>
<td></td>
<td>Improved patient experiences</td>
<td>Physicians need to be more focused on the integral perspective of the patient as a person (Patient 1) Increase customer orientation. Not just in terms of saying the right words, but in terms of actually solving real problems . . . reduce complexity, especially artificial complexity (Academic 7)</td>
</tr>
<tr>
<td></td>
<td>Empowered and new roles for caregivers</td>
<td>I think health care would be more effective if physicians and nurses were allowed to say no (Nurse 2) Community health is very successful. Local health promoters make a difference. Health promoters are often from the community so they are trusted (Physician 3)</td>
</tr>
<tr>
<td></td>
<td>Prevention and health promotion</td>
<td>[We] don’t focus enough on preventative measures. People need to learn about exercise and diet, then the system will not be bogged down with people with preventable issues (Patient 9)</td>
</tr>
</tbody>
</table>

(continued)
If nothing changes, disparities in the access and quality of health-care services depending on socioeconomic status will continue. (Patient 1)

The future looks bleak for a majority of people. Health care is getting better in terms of quality of services offered but it all depends on accessibility. For those who can afford it, things are looking great; but for the majority who cannot afford it, this is far from good news. (Patient 5)

Given the current state of health care in our country, I don't have much hope that things will change in the near future. (Researcher 6)

These feelings highlight the negative macro-level organizational perceptions of the overall health-care system. Regardless of participants’ global context, they are concerned about five aspects of the immediate probable future of health care: access disparities, complexity and disruption, informed and demanding customers, changing caregiver roles and advancing technology. When discussing the bleak outlook of health care, participants point us to a preferred future by highlighting existing problems.

**Access disparities**

It’s getting harder and harder to get health care. (Academic 1)

Patients will be underserved and will have a harder time accessing the health care they need, which will make our society less healthy in the long run. (Nurse Practitioner)

Consumer access to health care is bedrock to a fully functioning society (Anderson et al., 2018) and is an aspect of the current situation that deserves attention based not only on participants’ experiences but also according to existing literature (Davis et al., 2017). However, access is only one part of the overall issues that consumers face. Health care also must be affordable:

 […] ideal future state would be to have a health-care system that is affordable to all whether it is via insurance programs or self-pay systems. (Administrator 2)
In many countries, health-care expenditures are accelerating at an alarming rate. For example, in 2015, the USA’s health care expenditures represented 17.8 per cent ($3.2tn) of GDP, or nearly $10,000 per person (CMS, 2015). Mounting health-care costs threaten not only affordability but also accessibility.

**Complexity and disruption.** Access and affordability must be combined with consumer comprehension of health-care services:

Honestly, I’d love to hear a plan that’s simple and straightforward and easily spelled out for people to understand. (Physical Therapist)

Programs that consumers do not understand often result in frustration at the least and non-compliance at the worst. If consumers engage in health care and can afford it, they must be able to follow-through with prescribed directives to achieve success (e.g. improved well-being).

However, the health-care environment that consumers predict is one of complexity and disruption, driven by more informed and demanding consumers and the unrelenting advance of technology:

Disruption [...] the health-care sector has embraced dynamism, and this will not change in the near future [...] technology will disrupt much of health care, in that it will provide data that were never before available. (Academic 2)

As disruption and complexity continue to increase, health-care professionals and organizations will face challenges in meeting patient needs. For example, technology disruptions may increase access for previously unserved consumers, but often do so while increasing system complexity.

Participants’ emphasis on increased health-care complexity and disruption in their vision of the probable future mirrors current scholarship (Fennell and Adams, 2011). Factors leading to turbulence include ever-changing organizational structures and dynamics, loss of control due to conflicting demands, heavy patient loads, smaller staffs and increased responsibility (Gaudine, 2000). Many health-care providers wonder “[h]ow do we continue to provide the care for patients who need us with the massive change in the way healthcare is being delivered?” (Roddak, 2013, p. 1). This is an important question as caregivers find it increasingly difficult to devote the resources (e.g. time and energy) that patients deserve, leading to an increased likelihood of errors and low patient satisfaction. Research suggests that a lack of resources increases both patient mortality and hospital readmission (Joynt and Jha, 2012).

**Informed and demanding consumers.** There is a movement toward patient empowerment, and it must be coupled with accurate information and education. We are seeing just the beginning of this transition:

[...] information availability seems to be leading to changes in the health-care marketplace. Just as consumers can approach a car purchase, for example, with a greater level of [information] than ever before, tools like WebMD (and many others), are allowing patients to self-inform. This may lead them to seek compliance to their pre-formed ideas from their dr. or to avoid going to the dr. altogether. (Academic 7)

This comment illustrates that consumers are taking advantage of the unprecedented access to available information to become more informed about health care. Literature suggests that this is creating new models for health-care delivery (Osei-Frimpong et al., 2016). The difficulty is that as consumers are more active in their own care, they may not be as responsive to the directives of health-care professionals. This means that health-care
professionals must learn to work with consumers to jointly determine the best approach to care. In fact, this is a desirable state in health-care services:

[...] patient power will continue to exert its influence over health-care decision-making (Academic 3)

This directly reflects concordance, which can be a powerful tool for physicians and patients as they work jointly toward better health outcomes. Importantly, the literature suggests that when patients are more involved with their care, they see higher levels of health-care success (McColl-Kennedy et al., 2012; Sweeney et al., 2015). In this regard, consumer participation is critical to successful processes and outcomes in health care (Hausman, 2004).

One of the potential negatives to this informed and powerful consumer is the fact that they can become, or at least perceived as, demanding:

Patients want to have a physician available 24/7 to meet their needs and at times they become upset when they cannot speak with a physician when they want. (Nurse 1)

Consumers are going directly to specialist and skipping primary care physicians more as they feel that their complaints are getting delayed otherwise. (Academic 2)

Consumers want to be in control of their health care and are leveraging available health information, technology and mobile health options, while also demanding more transparent, convenient, personalized and affordable service. However, this must be tempered with the reality that the health-care provider brings expertise to the equation.

*Changing caregiver roles.* Participants in our research point to the changing roles of caregivers in health care. As doctors are increasingly burdened with long-term care issues, nurses are increasingly called on to be primary health-care practitioners.

[...] the role of nurse practitioners should continue to expand to address changing health-care needs. As primary care doctors see more older patients and more people with long-term health issues, nurse practitioners are being given more and more responsibilities to help doctors handle the increased demand. (Nurse Practitioner)

Additionally, as consumers become more informed and active in the care process, nurses will increasingly operate as facilitator in the process. This will further empower consumers to partner with providers and co-manage their care over time:

I also see the role of the “patient navigator” increasing to help patients and family manage chronic and complex health issues. (Nurse and Researcher)

Unfortunately, with these changing roles, particularly for nurses, comes an increased burden in an already over-burdened service system:

[...] patient/nurse ratio’s [...] This [doesn’t] allow for greater time per patient, education, etc. (Nurse and Researcher)

So, while the goal is to empower consumers and to support them in the process, the demands for caregivers’ time may short-circuit the process:

I have only 15 min to see any patient, I have to get vitals, take information, the time is really short. I can’t get to know someone, 15 min is not enough at all. (Physician 4)

As caregiver roles change, physicians and nurses will need to adapt how they fulfill their roles. We will likely also see an expansion of responsibility for patient advocates and community health-care workers.
Advancing technology. Participants describe technology as one of the root causes and probable solutions to the complexity and disruption that appear in health care’s immediate future. Advancing technology is seen as a savior to overburdened health-care service systems and will connect disparate systems and experts:

We have a telemedicine medical network with Spain, Africa, Mexico and Peru for sharing information about infectious diseases and cancers, and we have the capacity to connect all of the health establishments in the Pan-American Health Organization. (Physician 3)

Technology will also serve as a direct interaction tool in the form of virtual appointments, tele-medicine and distance-care. The use of technology as an interaction tool, though discussed across contexts, is particularly salient to research participants in developing or emerging economic contexts. Technology is viewed as a boon to improving both access and quality of health care for impoverished and remote populations:

Technology is leading to some interesting developments. The presence of virtual appointments (where a patient meets with a physician via skype or some similar technology) is quite interesting. I can easily see this becoming an increasingly popular communications method for certain types of symptoms/visits. (Academic 7)

It is also predicted that mobile technology will play a significant role in health care through fitness apps, which serve as communication platforms among patients and caregivers:

I use my Fitbit every day and I track my heartrate. There is an app that can tell me I might be getting sick [based on this data] and this can be integrated with the system so the doctor can also see it. (Patient 9)

Yet, integrating technology into health care also raises concerns about security of information:

But there is all of this data and what if it gets hacked and there goes my privacy, everybody can know everything about me. (Patient 9)

Further, there is one aspect of health-care technology that does not have a good prognosis and information technology (IT) interoperability:

The main problem facing health-care IT is a lack of systems interoperability […] lack of interoperability will continue to cause errors in electronic health records […] hospitals will become less efficient because doctors will spend a lot of time dealing with data problems […] patients won’t be able to port medical records between their doctors […] ultimately […] Patients will suffer because of these errors and so will hospitals’ reputations. (IT Professional 2)

If the IT systems used by hospitals and health-care professionals lack interoperability, it will undermine the very advantages presented by technology:

Things were not communicated correctly across boundaries. We are at a top hospital and they ask us what we are doing and the doctor says “no, that is all wrong” and she tells us all the advice we have received, from three other hospitals, is not current. We change what we are doing and have almost immediate results. (Patient 10)

Participants have a vision of how technology may positively and negatively impact their health-care future. However, technology is just one tool available; the challenge is how can technology (and other tools) be used to get to a preferred state without stalling at the
probable state that has been described above. Before discussing how to get there, we present participants’ preferred future.

**Preferred health-care future**

Health-care professionals not only discussed where they thought health care is headed but also offered a snapshot of their preferred health-care future. This preferred state aligns directly with concerns based on the current trajectory of health care just discussed:

A preferable state would be to increase access to affordable health care to everyone while at the same time having the consumer share in the responsible consumption of that health care by sharing in the cost in a reasonable manner to where preventive health care and promotion of healthy lifestyles become the focus. This would translate into decreased health-care costs and allow resources to be put into research and development of new diagnostics and treatments that are more efficient and effective. (Administrator 2)

This summarizes participants’ preferred future, which falls into four categories – universal access, patient responsibility and engagement, improved patient experiences and empowered caregivers.

**Universal access**

Access for all is discussed as a preferred state and described as a right or simply as a moral obligation:

Care is a human right. The protection of the health of people is a human right. Maintaining health, prevention, rehabilitation […] all human rights. (Physician 3)

The thrust of this theme is that everyone deserves health care; yet, it is often discussed as a desirable but elusive dream state. Regardless of research participant type or context, universal access to health care is a preferred health-care future.

**Patient responsibility and engagement**

Participants suggest that consumers should take responsibility for their own health, engaging actively in the health-care process. To do so, preventative care is paramount:

We do a lot of our own research, it empowers us, we read everything we can get our hands on about [disease]. (Patient 10)

We should emphasize preventative care which will lead to healthier population at large. As a result, we will see a decrease in ER visits, a decrease in sicker patients and an overall decrease in health-care costs. (Physician 2)

Yet, potential roadblocks exist:

Not everyone has access to the information, nor do they always know how to use it. (Patient 8)

It can be harmful when patients pull information from non-credible sources. (Nurse 2)

The hope is that while patients may be more demanding, they will also be more informed and will make better choices for themselves and their health:

Patients may be more demanding in quality of service, but a little more educated in the behaviors they should take to care for themselves. (Patient 1)
This desire for a preferred health-care future directly echoes marketing’s well-known concept of value co-creation. According to our participants, co-creation implies a reciprocal relationship among stakeholders such as patients (and their families), caregivers and healthcare organizations so that service delivery can become more effective. This perspective reflects participants’ desire for concordance as a mechanism to co-create value. For example, when health-care providers acknowledge that patient engagement is both necessary and helpful, they are likely to realize the benefits of patient-centered care and promote co-creation of care among stakeholders. Once consumers are engaged in their health care, they need systems that work not only for them but also, more importantly, with them. In fact, current trends in the delivery of health care (e.g. shared decision-making, patient autonomy) illustrate patients’ changing role from passive recipients of care to co-producers of their own health and health-care experience. This active participation will lead health-care providers to include consumers in value-creating activities in health-care delivery.

**Improved patient experiences**

As consumers enter health-care services in a vulnerable state, their related experiences may be perceived as difficult and daunting. To overcome this, health-care service systems must begin to make more sense to consumers while operating more efficiently for providers. Our participants point toward systems that are designed to operate for the consumer as the focal stakeholder:

> At the [institute], patients have special food for their diet. If they are from the forest, or from the highlands, they have food from their region. (Physician 4)

This requires a shift in focus on the part of the health-care service provider, including doctors:

> Physicians need to be more focused on the integral perspective of the patient as a person. (Patient 1)

This shift is important to ensure that within patient experiences, physician-patient relationships continue to progress:

> The relationship with doctors and patients is very important. If the patient doesn’t trust the doctor, nothing will work. (Physician 5)

As part of the renewed focus on the patient, complexity must be removed so patients can better navigate health-care systems:

> Reducing, simplifying, or re-organizing complexity [...] reduce the friction of the experience [...] the health-care process is subject to many pain points – waiting times, billing struggles, undesirable scheduling (why do patients still not have night and weekend options outside of the ER?), and so on. (Academic 7)

This will also provide beneficial spillover effects to caregivers as they are part of systems that operate more smoothly. This approach is customer-centric and can be developed through human-centered service design (Anderson *et al.*, 2018). Finding new service platforms for patients, as they seek care that may or may not need a physician, will be part of this transition. This means new roles for caregivers as they facilitate these new systems.

**Empowered and new roles for caregivers**

As systems morph into new forms of care, constituents within these systems will have new roles to fulfill in this preferred future. This will impact physicians, nurses and other
caregivers depending on the phase of change and type of illness. Physicians will need more autonomy in a preferred future health-care service system:

Physicians need to be more in charge of health-care growth/development. (Academic 2)

I think health care would be more effective if physicians and nurses were allowed to say no. (Nurse 2)

Nurses will have more responsibility and will need more autonomy in the future if we want to get to a preferred state:

[Nurses] should have the autonomy to see patients without a doctor overseeing my every move. Fortunately, many states now allow nurse practitioners to see patients without oversight. There are several benefits of having nurse practitioners deliver primary care. (Nurse Practitioner)

To make this work, patients need to have a clear vision of nurses:

An effort should be made to make patients see us for what we are educated, primary (not secondary) care providers who provide quality care. (Nurse Practitioner)

Further, physicians and nurses will need to work together:

[...] physicians should be paired directly with an RN when seeing patients. So, the concept of “team care.” (Nurse and Researcher)

Finally, there needs to be balance between caring for people and taking care of administrative tasks:

[...] a better balance of reasonable expectations of paperwork and caseload numbers per provider. (Nurse 1)

This vision of the future matches well with the mounting evidence, suggesting that doctors alone are no longer sufficient to provide care in the evolving field of health care (Kurtzman and Barnow, 2017). In fact, the impending physician shortage will necessitate greater reliance on physician assistants (PAs) and nurse practitioners (NPs), especially in primary care:

The system should not be so overloaded as it is; but it is. It is a strain, and it’s going to get worse with the move to less and less PCPs. (Physician 6)

Considering the data confirm that NPs and PAs provide a range of primary care services as effectively as physicians, there is greater interest in employees such as these to provide frontline care (Kurtzman and Barnow, 2017). Our participants also suggest that other health-care providers and community health workers can help produce favorable outcomes:

Community health is very successful. Local health promotors make a difference. Health promotors are often from the community so they are trusted. (Physician 3)

There is evidence that consumers report a willingness to see other frontline employees (i.e. NPs and PAs) sooner rather than waiting for a physician (Dill et al., 2013). This shift will likely be driven by patient needs and preferences. As patients are the only constituent in the process who experience the entire illness and thereby the entire service experience (Elg et al., 2012), much can be learned by partnering with them in creating a preferred health-care future.
**Paths to a preferred health-care future**

*How can we get to a preferred health-care future?*

The only way this is going to happen is for the patient voice to be the dominant driver of health-care policy and change. The system exists to provide health care and health for the people it serves; thus, it is not about compensation for physicians or administrators, it is not about drug pricing and stock returns, or anything else. It is about serving patients. (Academic 6)

We must focus efforts on how to best serve patients. However, this cannot materialize without considering providers and the new roles they will face as health-care services adapt over time. Our participants identify three key areas that will help move us to a preferred health-care future: prevention and health promotion, advanced technology and concordance.

*Prevention and health promotion.* When asked how to get to a preferred health-care future, participants often began the discussion by mentioning prevention and health promotion; thus, it appears that the primary goal should be to assist people to act to prevent poor health and disease:

> There needs to be an emphasis on primary health care and prevention rather than cure. (Patient 5)

> People need to seek health care before they are sick, not only when they have a problem, a bad problem […] I see people at the end of their disease, what could have happened if I saw them sooner? (Physician 4)

Health promotion is a way to help people learn how to actively prevent poor health and disease:

> Prevention sounds great, but you have to educate people on how it works. (Patient 10)

> It’s about culture and letting people know they need to prevent. Some people know, but in other areas they do not have this information. We need to help them get the information. (Physician 5)

While prevention and promotion are universally important, what people need to know depends on context. For example, in developed nations, lifestyle disease prevention is important, while in developing contexts, patients seeking basic care earlier to prevent treatable illnesses from evolving into major health concerns is needed. In developing economic contexts, patients are simply not going to the doctor as soon as they should, overtaxing already stressed emergency medical service systems. In any case, marketing can be useful to achieve a state of wellness and prevention. Douglas (2006) shows that social marketing can be used to promote public health, contending that marketing concepts used at both the organizational (e.g. segmentation, branding) and personal levels (e.g. doctors’ reinforcement of messages during direct or indirect contact with patients) can impact health behavior. Marketing is and will continue to be a vital tool for moving patients, communities, nations and society toward a wellness model for health care that focuses on prevention.

*Appropriate technology implementation.* The application of technology will form the foundation of the move to a preferred future. All research participants discuss the gains technology will create in health care, though context is an important driver of how these gains will manifest. For example, participants in developed economies discuss the use of technology to self-monitor and for communication between patients and physicians. In developing and emerging economic contexts, the use of technology is a communication tool between physicians and for connecting rural and urban providers as they serve their constituent patients. In any case, technology is a tool to improve health-care delivery and quality:
Technology is an integral part of our lives now whether we like it or not and it will play a key role in health care the same way as it does in every other aspect of our lives. Technology will connect us to patients in new ways and allow us to test for new and different things than we have in the past. (Genetic Counselor)

Undergirding the deployment of technology, information technologies will be vital to the integration of health-care services across systems offering effectiveness:

IT should be used to make doctors more productive so they can spend more time with patients since they won’t have to spend time writing in paper charts. IT should be used by the entire hospital and patients. It could be used to manage patient care sharing secure patient health info. Developing secure electronic health records that make health information available to patients and doctors can improve care and reduce costs. IT can help doctors coordinate care with other doctors and nurses. It can be used to share health status with family. Big data and data analytics can be used to address health conditions. IT can streamline operations and reduce waits. (IT Professional 2)

More information, collected and delivered as needed, will improve decision-making for both patients and caregivers. Big data and analytics will support decision-making for constituents. Built on IT systems to support specific technological services, advanced information technologies will address specific issues providers and consumers experience:

Increased use of health information technology, to include RFID, which will enable the patient to better manage their health information. (Academic 6)

Distance communication will improve rural health. (Academic 9)

The emerging technologies, AI, AR/VR, IoT, Robotics, and so forth, are integrated into daily life and health-care scenes for [consumers]. (Academic 12)

Yet, hesitations exist about the implementation of technology in health care:

Technology is both good and bad. It helps the doctors to make an accurate diagnosis and in a short time but can also make doctors lazy, limit research by doctors and cases can be misdiagnosed by “computer-generated doctors” who over-relies of technology. (Patient 5)

I have the perspective, it’s over relied on, it’s expensive. Your best tools as a health-care provider are your eyes, ears, and hands […] just ask questions and listen […] technology is a tool, just one tool. (Physician 6)

There is a plethora of new technologies poised to launch in the health-care space. Some are in testing, some are in limited release; many will enable fundamental change in health-care service delivery. This is particularly true in care for long-term illnesses which will allow individuals to live independently longer and in applications for wearable technologies that are advancing to allow real-time information sharing between patients and caregivers (Bantau and Rayburn, 2016). Across these technologies, increased data access, analysis and application will offer opportunities for improved efficiencies. Applying such advanced technologies not only allows for service learning, adaptation, and redesign but also for the development and deployment of wholly new and possibly disruptive services (Bantau and Rayburn, 2016). Harnessing this possibility will be one way to move closer to a preferred future in health care.

Concordance. Concordance is a coming together of the provider and patient to partner in the health-care process. Participants are intrigued about the idea of concordance:
Following equal exchanges, both sides to the interaction are empowered. So balanced and equal relationship between two parties may contribute to a more open and authentic communication between the parties. (Patient 7)

At first as a health-care provider, we are trained to fight against it. To me concordance is a good thing, but it is not what we are taught. Patients know their body, patients can be savvy. (Physician 6)

Though, some concerns exist:

I think the expertise of the clinicians create an unbalanced relationship. I think that this is positive and desirable in many ways when the clinician is professional. Some consumers may ignore medical facts and treatment recommendations based on concordance assumptions. (Academic 10)

I believe consumer health care is trending in a way that’s no longer healthy for the patients. There’s been a shift in health care and it seems as though the patients almost have too much say. In the past few years I’ve seen a lot of physicians having to agree to orders that aren’t helpful/beneficial just to keep the patients happy and the hospital ratings up for insurance reimbursement. This is true of nursing too. (Nurse 2)

In either case, it is a difficult transition to make:

Concordance in the sense of negotiation between equals is an ideal state at which it is almost impossible to arrive. It is difficult to believe a patient feels the same power as a physician when they interact. Knowledge, education, status, etc. may hinder the possibility of being equals. (Patient 8)

However, participants offer a way forward:

The only way this is going to happen is for the patient voice to be the dominant drive of health-care policy and change. The system exists to provide health care and health for the people it serves […] it is about service patients. (Academic 3)

[It] can work if patients are educated. (Physician 4)

Most importantly, participants are optimistic about patients’ outcomes resulting from concordance:

Patients will feel more valued. Absolutely. My wife had an experience with a normal doctor but with an anthroposophical background. He applied concordance to a great extent. My wife was positively surprised. (Patient 6)

Trust will be developed at a much deeper level. (Patient 5)

Study implications

Health promotion and prevention

The primary objective of health promotion and prevention programs is to engage with and empower individuals and communities to adopt healthy behaviors. As such, these programs often address social determinants of health (e.g. economic, social and cultural) that affect health status. Therefore, health-care providers may find success using descriptive norms that have shown to be effective in encouraging desirable behaviors (Goldstein et al., 2008; Reese et al., 2014). For example, a health-care organization (e.g. hospital, doctor office or insurance company) may use email, social media or mailings to distribute messages that read:
Join your neighbors in helping to increase our community's health and well-being. In a study conducted in 2017, 72 per cent of your neighbors walked at least two miles a day. You can join your neighbors in this program to increase your community's health and well-being by walking at least two miles a day.

As highly visible institutions, hospitals are ideal settings for modeling healthy eating; however, many hospitals provide unhealthy food choices (Lesser and Lucan, 2013; The Atlantic, 2016; The Guardian, 2014). In a 2014 article, The Guardian states “[a]s the purveyor of health and wellbeing, the NHS does not do well at promoting a healthy diet and lifestyle among its staff” (p. 1). In the same article, the NHS's chief executive stated that, “employers should take an active interest in staff health and wellbeing” (p. 1). To influence the behavior of people who live in the communities in which they operate, hospitals are advised to align the meals they serve (to patients, visitors and employees) with their mission of promoting health and wellness. Doing so would support the concept of concordance in that health-care professionals would lead by example, thus dispelling a perception of “do as I say, not as I do”. Such an approach would parallel TSR's goal of using the interaction among service and consumer entities to “[...] affect the well-being of individuals, their families, and their communities [...]” (Anderson et al., 2013, p. 1208).

Technology in health care

Given the increasing complexity of health information and health-care settings, from a marketing perspective, the appropriate use of technology should focus on facilitating provider–patient interaction. Social media is one way to provide additional information and foster supportive relationships to achieve health-related goals (Cavusoglu and Demirbag-Kaplan, 2017; Sedrak et al., 2016). For example, consumers are using social media to share information about themselves and their treatments with other providers and other consumers (Attai et al., 2015). Moreover, as consumers increase their level of interaction with health-care providers, platforms such as Facebook, Twitter and organizational websites are uniquely suited to foster consumer engagement and facilitate informational and emotional support (Cavusoglu and Demirbag-Kaplan, 2017; Sedrak et al., 2016). In short, health-care providers should continue to expand their use of social media to support shared decision-making between providers and consumers, build and maintain social support networks, provide personalized self-management tools and deliver accurate, accessible and actionable health information. Such an approach can significantly impact the level of concordance between provider and patient.

Concordance

Increasingly, health-care providers are pursuing multiple goals through a patient-centered approach to health service delivery (Anderson et al., 2018; Crie and Chebat, 2013). Here, patient participation is an essential component of value co-creation (Lusch and Vargo, 2014) due to the likelihood of its positive impact on well-being, treatment compliance and the patient-provider bond (Engström and Elg, 2015; McColl-Kennedy et al., 2012). We argue that health-care organizations must double down on the idea of patient centricity by fully embracing patient participation in the future of health-care services. This is possible through a concordance-based approach to health care.

A natural outgrowth of participation in the service experience is the co-creation of value from the service. Co-creation means consumers and providers work together to create value during a service exchange (Sierra and McQuitty, 2005). Value can be habitual, which reflects everyday fulfillment of needs and/or wants, or it can be transformational, which reflects
exchanges, resulting in improved well-being for one or both parties in the exchange (Blocker and Barrios, 2015). The goal of health-care services is transformative value in the form of improved patient well-being.

To enable a patient-centric health-care organization, there will need to be fundamental shifts in the way many organizations operate. This movement is already underway. Many health-care providers have started engaging patients at a deeper level, and the result is improved health outcomes. This process does not have to start when consumers are ailing. As our participants point out, prevention is vital to better health for all consumers and society. So, health-care organizations can take an active role in leading the change to prevention, again by focusing on the consumer and what motivates them. Marketing scholars have a long history of examining and understanding why consumers behave like they do. This information can inform these newly patient-centric organizations as they seek to redesign existing services, conceive new services and deploy efforts to engage patients in health management.

Study limitations and future research directions
Our research is not without limitations. Being interpretive in nature, the results here are preliminary to some degree. However, the data allowed the analysis to move beyond “what” and explain “how,” which is a pinnacle objective of qualitative methods. Also, though a more global and representative sample would be utopic, a valid sample of health-care professionals, health-care academics and patients from diverse, global regions was obtained.

More research is needed to understand how marketers can help consumers move to a preferred health-care future. In doing so, correlation studies and/or experimentation could be used to explore effect sizes and response variation regarding the sequential process presented in the framework here of a probable future to a preferred future in health care. Longitudinal data could be collected, which explore if probable future components mesh and lead to preferred future outcomes; such investigations could take place across an amalgam of health-care settings. Also, inquiry about preferred future outcomes once put into place in health-care services warrants attention; such efforts could lend insight about brand strategy development for health-care providers and experiential value perceptions of patients.

References


Further reading


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Abstract

Purpose – This paper aims to examine whether consumers respond differently to different types of eco-innovations and to explore how and under what conditions eco-friendly consumer innovativeness (ECI) impacts consumers’ perception and adoption intentions.

Design/methodology/approach – Two online experiments with real consumers in the USA were conducted to test the hypothesized relationships. Two eco-innovation products were examined: a connected vacuum cleaner (Study 1) and an innovative smartphone (Study 2).

Findings – First, consumers tend to express more positive product beliefs, higher preferences and stronger adoption intentions toward resource use elimination innovations compared with the other types of eco-innovations across two product categories. Although consumers are not willing to pay more, they would adjust their payment equity by increasing consumption levels for resource use elimination innovations. Second, this research demonstrates ECI affects adoption intentions via formulating consumer perceptions of product eco-friendliness. Perceived trade-offs between eco-friendly benefits and product effectiveness strengthens the positive effect of ECI while weakening the impact of perceived product eco-friendliness on adoption intentions.

Research limitations/implications – Future studies may validate and extend the results for marketing communication to different types of eco-friendly innovative consumers to determine which marketing messages best match the perceptions and preferences of certain eco-friendly innovative consumers.

Practical implications – This study offers useful insights for strategic research-and-development investment and decision-making processes in selecting the best-suited approaches to developing eco-innovations and maximizing their success in the commercialization phase. Specifically, firms should place greater emphasis on resource use elimination innovation, which could evoke more positive consumer responses than resource use efficiency innovations and resource use substitution innovations. Moreover, it is important to improve the segmentation of the early adopters in the eco-innovation market with respect to specific types of eco-innovations so that marketers can distinctively address eco-friendly innovative consumers that best fit the potential user profile of their products.

Originality/value – The current research is novel as neither an empirically nor a theoretically founded framework has been suggested to examine how and why consumers respond differently to different types of eco-innovations. The findings shine new lights on eco-innovation research by providing useful insights into the underlying mechanisms and the conditions under which ECI affects consumers’ responses.

Keywords Consumer behaviour, Consumer innovativeness, Green issues

Paper type Research paper
Introduction
Recent times have been marked by growing environmental challenges, including global warming, energy security and resource scarcity, resulting in mounting pressures to minimize the human ecological footprint by shifting to more sustainable production and consumption (Kotler, 2011). In response, firms have accelerated their efforts to transform eco-friendly ideas into new and “greener” processes, technologies, and products/services (Katsikeas et al., 2016). However, despite a modicum of progress toward the goal of more sustainable development, current efforts fall far short of addressing the myriad pressing environmental challenges (OECD, 2009; United Nations, 2013). For example, the report of Baldé et al. (2017) reveals that more than 52 million metric tons (Mt) of electronic waste, mainly small electronic devices, will be disposed of worldwide by 2021, compared with the 40 million Mt generated in 2014. Due to the ongoing trend of electrifying nonelectrical equipment and low recycling rates, the substantial rise of electronic waste poses disproportionately more serious problems than other waste substances, such as food and textiles (Hoornweg and Bhada-Tata, 2012).

Given these foreboding realities, a big challenge for firms concerns optimizing growth potential whilst reducing its negative environmental impact (European Commission, 2012). A promising answer to this question – which should be at the heart of government policies and industry practices – is the eco-innovation concept in which new products have both innovative and eco-friendly features. Being innovative and environmentally sustainable unleashes a new potential for economic benefit and competitive advantage across many businesses and industries (European Commission, 2012; Iyer and Reczek, 2017) and renders innovations less vulnerable to the threat of obsolescence (Majid and Russell, 2015), but firms need further guidance on how to proceed in terms of both developing new products and reaching consumers.

As with all innovations, eco-innovations face a high rate of technology failure (Chan and Ip, 2010). Indeed, 46 per cent of all resources allocated to new product development in US firms are spent on products that failed to reach broad commercialization (Cooper et al., 2001). Moreover, estimates of new product failures among consumer packaged goods (fast-moving goods) are around 75 per cent (Schneider and Hall, 2011) and 72 per cent of new products do not meet profitability goals (Carmichael, 2014). While new product failure statistics do not provide a complete picture of the reasons why so many new products fail in the market, existing research attributes this phenomenon to inappropriate product designs (Celhay and Trinquecoste, 2015) and insufficient levels of consumer demand (Hauser et al., 2006; Heidenreich et al., 2017). Our research addresses these issues in the context of eco-innovation introduction.

First, with regard to new product design, it is widely acknowledged that an eco-innovation orientation is an inevitable reality for sustainable growth and differentiation (Du et al., 2016; Kotler, 2011). In recent years, a plethora of environmental sustainability issues have been incorporated into new product development, such as recycling (Giebelhausen et al., 2016), carbon emission reduction (Heidenreich et al., 2017), renewables (Claudy et al., 2013), energy saving (Tangari and Smith, 2012) and natural or locally supplied ingredients (Bodur et al., 2014). However, scant attention has been devoted to investigating whether different approaches to “greening” new product designs trigger different psychological and behavioral responses in consumers’ adoption processes. The lack of empirical work on this front requires immediate attention as firms have increasingly faced challenges relevant to their eco-friendly product development strategy, including making strategic investments in specific areas of research and development as well as marketing decisions about brand extensions and product positioning (Katsikeas et al., 2016). Therefore, the first aim of our
study is to examine if consumers respond differently to different types of eco-friendly attributes in eco-innovative product designs.

Second, the success of eco-innovation in the marketplace depends on how effectively firms target the consumers who are most likely to be interested in learning about and adopting a new product concept (Hoffman et al., 2010). A significant body of the innovation literature suggests that consumer innovativeness (CI), as an individual’s desire or willingness to take the risk of adopting new products, underlies the difference in adoption speed between innovators (early adopters) and imitators (Im et al., 2003; Li et al., 2015; Manning et al., 1995). In the sustainability literature, recent studies have adopted trait-based approaches to highlight the potential role of CI in reducing the intention–behavior gap in sustainable consumption across different product categories (Englis and Phillips, 2013; Hahnel et al., 2014).

Despite significant progress to date, two major limitations in the current research on CI warrant further consideration. First, given the complex adoption dynamics and diffusion processes of eco-innovations (Janssen et al., 2006; Wiedmann et al., 2011), only few research efforts have shed any light on the relationship between CI and consumers’ adoption of eco-innovative offerings (Heidenreich et al., 2017; Jansson, 2011). Second, and more important, the limited empirical research on this topic only investigates CI as an innate general trait, including such concepts as “need for stimulation” (Jansson, 2011) and “need for uniqueness” (Heidenreich et al., 2017), rather than focusing on a domain-specific level of abstraction in the CI conceptualization. It is thus crucial to understand the nature of domain-specific consumer innovativeness (DSI) in the context of eco-innovation and its effects on consumers’ product beliefs and adoption intentions.

The present study addresses the shortcomings in eco-innovation research and makes three main contributions. First, as the introduction of eco-innovation is challenged by pervasive uncertainty due to its long take-off phase and the value-action gap of sustainable consumption, we specify which the best approaches to “greening” new product designs should be from the consumer perspective. By grounding our main thesis on the categorization theories (Moreau et al., 2001b; Viswanathan and Childers, 1999) with the focus on the distinctiveness of eco-friendly benefits integrated in new product designs, we provide a rigorous answer as to whether particular types of eco-innovation provoke more positive consumer responses than other alternatives. In doing so, we offer useful guidelines on which types of eco-friendly attributes should be emphasized in new product development. Second, we propose a new conceptualization of CI at a domain-specific level of abstraction by adapting the DSI concept of Goldsmith and Hofacker (1991) to the realm of sustainable innovation consumption, so called eco-friendly consumer innovativeness (ECI). To further validate the ECI scale, we demonstrate that the ECI scale predicts consumers’ perceptions and adoption intentions across different types of eco-innovation. Third, we contribute by specifying the unique mechanism through which ECI affects consumers’ psychological and behavioral responses. More specifically, we suggest that consumers with stronger ECI increase adoption intentions towards eco-innovation through more favorable evaluations of the environmental aspect of an innovation. Furthermore, because of the way ECI interacts with perceived trade-offs between environmental benefits and product effectiveness, our analysis provides new insights into the complex dynamics linking consumers’ traits to their product beliefs and behavioral intentions in the context of sustainable innovation.

Theoretical background

Conceptualization of eco-innovative product designs

The integration of ecological consciousness into new product development and innovation design has risen in importance for academic researchers and practitioners (Goodman et al., 2017;
Katsikeas et al., 2016; Pujari et al., 2003). While advanced technologies and skillful industrial designs facilitate the rapid development of innovative products, this changing landscape also requires a faster pace of product upgrading, triggers shorter replacement cycles and creates a greater fear of obsolescence, ultimately leading to negative consequences for the environment (Calcott and Walls, 2005). Guiltinan (2009) identifies two aspects of new product development that drive these environmental issues: the frequent introduction of replacement products and the recyclability of new products. These two aspects exacerbate environmental problems if firms only emphasize producing and marketing innovations without any focus on sustainability.

The eco-innovation concept, which incorporates both innovative and eco-friendly attributes in a new product design, reflects a proactive orientation toward positive sustainability in product design rather than the reactive elimination of environmentally problematic features (Pujari, 2006). Halila and Rundquist (2011) refer to eco-innovation as either new products, process, and practices or modifications to existing ones that aim to reduce or avoid environmental harm. Taking a broader and more practical approach, the European Commission (2012, p. 2) defines eco-innovation as “all forms of innovation – technological and non-technological – that create business opportunities and benefit the environment by preventing or reducing their impact, or by optimizing the use of resources.” Building on the extant innovation and sustainability literature, Varadarajan (2015) concludes that while a variety of definitions of eco-innovation have been suggested, the literature contains no widely accepted and broadly sound conceptualization as well as robust operationalization of eco-innovation, especially with regard to the consumer market. This inhibits the comparability and generalizability of findings across product categories and industries. The current work examines the design of eco-innovation from the consumer perspective and defines an eco-innovative product design “as a firm’s new product design that is perceived by consumers to be innovative and eco-friendly based on their evaluation of product attributes”.

Many scholars argue that a defining component of an eco-innovation is positive ecological attributes that have been purposely designed into (i.e. embedded in) the new product development process (Adams et al., 2012; Fuller and Ottman, 2004). In line with this notion, we contend that the success of an eco-innovative product design depends mainly on how consumers understand and value the ecological benefits of the innovation based on its product attributes. This key perspective remains insufficiently addressed and therefore requires deeper attention in the innovation and sustainability literature.

Types of eco-friendly attributes in eco-innovative product designs
Eco-friendly attributes (a subset of ethical attributes) are defined as product characteristics that have positive implications for protecting (or not harming) the environment (Bodur et al., 2014; Bodur et al., 2016; Irwin and Naylor, 2009). Prior studies have suggested various approaches to classifying eco-friendly attributes. For example, Irwin and Naylor (2009) investigate product eco-friendliness as “protected” or “sacred” values (e.g. boycotting a firm with egregious ethical violations) and argue that consumers explicitly reject unethical items and avoid making trade-offs between ethical values and other attributes, no matter what the benefits of doing so may be (p. 235). With another approach, Bodur et al. (2016) posit that eco-friendly attributes are either product-related (they directly affect product performance and quality) or symbolic (they indirectly address environmental issues, such as cause-related marketing).

In the context of sustainable innovations, Varadarajan (2015) categorizes the sustainability-related benefits of an innovation into two main groups: physical differentiation attributes (resource use efficiency, elimination, or substitution during the production stage) and experienced differentiation attributes (resource use efficiency, elimination or substitution during the product usage stage). The most recent study of Iyer
and Reczek (2017) emphasizes the importance of understanding the two approaches: *mitigating* (i.e. reducing resource consumption) and *creating* (i.e. introducing alternative fuels and energy resources or pro-environmental values). In line with previous studies and building on interviews with managers and consumers, we contend that there are three key types of eco-friendly attributes that can be integrated into new product development and marketing activities:

1. resource use reduction/ef**fi**ciency features;
2. resource use elimination features; and
3. resource use substitution features.

We discuss each in turn.

**Resource use reduction or efficiency innovations.** The development of these innovations aims to improve productivity and efficiency in the use of resource inputs in the manufacturing and consumption processes of the eco-innovation (European Commission, 2013; Varadarajan, 2015). In other words, natural resources should be processed and consumed in a more efficient and sustainable way over the whole life cycle of the product (Schandl, 2011). This type of eco-innovation is often designed to minimize energy use and maximize carbon reduction. For example, smart metering provides real-time energy consumption feedback to consumers and can generate a sustained reduction in energy consumption of 5-10 per cent (HM Treasury, 2005). Another example is the smart Nebia shower system, which reduces water consumption by 70 per cent without affecting people’s shower experience (Mitchell, 2015).

**Resource use elimination innovations.** The goal of this eco-innovation type is to eliminate the use of natural resources or harmful ingredients as an input for manufacturing and consumption processes while maintaining the same levels of product functionality and performance (Malhotra, 2016). According to Varadarajan (2015, p. 8), there are three approaches to developing resource use elimination innovations:

1. excluding ecologically harmful ingredients;
2. excluding filler ingredients from a product; and
3. excluding the need to use a complementary product.

The possibility of eliminating potentially hazardous materials largely depends on the availability of safer alternatives that ideally perform at least the same or even better functions. A recent example is the Quanthor cell phone, which is based on Fibonacci sequence technology to eliminate the emission of electromagnetic radiation. The innovative XO Laptop for children containing no hazardous materials is also a good illustration of this type of eco-innovation.

**Resource use substitution innovations.** Resource use substitution innovations are developed by substituting:

- nonrenewable resources with renewable resources;
- ecologically harmful nonrenewable resources with less/non harmful nonrenewable resources;
- less abundant nonrenewable resources (subject to the substitution not having a negative impact on the overall sustainability profile of the product) with more abundant nonrenewable resources; or
- mined raw materials with above-ground ones (Varadarajan, 2015, p. 8).
This type of eco-innovations is considered as the key to reduce costs and raise the efficiency, performance and deployment levels of renewable energy usage (e.g. solar, wind, modern biomass, hydro, geothermal) on a regional, sectional and global scale (Saygin et al., 2015). A good example of this type of innovation is the Immortus car (by EVX Ventures in Melbourne), which is powered by solar energy captured by photovoltaic paneling along the vehicle’s exterior (Mitchell, 2015). Another example is Trinity, an innovative portable micro wind turbine from Janulus, which generates power at low wind speeds for charging small devices and even electronic cars.

**Eco-friendly consumer innovativeness**

The CI concept was first introduced in the early 1970s by Rogers and Shoemaker (1971) as “the degree to which an individual is relatively early in adopting an innovation than other members of his system.” This definition, which focuses on the actual time of adoption, has initiated a lasting debate on the conceptualization and measurement of CI in the marketing field (Midgley and Dowling, 1978). Since its introduction, CI has become an important concept in innovation and marketing communications research (Goldsmith et al., 1995; Heidenreich and Kraemer, 2016).

During the early phases of CI’s conceptual development, it was regarded as actual adoption behavior within a particular product category or across several categories (Summers, 1972; Venkatraman and Price, 1990). In the late 1970s, the academic and intellectual debate was extended to focus on conceptualizing and operationalizing CI at a higher level of abstraction. Specifically, several researchers developed a cross-sectional measurement of CI, which offers a deeper and more abstract understanding of CI as a cognitive style (Kirton, 1976) and as an individual personality trait (e.g. innate innovativeness [see Midgley and Dowling (1978)] or inherent innovativeness [see Hirschman (1980)]).

Since the 1990s, rationalizing the CI concept in a specific domain has become more attractive to marketing researchers, providing a pragmatic approach for the vast majority of academic research to focus on (Goldsmith and Hofacker, 1991). Over the last decade, CI has continued to garner significant attention (Bartels and Reinders, 2011; Heidenreich et al., 2017; Vandecasteele and Geuens, 2010). Specifically, the past decade has witnessed the development of the CI conceptualization at three different levels of abstraction: general personality trait innovativeness, domain-specific innovativeness and actualized innovativeness. These diverse classifications and operationalizations of CI (see Appendix 1) aggravate the findings’ comparability and generalizability as well as prevent cumulative knowledge development and disciplinary maturity.

In several pivotal publications, researchers have argued that the intermediate level of abstraction of CI (i.e. DSI) is more effective in predicting innovation adoption behaviors than global innovativeness, which represents as high level of abstraction (Goldsmith et al., 1995; Hoffmann and Soyez, 2010; Klink and Athaide, 2010). The first DSI scale proposed by Goldsmith and Hofacker (1991) has been empirically tested and shows good validity, favorable psychometric properties, and a high correlation with actual adoption behaviors across various settings (Goldsmith et al., 1995; Roehrich, 2004). Furthermore, Bartels and Reinders (2011) posit that DSI is the most popular approach to measuring CI in the existing literature. Following prior work, we focus on DSI in the specific domain of eco-innovative products (i.e. ECI) and investigate its impact on consumers’ perceptions and adoption behaviors. Inspired by Goldsmith and Hofacker (1991), we thus define ECI as *the consumer’s tendency to be knowledgeable about and adopt innovative products and services that are beneficial to the natural environment*. In other words, ECI is nested within the DSI concept.
with respect to the sustainable innovation product category. We believe that the uptake of eco-innovation— that is, when consumers pay more attention to environmental aspects of an innovation, overlook the perceived trade-offs between eco-friendly benefits and product effectiveness, and ultimately adopt eco-innovative offerings—is a sign of ECI in the context of sustainable innovation consumption.

Hypothesis development

Types of eco-friendly attributes in eco-innovative product designs and consumer responses

Our main hypothesis is that consumers might respond differently to different types of eco-friendly attributes, as consumers tend to form categorizations, evaluations, and expectations of eco-innovation based on prior product knowledge and experience (Moreau et al., 2001a; Moreau et al., 2001b). We base our main hypothesis on categorization theories (i.e. the categorization-based knowledge transfer for new products and the fuzzy set theory).

The categorization theory postulates that “individuals naturally categorize and spontaneously name objects” according to the richness (number of attributes) and distinctiveness (differentiating attributes) of product categories (Sujan and Dekleva, 1987, p. 372). In the case of really new products, Moreau et al. (2001b) argue that consumers face the challenge of using cues from multiple categories to understand the innovation and develop their new product expectations and preference. As a result, consumers are likely to categorize a new product into the category that is first cued and then use this category label to make inferences about the product and purchase decisions.

Other researchers have adopted the “fuzzy set” theory to investigate product categories as sets without clear boundaries that separate category members from nonmembers (Ahmad and Richard, 2014; Viswanathan and Childers, 1999). In a fuzzy set, the category membership of a product depends on the degree to which it possesses a particular attribute or a set of attributes. Drawing on this theory, Viswanathan and Childers (1999) suggest that consumers evaluate the gradedness of category membership at the level of individual attributes, which are then combined to reach overall measures of category membership gradedness for a whole product. Applying these theories in the context of eco-innovation, in which both innovative and eco-friendly attributes are included in a new product design, we focus on the distinctiveness aspect of the categorization approach, in which knowledge is transferred from multiple categories (innovativeness and eco-friendliness) to formulate a new representation of an eco-innovation and form their expectations and preferences.

In the marketing and sustainability literature, numerous studies have provided a deeper understanding of consumer psychology with a focus on both mitigating negative impacts of consumption and creating/promoting pro-environmental values and behaviors across a wide range of product/service categories and national markets (Iyer and Reczek, 2017). Specifically, eco-friendly attributes can affect consumers’ overall brand attitudes and evaluations (Bodur et al., 2016; Olsen et al., 2014), purchase intentions (Alwitt and Pitts, 1996; Gleim et al., 2013; Gonçalves et al., 2016; Hartmann and Apaolaza-Ibáñez, 2012; Karmarkar and Bollinger, 2015; Newman et al., 2014; Peyer et al., 2017; Wu et al., 2015; Yang et al., 2015), willingness to pay (Haws et al., 2014; Irwin and Spira, 1997; Kazeminia et al., 2016), product preferences (Cornelissen et al., 2008; Griskevicius et al., 2010; Han et al., 2017; Peloa et al., 2013; Van der Wal et al., 2016; Zhang et al., 2011), satisfaction (Giebelhausen et al., 2016) and adoption intentions (Moon et al., 2016).

Our extensive review of the current literature reveals mixed and contradictory results, triggering an ongoing debate about the mechanism underlying the impact of eco-friendly product attributes on consumer responses (Appendix 2). The current major streams of sustainability research directly identify specific boundary conditions under which the
inclusion of eco-friendly attributes can either enhance or diminish consumers’ product evaluation and behavioral intentions, such as attribute strength (Luchs et al., 2010), attribute centrality (Gershoff and Frels, 2014) or firm intentionality (Newman et al., 2014). However, prior studies in these research streams have examined specific types of eco-friendly attributes in conventional products in a separate manner (Appendix 2). Thus, it remains unknown whether consumers respond differently to different eco-friendly attribute types incorporated in innovative product designs.

We extend this research stream by exploring which types of eco-friendly benefits integrated in new product designs should be emphasized to encourage consumers to adopt eco-innovation across the consumption contexts. We contend that categorization-based transfer, triggered by offering consumers different eco-friendly attributes in eco-innovation, leads to different products’ category membership (i.e. types of eco-innovations). Depending on purchase situations and product knowledge, consumers may assign different weights to different types of new eco-friendly attributes (Moreau et al., 2001a). Once the categorization and evaluation process of the eco-innovation’s category membership gradedness occurs, consumers then use the cues and assign weight of the respective category to make inductive inferences about product quality. These inferences influence consumers’ preferences, adoption intentions and willingness to pay for eco-innovations. Thus, we put forward the following hypotheses:

**H1.** Different types of eco-friendly attributes (i.e., resource use reduction, elimination and substitution features) yield significant differences in consumers’ (a) product quality perceptions, (b) preferences, (c) adoption intentions and (d) willingness to pay with respect to eco-innovative product designs.

**ECI and consumer responses to eco-innovations**

Based on cognitive identity theory, Grewal et al. (2004) posit that because social identity facilitates the acceptance of an individual in a social group to which they are emotionally attached, the individual is more likely to adopt an innovation in a specific domain to demonstrate their in-group belongingness. Prior research has revealed the strong predictive power of DSI for consumers’ product beliefs and their adoption behaviors across various settings and product categories (Goldsmith et al., 1998; Goldsmith et al., 1995; Hofstetter et al., 2013; Mowen, 2004). Yet, until now, neither an empirically nor a theoretically grounded framework has been offered to explain the mechanism underlying the effect of the DSI on consumer responses in the domain of sustainable innovation consumption. We propose that ECI – representing an individual’s innovativeness in the specific domain of interest regarding environmental protection and mindfulness – might lead consumers to have positive responses to new sustainable products (Gatignon and Robertson, 1985; Hirschman, 1980).

To further validate the new ECI scale developed in this study, we examine how ECI affects consumers’ responses to eco-innovation not only to provide evidence of predictive validity of ECI but also for practical implications. For example, marketers could identify and target specific types of consumers who may be more likely to buy certain eco-innovations with appropriate marketing messages. Accordingly, we propose that because an eco-innovation may help consumers high in ECI express their willingness and desire to try new products with positive environmental attributes, these consumers put more emphasis on the eco-friendly aspects of the innovation. This, in turn, results in higher perceived product eco-friendliness and ultimately stronger adoption intentions toward an eco-innovation. In other words, we aim to test both direct and indirect effects of ECI on adoption intentions through
perceived product eco-friendliness across different types of eco-innovation. Formally, we test the following two hypotheses:

\[ H2. \text{ ECI is positively related to perceived product eco-friendliness.} \]

\[ H3. \text{ Perceived product eco-friendliness mediates the positive effect of ECI on adoption intentions.} \]

In addition, when purchasing eco-friendly products, consumers often face trade-offs between environmental benefits and other important attributes, such as functional performance, aesthetic design, price and safety (Luchs et al., 2012; Olsen et al., 2014). Such trade-offs can have a negative impact on consumers’ perceptions and actual adoption, regardless of their concerns about environmental issues (Bamberg, 2003; Carrington et al., 2014; Olson, 2013). Therefore, we examine the role of these perceived trade-offs in explaining the effects of ECI on adoption intentions. From a managerial perspective, a better understanding of this mechanism will enable marketers to design appropriate marketing messages that target early adopters by focusing on information about perceived trade-offs in eco-innovation product designs.

To the best of our knowledge, no empirical research has not yet explored the moderating effect of the trade-offs between eco-friendly benefits and overall product effectiveness in the context of eco-innovation. First, we argue that consumers’ perception of these trade-offs weakens the relationship between perceived product eco-friendliness and adoption intentions. Specifically, when consumers hold stronger (vs weaker) perceptions of trade-offs, they will be more (vs less) reluctant to adopt an eco-innovation with higher (vs lower) perceived product eco-friendliness. Second, drawing on the costly signaling theory, we propose that when high-ECI consumers are aware that environmental benefits of a product may compromise overall product effectiveness, they are more likely to adopt an eco-innovation for the desirable status it signals. Costly signaling theory suggests that consumers will consider engaging in activities that are increasingly costly (in terms of resources, energy, risk, or time) as a way to signal their ability and willingness to incur certain inconveniences for a given cause and to compete for status (Zahavi and Zahavi, 1999). In other words, a person can gain status if he or she is willing and able to sacrifice certain resources for others (Cole and Chaikin, 1990). Applying this theory in the sustainable consumption context, Griskevicius et al. (2012) posit that green marketing efforts should make consumers who engage in self-sacrificing behaviors feel comfortable and easy to be socially visible, thus drawing attention to their status and their sacrifice as a way to encourage the voluntary adoption of more sustainable practices.

In this study, through eco-innovation adoption, high-ECI consumers effectively convey to their peers that they are willing to incur costs (i.e. they will sacrifice product convenience or effectiveness for environmental benefits), thereby increasing their relative status. ECI enables consumers to overcome past negative experiences with eco-friendly products and motivates them to embrace the trade-offs between eco-friendly benefits and product effectiveness as a means to signal their own inherent innovativeness (Heidenreich et al., 2016). Conversely, low-ECI consumers are not willing (or at least are more reluctant) to make trade-offs between eco-friendly benefits and other attributes (e.g. product functionality). Low-ECI consumers may be less susceptible to the benefits of sustainable innovations and more sensitive to trade-offs between eco-friendly benefits and product effectiveness due to an inherent hesitation to take certain risks (Klink and Athaide, 2010). In summary, we expect different moderating roles of perceived trade-offs not only on the relationship
between perceived eco-friendliness and adoption intentions but also on the link between ECI and adoption intentions.

**H4.** Perceived trade-offs between environmental benefits and product effectiveness negatively moderate the positive effect of perceived eco-friendliness on adoption intentions.

**H5.** Perceived trade-offs between environmental benefits and product effectiveness positively moderate the positive effect of ECI on adoption intentions.

**Method**

To test the hypothesized relationships, we conducted two online experiments with real consumers in the US market to provide empirical evidence that consumers respond differently to different types of eco-friendly attributes that are integrated in high-tech products – in particular, Internet-of-things (IoT)-based products. We used IoT-based products due to their increasing popularity and considerable impact in many spheres of life and society in recent years (Ng and Wakenshaw, 2017). Despite their benefits and advantages, the pervasiveness of IoT-based devices and networks on a large scale accelerates the rapid growth of electronic waste, resource and energy consumption and greenhouse emissions. Due to growing ecological challenges and mounting pressures to reduce humanity’s ecological footprint, the idealized vision of IoT inevitably includes its potential to bolster economic and environmental sustainability to improve the well-being of humankind (Maksimovic, 2017). This vision could be more fully realized by introducing the eco-innovation concept into the IoT technology development, such that new products offer both “smart” functions and eco-friendly benefits.

More specifically, we examined two eco-innovation products: a connected vacuum cleaner (Study 1) and a smartphone (Study 2). We selected connected vacuum cleaners and smartphones because they are familiar products to our participant population, amenable to the incorporation of eco-friendly attributes, and compatible with the experimental method. Eco-friendly attributes have increasingly been found in various product descriptions of home appliance manufacturers (e.g. Samsung CycloneForce, with its ultra-low-power bagless cylinder technology) and innovative smartphone companies (e.g. Fairphone 2, with a 10/10 reparability score). In addition, these product categories are often characterized by highly innovative product designs and shorter product lifecycles (Mahadevan, 2015). Finally, purchase decisions for these product categories are often associated by high involvement and rational decision criteria, suggesting a need for deep cognitive information processing with respect to various product dimensions (Ratchford, 1987). In high-involvement scenarios, consumers experience strong feelings of personal relevance toward specific products, resulting in a greater motivation to attend to and comprehend the salient product information (i.e. product innovative and eco-friendly attributes) (Celsi and Olson, 1988).

However, these product categories are distinct in the sense that one (the connected vacuum cleaner) is a privately consumed product that is used inside the house/private places and thus offers low social distinction, while the other (the smartphone) is a more symbolic and socially visible product that will be noticed and can thus express one’s status relative to others (Weaver *et al.*, 2015). Therefore, the contexts provide relevant and fertile ground for theoretical research and strong managerial implications.
Pretest

We conducted two separate pretests with marketing students who did not participate in the main studies. In the first pretest, we recruited 44 postgraduate students (35 per cent male, $M_{\text{age}} = 21.59, \text{SD} = 1.82$) with adequate eco-friendly product knowledge and experience ($M = 4.40, \text{SD} = 0.86$), as measured on a seven-point Likert scale adapted from Gershoff and Frels (2014) ($\alpha = 0.70$). The students received the definitions of different types of eco-innovation and were asked to classify a list of the ten most popular innovative and eco-friendly features of vacuums and smartphones into four categories:

1. innovative features;
2. resource use reduction features;
3. resource use elimination features; and
4. resource use substitution features, with an optional answer of “I don’t know”.

To control for any assumptions participants might make about the types of eco-friendly features, we used the words “reduce,” “eliminate” and “substitute” in the descriptions of resource use reduction, resource use elimination, and resource use substitution features, respectively.

We selected the features that the majority (i.e. 55 per cent or more) of participants classified as being typical for each specific type. The majority of respondents categorized “remotely controlled by a smartphone app” (81 per cent) and “home automation” (89 per cent) as innovative features. Most of the respondents (95 and 66 per cent, respectively) classified “50 per cent less energy consumption” and “a 10/10 reparability score” as resource use reduction features. “Canisters” and “eliminating radiation emission” were classified as resource use elimination features by 81 and 75 per cent of the respondents, respectively. Finally, “solar vacuum tube” and “solar phone charger” were classified as resource use substitution features by 68 and 59 per cent of respondents, respectively.

In the second pretest, we asked a different pool of marketing students ($n = 30, 43.3$ per cent male, $M_{\text{age}} = 21.87, \text{SD} = 1.20$) to evaluate the eco-friendliness of the selected features from the first pretest on a seven-point Likert scale (1 = “not at all”; 7 = “extremely”). We also measured eco-friendly product knowledge and experience with the same scale adapted from Gershoff and Frels (2014) ($\alpha = 0.79$). Participants displayed adequate knowledge about eco-friendly products ($M = 4.05, \text{SD} = 1.26$). We then conducted one-sample $t$-tests to compare each attribute with respect to the scale midpoint of four. In line with the first pretest, respondents rated the eco-friendly attributes as significantly higher than the scale midpoint value: resource use efficiency ($t_{\text{vacuum}}(29) = 5.64, p < 0.001$; $t_{\text{phone}}(29) = 5.76, p < 0.001$), resource use elimination ($t_{\text{vacuum}}(29) = 5.71, p < 0.001$; $t_{\text{phone}}(29) = 6.42, p < 0.001$) and resource use substitution ($t_{\text{vacuum}}(29) = 5.01, p < 0.001$; $t_{\text{phone}}(29) = 7.05, p < 0.001$). However, the innovation attributes were not rated significantly higher than the scale midpoint ($p > 0.30$). Based on the results of the pretests, we created four manipulations for each product category (Appendix 3).

To develop our ECI scale, we modified the original DSI scale of Goldsmith and Hofacker (1991) and the ethical consumption innovativeness scale of Ganglmair-Wooliscroft and Wooliscroft (2016) in the context of eco-innovation. To ensure conceptual compatibility and meaningful equivalence, we invited two experienced marketing scholars and eight doctoral candidates (37.50 per cent male, $M_{\text{age}} = 30.05, \text{SD} = 4.66$) to review our scale by evaluating the representation of each item based on our definition of ECI on a five-point Likert scale (1 = “does not fit at all”; 5 = “good fit”). Based on data analysis from this pretest, we finalized the structure and the content of the ECI scale with a five-item self-reported scale to measure
ECI within the specific domain of environmental interests ($M_{\text{Fit score}} \geq 3$), while eliminating the item “I will buy a new [product name] even if I have not heard of it before” due to its low fit ($M_{\text{Fit score}} < 3$) (Table I).

Because IoT-based products are designed as dynamic service platforms with high flexibility and heterogeneity in consumption, there are more opportunities to differentiate these products, moving competition away from price alone (Ng et al., 2015). In this sense, it can be argued that the price component is no longer the most substantial hindrance to adopting several types of IoT-enabled products. Indeed, according to Accenture (2015), consumers are more likely to pay more for smart devices that offer safety (e.g. a smart smoke alarm, a smart security system) or novelty (e.g. smart cars, smart shoes).

In this study, instead of actual selling prices, we focused on consumers’ willingness to pay (WTP), defined as the minimum price at which or below the consumer will purchase the new product, as an important construction of price response functions (Völckner, 2008) to provide guidance for implementing suitable pricing instruments for eco-innovative products. To avoid a potentially biasing impact of pricing information on respondents’ answers for WTP, we did not present actual selling prices or signal price differential across conditions in our experiments. Finally, to control for the effects of brand names, we used fictitious brand names for a connected vacuum and a smartphone in all the conditions.

### Study 1: different types of eco-friendly attributes in eco-innovative product designs

The purpose of Study 1 is to explore whether consumers respond differently to different types of eco-friendly attributes in an eco-innovative product design ($H1a-H1d$). To test these hypotheses, we used a connected vacuum cleaner, a privately consumed product, as our

<table>
<thead>
<tr>
<th>Domain-specific innovativeness (DSI)</th>
<th>Ethical consumption innovativeness (ETCI)</th>
<th>Eco-friendly consumer innovativeness (ECI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldsmith and Hofacker (1991) and</td>
<td>Ganglmair-Wooliscroft and Wooliscroft (2016)</td>
<td>The current study</td>
</tr>
<tr>
<td>Goldsmith et al. (1995)</td>
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</tr>
</tbody>
</table>

In general, I am among the last in my circle of friends to buy a new [product name] when it appears. (r)
If I heard that a new [product name] was available in the store, I would be interested enough to buy it
Compared to my friends, I own a few [product name]. (r)
In general, I am the last in my circle of friends to know the names/information of the latest [product name]. (r)
I will buy a new [product name] even if I have not heard of it before
I know the names of new [product name] before other people do

In general, I am among the first in my circle of friends to undertake an ethical consumption behavior
If I hear about a new ethical consumption issue, I am interested to find out more Compared to my friends, I make a lot of consumption choices on an ethical basis
In general, I am the first in my circle of friends to know about ethical consumption issues
I know about ethical consumption issues before other people do

In general, I am among the first in my circle of friends to adopt eco-innovative products
If I hear about new ideas/products on environmental issues, I am interested to find out more
Compared to my friends, I make a lot of consumption choices that are good for the environment
In general, I am the first in my circle of friends to know about eco-friendly consumption issues
I know about environmental issues before other people do

Notes: (r) = reverse scored

Table I. The DSI, ECI, and modified scales of eco-friendly consumer innovativeness
innovative product category to test whether different types of eco-friendly attributes elicit different product beliefs and adoption intentions in the consumers’ psyche.

**Sample and design**
One hundred thirty-one consumers (42 per cent male; $M_{age} = 43.47$, SD = 12.93) were recruited through Amazon Mechanical Turk (MTurk) to complete an online study in exchange for nominal compensation. The sample was biased toward the upper end of the income brackets, with over 60 per cent of respondents reporting medium ($50,000-$74,999), high ($75,000-$100,000) and very high (> $100,000) annual incomes. The majority of respondents (86.30 per cent) had a minimum of a bachelor’s degree. Participants were randomly assigned to one of four versions of a survey and were roughly evenly distributed across the conditions. We used a four between-subjects design, including a control condition and three eco-friendly attribute types in eco-innovative product designs (i.e. types of eco-innovations): resource use efficiency, resource use elimination and resource use substitution versions of a connected vacuum cleaner.

**Procedure and measures**
All participants were given a short description of a connected vacuum cleaner. They were then told that the description was from an online store dedicated to connected vacuum cleaners and that they were considering purchasing one. On the following page, all participants were randomly assigned to one condition and were given an advertisement with the same picture of a connected vacuum cleaner and its respective descriptions according to the conditions.

To measure the extent to which participants evaluated the connected vacuum cleaner as innovative and eco-friendly, we used a seven-point Likert scale (1 = “strongly disagree”; 7 = “strongly agree”) of perceived product innovativeness (5 items, $\alpha = 0.95$) (Goode *et al.*, 2013) and perceived product eco-friendliness (3 items, $\alpha = 0.95$) (Gershoff and Frels, 2014). Participants then reported their relative preferences (4 items, $\alpha = 0.95$) (Jhang *et al.*, 2012), adoption intentions (3 items, $\alpha = 0.94$) (Hassan *et al.*, 2014) and willingness to pay (respondents were asked to answer the open-ended question “How much would you be willing to pay for this product?” [measured in USA dollars]). We also measured product quality with a single item based on a seven-point Likert scale: “How do you rate the quality of the product?” (1 star = “extremely bad”; 7 stars = “extremely good”). For psychometric properties of the measures, see Appendix 4.

**Results**
**Manipulation check.** Two separate analyses of variance (ANOVA) analyses demonstrated that the manipulations in terms of eco-friendliness and innovativeness were correctly operationalized. Participants evaluated the product as more eco-friendly in the resource use efficiency condition ($M = 4.79$, SD = 1.07), the resource use elimination condition ($M = 5.83$, SD = 0.88), and the resource use substitution condition ($M = 5.57$, SD = 1.08) than in the control condition ($M = 4.13$, SD = 1.16; $F(3, 127) = 18.13$, $p < 0.001$). Perceived product innovativeness scores were not significantly different among the four conditions ($F(3, 127) = 2.49$, $ns$). Overall, we found that the product descriptions successfully manipulated participants’ perceptions of the product’s eco-friendliness and innovativeness.

**Consumer responses.** After the manipulation check, we eliminated the control condition ($n = 37$) from the dataset and focused on comparing the means of three types of eco-innovation. We conducted an ANOVA modeling consumer responses (product quality, product preferences, adoption intentions and WTP) as a function of the eco-innovation-type conditions. In support of our hypotheses, we found significant effects of the eco-innovation-
type conditions on consumer responses. In particular, we found evidence of a significant effect of eco-innovation types on product quality \((F(2, 91) = 7.07, p < 0.01)\), preferences for eco-innovations \((F(2, 91) = 5.86, p < 0.01)\) and adoption intentions \((F(2, 91) = 5.41, p < 0.01)\), in support of \(H1a, H1b\) and \(H1c\), but no significant effect on WTP \((F(2, 91) = 1.25, ns)\), thus rejecting \(H1d\). These significant results suggest that participants respond differently to different types of eco-friendly benefits in an eco-innovative product design. Moreover, in paired comparisons, we found that consumers’ responses were significantly different across each of the three eco-innovation-type conditions. As Table II shows, participants in the resource use elimination and resource use substitution innovation conditions reported higher scores for product quality, product preference and adoption intentions than those in the resource use efficiency condition.

**Discussion**

The results demonstrate that different types of eco-friendly attributes in an eco-innovative product design triggered significant differences in consumers’ psychological and behavioral responses. It is evident, that although participants responded more positively to resource use elimination and resource use substitution innovations, they were reluctant to pay more for these types of eco-innovation. The implications of these findings hold particular importance for managers, who must make decisions about what types of eco-friendly benefits should be included in eco-innovative product designs as well as decisions about brand extensions and product positioning in the context of privately consumed products such as vacuum cleaners.

**Study 2: effects of ECI on consumer perceptions and adoption intentions**

The objectives of Study 2 are to replicate and confirm the primary results found in Study 1 – namely, that consumers respond differently to different types of eco-innovations – in the context of a publicly consumed product category, innovative smartphones. We also examine the underlying mechanism of the effects of ECI on consumer responses and test whether this mechanism varies across different types of eco-innovations \((H2-H5)\).

**Sample and design**

The usable sample for Study 2 comprised 222 consumers (39 per cent male; \(M_{age} = 42.18, \ SD = 12.88\)) recruited through MTurk to complete an online study in exchange for nominal compensation. Their annual incomes were distributed across low ($25,000-$50,000; 34.90 per cent), medium ($50,000-$74,999; 27.22 per cent), high ($75,000-$100,000; 20.71 per cent) and very high (> $100,000; 10.65 per cent) income brackets. More than 80 per cent of the

<table>
<thead>
<tr>
<th>Types of eco-innovations</th>
<th>Product quality</th>
<th>Product preferences</th>
<th>Adoption intentions</th>
<th>Willingness to pay</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(M)</td>
<td>SD</td>
<td>(M)</td>
<td>SD</td>
</tr>
<tr>
<td>Resource use efficiency innovation</td>
<td>5.13</td>
<td>1.01</td>
<td>5.52</td>
<td>1.34</td>
</tr>
<tr>
<td>Resource use elimination innovation</td>
<td>6.03</td>
<td>0.91</td>
<td>6.33</td>
<td>0.76</td>
</tr>
<tr>
<td>Resource use substitution innovation</td>
<td>5.79</td>
<td>1.06</td>
<td>6.17</td>
<td>0.80</td>
</tr>
</tbody>
</table>

**Notes:** Subscripts should be interpreted only within columns. Means with the same subscript are not significantly different from each other. Means with different subscripts are significantly different at \(p < 0.05\).
respondents had at least a bachelor’s degree. Participants were randomly assigned to one of four versions of a survey and were roughly evenly distributed across the conditions. We used a four between-subjects design that included four conditions:

1) control;
2) resource use efficiency;
3) resource use elimination; and
4) resource use substitution versions of an innovative smartphone.

Procedure and measures
All participants received a short description of an innovative smartphone in the market. They were told that it was from an online store dedicated to smartphones and that they were considering purchasing one. On the following page, all participants were randomly assigned to one condition and were given an advertisement with the same picture of an innovative smartphone and its respective product description according to the condition. We used the same measurement scales for perceived product innovativeness, perceived eco-friendliness, product quality, product preferences, adoption intentions and willingness to pay as in Study 1. Finally, we asked participants to predict what their consumption level (measured in hours) would be if they bought this product. We measured ECI with five items (α = 0.94) based on a seven-point Likert scale (1 = “strongly disagree”; 7 = “strongly agree”) (Table I). We assessed the explicitness of participants’ beliefs in the trade-offs between environmental benefits and product effectiveness by eliciting their agreement with the following two items:

1) “There is no way to include eco-friendly attributes into eco-innovative products without sacrificing their effectiveness”; and
2) “Eco-innovations with eco-friendly attributes are rarely effective” (Lin and Chang, 2012) (α = 0.82).

For psychometric properties of the measures, see Appendix 4.

Results
Manipulation check. Participants in the control condition reported lower scores of product eco-friendliness (M = 3.84, SD = 1.68; F(3, 218) = 12.71, p < 0.001) than those in the resource use efficiency condition (M = 4.92, SD = 0.95), the resource use elimination condition (M = 5.23, SD = 1.18), and the resource use substitution condition (M = 4.65, SD = 1.05). Moreover, participants evaluated the product at the same level of innovativeness among the four conditions (F(3, 218) = 2.09, ns). Therefore, the manipulation of eco-friendly attribute type and innovativeness was successful.

Consumer responses. After the manipulation check, we compared the means of three types of eco-friendly attributes in an eco-innovative product design by eliminating the control condition (n = 53) from the data set. The results of the ANOVA tests, using product quality, product preferences, adoption intentions, willingness to pay, and predicted consumption levels as dependent variables, revealed that there were significant differences in consumers’ responses among different types of eco-innovations, confirming the findings of Study 1.

More specifically, we found that different types of eco-innovations significantly affect product quality perceptions (F(2, 166) = 3.98, p < 0.05), adoption intentions (F(2, 166) = 4.14, p < 0.05) and predicted consumption level (F(2, 166) = 5.00, p < 0.01), in support of H1a and H1c. However, the results indicate that consumer preferences for eco-innovations (F(2, 166) =
Among different types of eco-friendly attributes, thus rejecting H1b and H1d. Furthermore, in paired comparisons (Table III), we found that participants in the resource use elimination condition not only scored higher for product quality but also expressed stronger adoption intentions and higher level of estimated product consumption than those in the resource use substitution and resource use efficiency conditions. Consistent with the findings in Study 1, the results confirm that compared with other types of eco-innovation, resource use elimination is regarded as the more favorable option by creating more positive perceptions of product eco-friendliness and product quality, evoking stronger adoption likelihood and even increasing higher predicted product consumption levels.

The influence of ECI on perceived product eco-friendliness and adoption intentions. We conducted a mediated moderation analysis using Model 15 from PROCESS macro in SPSS for each eco-innovation type (Hayes, 2013). In the mediated moderation model, we entered ECI as the independent variable, perceived trade-offs as the moderator, perceived product eco-friendliness as the mediator, and adoption intentions as the dependent variable. We also controlled the effects of participants’ demographic characteristics (age, gender, income and prior product experience [measured by the number of smartphones owned]) in the analysis. Following the bootstrapping procedure recommended by Preacher and Hayes (2004), we applied 5,000 iterations to derive a 95 per cent confidence interval for the indirect effect of ECI on adoption intentions through perceived product eco-friendliness. None of the control variables had significant effects on the dependent variables. Examining the conditional indirect effects, we found that across the three types of eco-innovations, the 95 per cent confidence interval excluded zero and z-values were significant (Table IV), indicating a significant indirect effect of ECI on adoption intentions through perceived product eco-friendliness, in support of H2 and H3. As Figure 1 shows, there was full mediation for the relationships of ECI and adoption intentions in the resource use elimination innovation and resource use substitution innovation conditions, while there was partial mediation in the case of the resource use efficiency innovation.

Regarding the moderating effects of perceived trade-offs between eco-friendly benefits and product effectiveness, the results indicate that perceived trade-offs significantly and negatively moderated the positive effects of perceived eco-friendliness on adoption intentions (interaction effect = -0.38; 95 per cent CI = [-0.66, -0.10]), in support of H4, in the resource use efficiency condition. We also found a significant and positive moderating effect of perceived trade-offs on the link between ECI and adoption intentions (interaction effect = 0.45; 95 per cent CI = [0.21, 0.69]), in support of H5, in the resource use efficiency condition.

Table III. Differences in consumer responses to types of eco-friendly features in eco-innovative product designs (context: an innovative smartphone)

<table>
<thead>
<tr>
<th>Types of eco-innovations</th>
<th>Product quality</th>
<th>Product preferences</th>
<th>Adoption intentions</th>
<th>Willingness to pay</th>
<th>Predicted consumption levels</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Resource use efficiency innovation</td>
<td>5.37a</td>
<td>0.88</td>
<td>5.86a</td>
<td>0.94</td>
<td>5.01a</td>
</tr>
<tr>
<td>Resource use elimination innovation</td>
<td>5.84b</td>
<td>1.07</td>
<td>5.97b</td>
<td>1.06</td>
<td>5.57b</td>
</tr>
<tr>
<td>Resource use substitution innovation</td>
<td>5.78b</td>
<td>0.97</td>
<td>5.80b</td>
<td>0.83</td>
<td>4.90b</td>
</tr>
</tbody>
</table>

Notes: Subscripts should be interpreted only within columns; Means with the same subscript are not significantly different from each other. Means with different subscripts are significantly different at p < 0.05.
(Figure 2). However, we did not find any significant moderating effect of perceived trade-offs in the other two conditions.

Discussion
Study 2 replicates key findings from Study 1 in a publicly consumed product context (an innovative smartphone) while exploring the underlying mechanism of the effect of ECI on adoption intentions across different types of eco-innovation. More specifically, Study 2 confirms that participants responded differently to different types of eco-friendly attributes included in an eco-innovative product design. Resource use elimination innovations triggered the highest perceived quality, the strongest adoption intentions and the highest level of estimated consumption, followed by resource use substitution and resource use efficiency innovations. The results support the generalizability of our findings in Study 1 across product categories.

The primary objective of Study 2, however, was to demonstrate how ECI affects adoption intentions across the different types of eco-innovation. The results reveal that stronger ECI enhanced consumers’ perceptions of product eco-friendliness, which, in turn, affected their adoption intentions toward an eco-innovation. The indirect effect of ECI on adoption intentions was significant across three different types of eco-innovations. We found that the moderating effects of perceived trade-offs occurred only in the case of the resource use efficiency condition and not in the resource use elimination or the resource use substitution conditions. The pattern of the results underscores that trade-offs between eco-friendly attributes and product effectiveness play an important role in strengthening the impact of ECI while weakening the effect of product eco-friendliness on consumers’ adoption intentions in the context of resource use efficiency innovations.

General discussion
How do consumers respond to different types of eco-friendly attributes included in an eco-innovative product design? No singular set of studies has yet provided a rigorous answer to this question, but the current study attempts to illuminate one tenable explanation: because an eco-innovation, as a really new product, consists of both innovative and eco-friendly attributes, it requires consumers to transfer information from the repository of their past experiences across multiple product categories to perceive and evaluate the new offerings (Moreau et al., 2001b). In other words, different types of eco-innovations can elicit different consumer responses, depending on how consumers use cues from multiple categories to understand innovation and develop their expectations, preferences, and adoption intentions. To facilitate consumers’ categorization and learning processes, marketers need to understand and delineate the appropriate information that emphasizes the distinctiveness (differentiating attributes) of the new product categories that should be transferred from each domain.

<table>
<thead>
<tr>
<th>Types of eco-innovations</th>
<th>Indirect effect of ECI</th>
<th>Boot SE</th>
<th>Sobel test</th>
<th>Bias-corrected bootstrap 95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource use efficiency innovation</td>
<td>0.19</td>
<td>0.10</td>
<td>1.96*</td>
<td>[0.02, 0.41]</td>
</tr>
<tr>
<td>Resource use elimination innovation</td>
<td>0.20</td>
<td>0.10</td>
<td>2.27*</td>
<td>[0.04, 0.45]</td>
</tr>
<tr>
<td>Resource use substitution innovation</td>
<td>0.19</td>
<td>0.09</td>
<td>2.38*</td>
<td>[0.05, 0.43]</td>
</tr>
</tbody>
</table>

Note: *Significant at p < 0.05
Theoretical contributions
Our paper broadens and deepens the current understanding of consumer adoption of eco-innovation in several ways. First, it is evident that the inclusion of different types of eco-friendly attributes in new product designs can provoke different psychological and behavioral responses among consumers. In the sustainability literature, prior work has identified numerous factors that influence consumers’ categorization, expectations,
perceptions, and purchase behaviors across various conventional eco-friendly product categories (e.g. shampoos, detergents) (Bodur et al., 2016; Irwin and Naylor, 2009; Lim, 2017; Sharma and Jha, 2017). As relatively new in the market, eco-innovations tend to defy straightforward categorization (Moreau et al., 2001b). Thus, it is questionable how consumers transfer relevant knowledge from multiple sources to better comprehend them. Whereas most studies on eco-innovation are centered on the organizational perspective, we extend this research area by focusing on the consumer perspective. In response to the repeated calls from innovation and marketing researchers (Iyer and Reczek, 2017; Kotler, 2011; Rennings, 2000), our empirical study uncovers how consumers respond to the introduction of different eco-innovation types.

We add to this stream of research by focusing on the distinctiveness of eco-innovation categories – that is, by differentiating the types of eco-friendly attributes included in eco-innovative product designs. Our results show that there are significant differences in consumers’ psychological and behavioral responses toward different types of eco-innovations. In Study 1, which used a connected vacuum cleaner as a research context, participants expressed more positive perceptions of product eco-friendliness and product quality as well as stronger preferences and adoption intentions toward resource use elimination and resource use substitution innovations. However, they were not willing to pay a higher price for these types of eco-innovation. The findings could be explained by the fuzzy set theory, which posits that consumers assess gradedness of category membership at the attribute level and then combine across attributes for the overall gradedness score of a product (Viswanathan and Childers, 1999). Based on consumers’ evaluation, resource use elimination and resource use substitution innovations possess higher gradedness of the eco-innovative product category via creating new alternative resources, which led to more positive consumer responses. Conversely, resource use reduction innovations, with a focus on the mitigation approach, have lower gradedness of the eco-innovative product category, which could decrease consumers’ product evaluation and adoption intentions.

Study 2 confirms the findings of Study 1 in a publicly consumed product context (an innovative smartphone). Similarly, we find that participants expressed more positive responses to resource use elimination innovations than to the other types of eco-innovation. In the context of innovative smartphones, although respondents were still not willing to pay more for the resource use elimination innovation, they would adjust their sense of payment

Figure 2.
The moderating effects of perceived trade-offs on the relationship between ECI and adoption intentions (Panel a) and on the relationship between perceived product eco-friendliness and adoption intentions (Panel b) in the context of resource use efficiency innovations.
equity by increasing the predicted consumption levels for this type of eco-innovation. The results could be explained by the lay theory which indicates that consumers increase the use of eco-friendly products as they consider pro-environmental products as being less effective than traditional products (Lin and Chang, 2012; Luchs et al., 2010). We further suggest that the higher level of product eco-friendliness consumers perceive, the more they consume the product in comparison with other eco-friendly alternatives.

Second, drawing on a trait-based approach, we take an initial step toward better understanding the concept of DSI in the sustainable innovation consumption domain by conceptualizing and operationalizing the concept of ECI to emphasize the specific facets and motivational reasons behind this complex construct in the case of eco-innovation adoption. We note that our ECI concept and measurement focus on the overall patterns of consumers’ tendency to adopt innovative ideas/products for environmental protection, rather than capturing varying motivations for general ethical consumption. We further validate the predictive ability of ECI on consumer responses to eco-innovation by highlighting its strong and positive effect on consumers’ perception and adoption intentions across different types of eco-innovations. The results further substantiate the findings of prior researchers (Heidenreich et al., 2017; Jansson, 2011) who have posited that CI, a general and static trait, exerts a significant influence on alternative fuel vehicle adoption. Importantly, the results provide additional evidence that a domain-specific conceptualization and operationalization of CI may be superior to a global CI approach (i.e. CI as a general trait) in predicting and explaining how consumers respond to eco-innovation. Therefore, we suggest that our ECI scale is an important part of a broader individual difference factor that can help future researchers understand how consumer traits impact sustainable innovation adoption.

Third, to the best of our knowledge, this study is the first to uncover the underlying mechanism driving the effect of ECI on consumer adoption across different types of eco-innovation. Specifically, instead of solely investigating the direct effect of ECI on adoption intentions, as previous studies have done (Goldsmith et al., 1998; Heidenreich et al., 2017), we provide further insights into how ECI affects adoption intentions by factoring in consumer perceptions of product eco-friendliness. In other words, when consumers have a strong tendency to adopt innovative products as a means to support environmental protection, they tend to pay more attention to the eco-friendly aspects of the innovation, which results in higher perceived product eco-friendliness and ultimately stronger adoption intentions.

The results pertaining to the moderating roles of perceived trade-offs between environmental benefits and product effectiveness in the context of resource use efficiency innovations offer new insights for eco-innovation research. In particular, the findings demonstrate how perceived trade-offs strengthen the positive effects of ECI but weaken the impact of perceived product eco-friendliness on adoption intentions. On the one hand, our study confirms the findings of prior studies (Luchs et al., 2012; Olson, 2013) that have emphasized the negative effects of perceived trade-offs in consumers’ decisions to buy eco-friendly products. In line with existing literature, we find that the higher the perceived trade-offs, the more reluctant consumers are to adopt an eco-innovation when they perceive the innovation to be eco-friendly. On the other hand, and perhaps more importantly, our findings uncover the positive moderating effect of perceived trade-offs on the link between ECI and adoption intentions. Because individuals with high ECI levels are more concerned about the eco-friendly dimension of an innovation, they are more likely to sacrifice product effectiveness for environmental benefits as a means to signal their own innovativeness, environmental concerns, and status relative to others. The more explicit they believe these trade-offs to be, the more they are willing to take greater risks in adopting an eco-innovation (Steenkamp and Baumgartner, 1992).
However, the moderating effects of perceived trade-offs were significant only in the context of resource use efficiency innovations. The pattern of results reveals that consumers tend to be more concerned about the trade-offs between environmental benefits and product effectiveness when there is a reduction in a number of resource inputs in the innovation consumption process. Yet this evidence is tentative in nature; thus, more research is needed to explore the roles of perceived trade-offs in influencing consumers’ adoption intentions in the contexts of resource use elimination innovations and resource use substitution innovations.

**Managerial implications**

Our study offers useful insights for strategic research-and-development investment and marketing-related decisions for new products, specifically in selecting the best-suited approaches for developing eco-innovation in order to maximize their success in the commercialization phase.

**New product development and positioning.** Our results suggest that developing and positioning an eco-innovation as a resource use elimination innovation could evoke more positive consumer responses than resource substitution innovations and resource use efficiency innovations. Specifically, firms should place greater emphasis on advanced technologies for eliminating the need to use a complementary product (e.g. Samsung CycloneForce, with its ultra-low-power bagless cylinder). They should also develop complementary product carryover innovations – for example, iPhone Qi-certified chargers, based on wireless technology and universal charging standards, can be used for all the latest version of iPhones in cars, cafés, hotels, and furniture. Another possible approach is to invest in innovative materials to replace ecologically harmful components (e.g. the innovative XO Laptop for children, which contains no hazardous materials or new Samsung LED LCD TVs are free of mercury, a toxic metal). However, our results suggest that as consumers are generally not willing to pay more for resource use elimination innovations, the price for this type of eco-innovation should remain the same as that of other innovations.

**Segmentation.** Although previous researchers (Heidenreich et al., 2017) have argued that companies can target different types of consumer segments to accelerate the diffusion process, this study emphasizes the fact that the “right” consumers must be addressed during the early phases of eco-innovation development to ensure its success in the market. Our findings suggest that consumers with differing degrees of ECI respond differently to innovations, indicating that ECI may be used as an effective segmentation tool to identify and profile early adopters who have a strong tendency to try eco-friendly innovative ideas/products. In Study 2, we found that consumers high in ECI are more likely to infer higher product eco-friendliness and express stronger adoption intentions than low-ECI consumers. It is important to improve the segmentation of the early adopters with high ECI in the eco-innovation market with respect to specific types of eco-innovations so that marketers can distinctively address eco-friendly innovative consumers that best fit the potential user profile of their products.

**Customizing marketing communication strategy.** Our results also reveal that, for resource use efficiency innovations, making the trade-offs between environmental benefits and product effectiveness easily perceivable is a key to harness the power of ECI to motivate consumers’ adoption intentions. High-ECI consumers can then explicitly exhibit their choice to sacrifice some degree of functional performance for sustainability as a way to signal their innovativeness and commitment to environmental protection. For example, to target high-ECI consumers, marketers of resource use efficiency innovations could explicitly communicate the trade-offs between environmental benefits and product effectiveness while emphasizing the product’s superior innovativeness and eco-friendliness over traditional
products. Conversely, when promoting eco-innovations to segments of the market that are not as strongly dedicated to innovative ideas for sustainability (i.e. the mass market), it is more important to find effective ways (e.g. Facebook groups, online forums, online review ratings) for early adopters to share their experiences with the late majority who normally have low ECI. However, in both cases, it is critical to reassure consumers that the new product meets a minimum acceptable threshold of functional performance (Luchs et al., 2012).

For resource use elimination and resource use substitution innovations, firms do not need to address the trade-offs in eco-innovative product designs but instead should focus on simply promoting the environmental benefits of these innovations to encourage consumers with high ECI to learn more about and adopt new product concepts. Marketers might visualize the unique features of these innovations for consumers while emphasizing the superiority of an innovation compared with existing products, especially in terms of the product’s ecological impacts.

Limitations and future research
Our study has several limitations that offer directions for future research. First, we only consider eco-innovation across two product categories and in the context of the USA market. Previous studies argue that consumers’ eagerness for new products varies substantially by nationality and product category (Tellis et al., 2009). Thus, it is questionable whether our findings are generalizable to different high-tech product categories and other cultural contexts. Consequently, it would be appropriate to replicate the research across different high-tech product categories and across national contexts to test whether product-related and cultural characteristics moderate the effects of ECI on consumers’ adoption behaviors. Second, we focus on manipulating types of eco-friendly attributes in eco-innovative product designs while controlling for other factors (e.g. brand names and aesthetic design), while prior researchers have underscored the important role of brand innovativeness (Shams et al., 2015) and aesthetic design (Luchs et al., 2012) in consumers’ product evaluations and adoption timing. Including these factors in a research model would also be a worthwhile extension that could provide valuable insights into individual adoption behavior toward eco-innovations.

Third, in our studies, the subjects were not exposed to any pricing information. However, price is still an important choice criterion for consumers considering ethical and eco-friendly purchases (Gleim et al., 2013). Research addressing how consumers form their internal reference prices for eco-innovation as really new products (e.g. through their expected prices or price last paid for other eco-friendly products) and how they compare their internal reference prices with actual selling prices to evaluate price fairness, infer product quality and make adoption decisions would be an intriguing research avenue. Further research is needed to test the effects of price promotions (e.g. coupons, rebates) and price changes as well as individual differences (e.g. price sensitivity, price consciousness) on consumer responses to eco-innovation. Future studies might also consider the consequences of our results for marketing communication to different types of eco-friendly innovative consumers. A targeted approach to determining which marketing messages best matches the perceptions and preferences of certain eco-friendly innovative consumers may significantly increase communication effectiveness in the eco-innovation diffusion.

Finally, we defined individual adoption as an intention to adopt an eco-innovation, WTP and estimated product consumption levels. As many marketing scholars have stated (Carrington et al., 2010; Hassan et al., 2014), there is an intention–behavior gap in a sustainable consumption context. Actual adoption behavior (i.e. the first trial) and actual consumption (i.e. actual usage levels) may be a better manifestation of the adoption decision
because early adopters might have strong adoption intentions but feel reluctant to actually purchase an eco-innovation. Therefore, a promising direction for further research is to measure actual adoption and postadoption usage of eco-innovation in a customer management context.

Eco-innovation is about more than simply new products; it is about the creation and diffusion of innovative manufacturing processes and consumption behaviors with a greater environmental sustainability focus. Eco-innovation is also not just about supporting business development; it is vital to address pressing environmental challenges, such as pollution, climate change, resource scarcity and dwindling biodiversity. The widespread uptake of eco-innovation could light the path to a better future in which innovations enable improved resource productivity and overall well-being for people in a cleaner and healthier living environment. However, there are no miracle technologies for a better future unless we find effective ways to tackle the challenges of sharing, implementing and bringing to scale existing sustainable innovations.

References


**Corresponding author**

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# Appendix 1

<table>
<thead>
<tr>
<th>Level of abstract</th>
<th>Conceptualization</th>
<th>Examples</th>
<th>Operationalization</th>
</tr>
</thead>
</table>
| High              | Generalized trait innovativeness | *Innovativeness* as a cognitive style – Kirton (1976)  
*Innate innovativeness* – Midgley and Dowling (1978)  
*Inherent novelty seeking* – Hirschman (1980)  
*Cognitive and sensory innovativeness* – Venkatraman and Price (1990)  
*Motivated Consumer Innovativeness* – Vandecasteele and Geuens (2010) | Self-reported scales across product categories |
| Intermediate      | Domain-specific trait innovativeness | Goldsmith and Hofacker (1991)  
*Ethical consumption innovativeness scale* – Ganglmair-Wooliscroft and Wooliscroft (2016)  
*Innovative buying behaviors* – Summers (1972)  
*Actualized innovativeness:* – Hirschman (1980) | Self-reported scales within a specific product category |
| Low               | Innovative behaviors/Actualized innovativeness/Use innovativeness | Purchase intentions  
Actual purchase behavior  
Relative time of adoption  
Ownership of an innovative product | |

Table AI. Conceptualizations of consumer innovativeness used within the marketing field
<table>
<thead>
<tr>
<th>Study</th>
<th>Context</th>
<th>Product categories</th>
<th>Resource use reduction (e.g., energy efficiency)</th>
<th>Resource use elimination (e.g., harmful chemical elimination)</th>
<th>Resource use substitution (e.g., renewable energy)</th>
<th>General claims (e.g., better for the environment)</th>
<th>Consumer behavior aspects examined (dependent variable)</th>
<th>Major findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alwitt and Pitts (1996)</td>
<td>USA</td>
<td>Disposable diapers</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>Purchase intentions</td>
<td>General environmental concern has only an indirect effect on purchase intentions for environmentally relevant products through environmentally relevant attitudes. The specific type of eco-friendly attributes (i.e., recycled content) has a negative impact on consumer responses. Recycled content did not show a strong embedding effect on the consumers' perception of eco-friendliness.</td>
</tr>
<tr>
<td>Irwin and Spira (1997)</td>
<td>USA</td>
<td>Automobiles An orthogonal array</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>Perceived eco-friendliness</td>
<td></td>
</tr>
<tr>
<td>Pujari et al. (2003)</td>
<td>USA</td>
<td>Light bulbs</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>Purchase intention</td>
<td></td>
</tr>
<tr>
<td>Cornelissen et al. (2008)</td>
<td>Spain</td>
<td>Light bulbs, and detergents</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>Product choice</td>
<td>Consumers lower in elaboration are more likely to choose an energy-efficient product when perceived distance is proximal versus distal. The cueing of common ecological behaviors leads participants to choose environmentally friendly products with greater frequency and even to use scrap paper more efficiently. Cuing people with common environmental behaviors affects their pro-environmental self-perception more strongly than cueing with uncommon environmental behaviors. The positive effect of product sustainability on consumer preferences is reduced when strength-related attributes are valued, thus sometimes even resulting in preferences for less sustainable product alternatives.</td>
</tr>
<tr>
<td>Luchs et al. (2010)</td>
<td>USA</td>
<td>Shampoos, detergent, automobile tires, and hand sanitizers</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>Product preferences</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Context</td>
<td>Product categories</td>
<td>Resource use reduction (e.g., energy efficiency)</td>
<td>Resource use elimination (e.g., harmful chemical elimination)</td>
<td>Resource use substitution (e.g., renewable energy)</td>
<td>General claims (e.g., better for the environment)</td>
<td>Consumer behavior aspects examined (dependent variable)</td>
<td>Major findings</td>
</tr>
<tr>
<td>-------------------</td>
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<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Wiedmann et al. (2011)</td>
<td>Germany</td>
<td>Natural gas vehicles (NGVs)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>Resistance to NGVs</td>
<td>Financial, performance (technological), time, social, and psychological risk positively affect consumers’ innovation resistance to NGVs</td>
</tr>
<tr>
<td>Zhang et al. (2011)</td>
<td>USA</td>
<td>Alternative fuel vehicles (AFVs)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>Diffusion of eco- innovations</td>
<td>Technology push can be an important mechanism for speeding the diffusion of AFVs. Market pull has a positive impact on the diffusion of AFVs and increases the social good as well as higher willingness to pay for AFVs. Governmental push leads to a decrease in the social good.</td>
</tr>
<tr>
<td>Griskevicius et al (2010)</td>
<td>Mexico</td>
<td>Cars, household cleaners, dishwashers, backpacks, batteries, and lamps</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>Product preferences</td>
<td>Activating status motives encourage people to choose green products over more luxurious non-green products. Status motives increased desire for green products when shopping in public and when green products cost more than non-green products.</td>
</tr>
<tr>
<td>Hartmann and Apaolaza-Barron (2012)</td>
<td>Spain</td>
<td>A fictitious green energy brand</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>Brand attitude</td>
<td>Utilitarian benefits of green products have no static effects on purchase intentions. Nature experience evoked by advertising has the strongest influence on brand attitude but no effect on purchase intention.</td>
</tr>
<tr>
<td>Lin and Chang (2012)</td>
<td>USA</td>
<td>Hand sanitizer</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>Product usage</td>
<td>Consumers who are more environmentally conscious overuse a green product driven by perceptions of a product’s effectiveness.</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Study</th>
<th>Context</th>
<th>Product categories</th>
<th>Type of eco-friendly attributes studied</th>
<th>Consumer behavior aspects examined (dependent variable)</th>
<th>Major findings</th>
</tr>
</thead>
</table>
| Luchs et al. (2012) | USA     | Shoes and phones   | Resource use reduction (e.g. energy efficiency) | Product choice                                       | Consumers tend to choose the product with superior functional performance over the product with superior sustainability characteristics.  
The effective use of product aesthetic design can improve the relative-choice likelihood of sustainable products. |
| Gleim et al. (2013) | USA     | Shower cleaner     | Resource use elimination (e.g. harmful chemical elimination) | Satisfaction Purchase intentions                      | Price is a significant barrier, but expertise also appears to be a significant impediment to the green product consumption.  
Consumers experienced poor product quality with a previous purchase and thus were reluctant to purchase a green product again.  
Number and form of informational cues that educate consumers about green products overcome purchase barriers. |
| Olson (2013)      | Norway  | Cars and televisions | Resource use substitution (e.g. renewable energy) | Product preferences Purchase intention               | Strong preferences for green products are found when trade-offs are not apparent, but preferences shift significantly to less green alternatives when the actual attribute trade-offs are considered.  
Situational factors that heighten consumer self-accountability lead to increased preferences for products promoted through their ethical attributes.  
The subtle activation of self-accountability leads to more positive reactions to ethical appeals than explicit guilt appeals. |
| Peloza et al. (2013) | USA     | Juice, coffee, tea, crackers | General claims (e.g. better for the environment) | Product preferences                                  | (continued)                                                                                                                                 |

(continued)
<table>
<thead>
<tr>
<th>Study</th>
<th>Context</th>
<th>Product categories</th>
<th>Type of eco-friendly attributes studied</th>
<th>Consumer behavior aspects examined (dependent variable)</th>
<th>Major findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haws et al. (2014)</td>
<td>USA</td>
<td>Bags, detergent dresses, shirts</td>
<td>Resource use reduction (e.g. energy efficiency)</td>
<td>Relative preference x Willingness to pay x Likelihood to buy</td>
<td>Stronger green consumption values increase preference for environmentally friendly products through more favorable evaluations of the environmental attributes</td>
</tr>
<tr>
<td>Newman et al. (2014)</td>
<td>USA</td>
<td>A dish soap and household cleaner</td>
<td></td>
<td>Purchase intention x</td>
<td>Consumers are less likely to purchase a green product when they perceive that the company intentionally made the product better for the environment compared with when the same environmental benefit occurred as an unintended side effect</td>
</tr>
<tr>
<td>Olsen et al. (2014)</td>
<td>USA</td>
<td>Household products, food, beverages, and personal care</td>
<td></td>
<td>Brand attitude x</td>
<td>New green product introductions can improve brand attitude. Brand and category’s positioning positively affects the introduction of new green products</td>
</tr>
<tr>
<td>Gershoff and Frels (2014)</td>
<td>USA</td>
<td>Mattress, panini and waffle maker, CPU, PM monitor</td>
<td></td>
<td>Perceived greenness x</td>
<td>If a central attribute offers a green benefit, the product is perceived as more environmentally friendly than when a peripheral attribute provides an identical environmental benefit</td>
</tr>
<tr>
<td>Karmarkar and Bolinger (2015)</td>
<td>USA</td>
<td>Shopping bags, organic products</td>
<td></td>
<td>Purchase intention x</td>
<td>Bringing one’s own bags positively affects the purchase of indulgent items. The increased likelihood of purchasing organic when bringing one’s own bag is reduced by larger price premiums</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Study</th>
<th>Context</th>
<th>Product categories</th>
<th>Type of eco-friendly attributes studied</th>
<th>Consumer behavior aspects examined</th>
<th>Major findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Majid and Russell (2015)</td>
<td>USA</td>
<td>Cars</td>
<td>Resource use reduction (e.g., energy efficiency)</td>
<td>Value retention</td>
<td>Hybrid (i.e., green) vehicles lose value faster than their nonhybrid counterparts. Pure green brands (e.g., the Prius), whose ability to express greenness is more salient, lose value at a slower rate than green brand extensions. Pure green brands are also less vulnerable to the threat of obsolescence from technological innovations.</td>
</tr>
<tr>
<td>Wu et al. (2015)</td>
<td>Taiwan</td>
<td>Electric vehicles</td>
<td>Resource use elimination (e.g., harmful chemical elimination)</td>
<td>Purchase intention</td>
<td>Image has a positive effect on value and purchase intention. Risk has a negative effect on purchase. Perceived usefulness and value have a positive effect on purchase intention.</td>
</tr>
<tr>
<td>Yang et al. (2015)</td>
<td>China</td>
<td>Natural drinks</td>
<td>General claims (e.g., better for the environment)</td>
<td>Purchase intention</td>
<td>Abstract (concrete) appeal is more effective in generating green purchase intentions than concrete (abstract) appeal in situations where the benefit association of green products is other (self). Public self-awareness and identity salience moderate the effect of appeal type and benefit association on green purchase intentions.</td>
</tr>
<tr>
<td>Van der Wal et al. (2016)</td>
<td>The Netherlands</td>
<td>Shopping bags, organic products</td>
<td>Consumer behavior aspects examined (dependent variable)</td>
<td>Product preference</td>
<td>Shoppers of a high-status sustainable grocery chain display sustainable shopping more by using branded shopping bags than shoppers of a lower-status chain.</td>
</tr>
<tr>
<td>Study</td>
<td>Context</td>
<td>Product categories</td>
<td>Resource use reduction (e.g. energy efficiency)</td>
<td>Type of eco-friendly attributes studied</td>
<td>Consumer behavior aspects examined (dependent variable)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------</td>
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<td>------------------------------------------------</td>
<td>----------------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Bodur et al. (2016)</td>
<td>USA</td>
<td>Chips and juices</td>
<td>x</td>
<td>Resource use reduction (e.g. energy efficiency)</td>
<td>Brand evaluation</td>
</tr>
<tr>
<td>Gonçalves et al. (2016)</td>
<td>Portugal</td>
<td>Biological products</td>
<td>x</td>
<td>Resource use elimination (e.g. harmful chemical elimination)</td>
<td>Purchase intention</td>
</tr>
<tr>
<td>Moon et al. (2016)</td>
<td>USA and Australia</td>
<td>New high-tech biofuel</td>
<td>x</td>
<td>Resource use substitution (e.g. renewable energy)</td>
<td>Adoption intention</td>
</tr>
<tr>
<td>Han et al. (2017)</td>
<td>Korea</td>
<td>Female clothes</td>
<td>x</td>
<td>General claims (e.g. better for the environment)</td>
<td>Sustainable fashion consumption (SFPC)</td>
</tr>
</tbody>
</table>

(continued)
<table>
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<tr>
<th>Study</th>
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<th>Product categories</th>
<th>Type of eco-friendly attributes studied</th>
<th>Consumer behavior aspects examined (dependent variable)</th>
<th>Major findings</th>
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<td>Peyer et al. (2017)</td>
<td>Germany</td>
<td>Consumer durable goods</td>
<td>Type of eco-friendly attributes studied: Resource use reduction (e.g., energy efficiency) Resource use elimination (e.g., harmful chemical elimination) Resource use substitution (e.g., renewable energy) General claims (e.g., better for the environment)</td>
<td>x</td>
<td>Purchase intention Consciousness for sustainable consumption Voluntary simplifiers buy more green products, exhibit a greater environmental and economic sustainability consciousness, and share more universalistic values. APV adoption relates positively to consumer innovativeness, and this effect can be intensified by providing external policies such as infrastructure, incentives, and communication policies.</td>
</tr>
<tr>
<td>Heidenreich et al. (2017)</td>
<td>Germany</td>
<td>Alternative fuel vehicles</td>
<td></td>
<td>x</td>
<td>Adoption intention</td>
</tr>
<tr>
<td>This study</td>
<td>USA</td>
<td>IoT-based products (high-tech products)</td>
<td></td>
<td>x x x</td>
<td>Product quality Product preferences Adoption intention Willingness to pay Predicted level consumption Consumers tend to express more positive product beliefs, higher preferences, and stronger adoption intention toward resource use elimination innovations compared with the other types of eco-innovations across two product categories.</td>
</tr>
<tr>
<td>Conditions</td>
<td>Control condition</td>
<td>Resource use reduction innovation</td>
<td>Resource use elimination innovation</td>
<td>Resource use substitution innovation</td>
<td></td>
</tr>
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<td>------------</td>
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<tr>
<td></td>
<td>Remotely controlled by a smartphone app</td>
<td>Remotely controlled by a smartphone app</td>
<td>Remotely controlled by a smartphone app</td>
<td>Remotely controlled by a smartphone app</td>
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</tr>
<tr>
<td>Innovative features</td>
<td>50% less energy consumption based on the compression technology</td>
<td></td>
<td></td>
<td>Solar vacuum tube enabling renewable energy substitute</td>
<td></td>
</tr>
<tr>
<td>Eco-friendly attributes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Home automation: connected to home applications</td>
<td>Home automation: connected to home applications</td>
<td>Home automation: connected to home applications</td>
<td>Home automation: connected to home applications</td>
<td></td>
</tr>
<tr>
<td>Innovative features</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eco-friendly attributes</td>
<td>A 10/10 reparability score for all components to reduce resource usage and electronic waste</td>
<td>Eliminating radiation emission based on the new technology</td>
<td></td>
<td>Solar phone charger enabling renewable energy substitute</td>
<td></td>
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</table>

Table AIII. Connected vacuum cleaner and innovative smartphone manipulations
## Table AIV. Means, standard deviations, reliabilities, average variance extracted (AVE) scores, maximum shared variance (MSV), and correlations

<table>
<thead>
<tr>
<th></th>
<th>Study 1 ($n = 131$)</th>
<th>Study 2 ($n = 222$)</th>
</tr>
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<tr>
<td></td>
<td>$M$</td>
<td>SD</td>
</tr>
<tr>
<td>1. Perceived product eco-friendliness</td>
<td>5.03</td>
<td>1.25</td>
</tr>
<tr>
<td>2. Perceived product innovativeness</td>
<td>5.60</td>
<td>1.24</td>
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<tr>
<td>3. Product preferences</td>
<td>5.88</td>
<td>1.05</td>
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<tr>
<td>4. Adoption intentions</td>
<td>4.81</td>
<td>1.59</td>
</tr>
<tr>
<td>5. Product quality</td>
<td>5.63</td>
<td>1.05</td>
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<tr>
<td>6. Willingness to pay (U.S. dollar)</td>
<td>198.96</td>
<td>105.25</td>
</tr>
<tr>
<td>7. Age</td>
<td>43.47</td>
<td>12.93</td>
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<tr>
<td>8. Income</td>
<td>5.95</td>
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</tr>
<tr>
<td>9. Prior experience</td>
<td>1.91</td>
<td>0.72</td>
</tr>
<tr>
<td>10. Gender</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>11. Gender</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

### Notes:
- **"** Significant at $p < 0.01$ (two-tailed); *significant at $p < 0.05$ (two-tailed)
Prioritizing marketing research in virtual reality: development of an immersion/fantasy typology

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Abstract

Purpose – Virtual reality (VR) is of increasing interest to marketers because it can be used to explore and proactively shape long-term futures, co-create value with consumers, and foster consumer-brand engagement. Yet, to date, the field lacks a cohesive framework for approaching VR research; thus, the objective of this systematic literature review is to provide such a framework and highlight research opportunities.

Design/methodology/approach – First, after conducting a systematic literature review, we highlight VR themes instrumental to flow and propose a typology for VR research using realism-fantasy and immersion as dimensions. Next, we review the current state of empirical research for each quadrant. Finally, we synthesize research within each quadrant, specifying criteria and considerations for conducting research. In doing so, we propose an agenda for marketing research, centered on methodological, future studies, and consumer-related contributions.

Findings – VR themes instrumental to flow include the avatar, application quality, and interactivity. We find, contrary to some conceptualizations of VR, that all applications are capable of producing flow. Conflicting research and gaps are highlighted in the findings section and summarized in Table III. Additionally, while prior research seems to draw from findings of other VR applications in advancing knowledge in general, the results of the literature review suggest that VR applications should be treated uniquely. Finally, we propose highly immersive VR applications as more conducive to future studies research.

Research limitations/implications – Scholars can utilize the findings to prioritize future research studies in marketing. By following the typology and research opportunities, scholars can advance marketing theory and enhance the external validity of research studies through VR applications.

Practical implications – Managers can utilize the findings to ascertain consumers and societies’ responses to various marketing stimuli, with implications for product development, branding, retail/service experiences, adoption of new technologies, tourism, and many other domains. VR applications offer managers more ways of testing concepts and processes in realistic fashion without the costs and risks associated with more traditional methods.

Originality/value – The objective of this paper is to examine varying opportunities for VR research given flow and fantasy potential and to prioritize VR research.

Keywords Future studies, Virtual reality, Immersion, Flow theory, Future studies, Realism-fantasy

Paper type Literature review

Introduction

Virtual reality (VR), an immersive computing technology, absorbs users in a responsive virtual world (VW) (Berg and Vance, 2016), making the individual feel that the experience is
real. As a result of immersion, focus on the virtual environment (VE) and forgetting the real world (Csikszentmihalyi, 1997), VR enables flow (Faiola et al., 2013; Matthews, 2015). In fact, flow explains why consumers experience learning, favorable attitudes and increased purchasing in VEs (Animesh et al., 2011; Faiola et al., 2013), making VR a novel tool to co-create brand experiences and research consumers.

Marketers have used VR since the 1990s in the form of computer-simulated environments with 3D modeling to predict market share and price sensitivity (Burke, 1996). Recently, VR has helped marketers obtain customers, build relationships and create excitement (Ali and Frew; 2014; Li and Buchthal, 2012). For example, Lowe’s Innovation Labs (2018) introduced the Holoroom (in participating stores), which utilizes smartphone-compatible headsets to guide customers through home improvement lessons. Likewise, Topshop offers an immersive VR experience that blends a real slide with a virtual waterslide (Romeo, 2017). Academically, recent research efforts have begun to use more sophisticated techniques, such as eye tracking and choice simulations for complex problems (Glazer, 2012). Though VR has been broadly applied in various domains (Fox et al., 2009), including psychology (Washburn, 2003; Young, 2010), ethics (Cram et al., 2011), economics (Innocenti, 2017) and neuroscience (Parsons, 2015), much remains to be understood regarding how to use VR, what to expect from different VR applications and what areas of VR need further investigation.

Given the advantages of using VR to understand consumers and predict real-world behavior (Loomis et al., 1999; Meißner et al., 2017) it is surprising that marketers’ use of VR remains sparse (Eye Faster, 2017). Thus, how can marketing scholars apply VR to extend the boundaries of knowledge in more realistic and technologically advanced ways? In marketing – especially consumer behavior – the increasing need for targeted behavioral tracking, expanding analytical capabilities in discipline and believability concerns of traditional research techniques furnish promising opportunities for VR applications. These opportunities exist not only for advancing theory by using VR as a context or understanding consumers but also for exploring future studies and predicting technological change (Wind, 2014).

VR provides a unique avenue to investigate future studies in marketing relating to systematic and explicit thinking about alternatives that can help navigate the future (Bell, 2003). By 2045, futurists predict that we will experience the point of singularity: the emergence of rapid technological growth without understanding the associated ramifications, which will likely impact multiple aspects of life, including the economy, science and society (Bell, 2003; Kurzweil, 2005). Kurzweil (2005) argues that this point is already arriving:

> [b]y the end of this decade, computers will disappear as distinct physical objects, with displays built in our eyeglasses, and electronics woven in our clothing, providing full-immersion visual virtual reality (p. 143).

Though written in 2005, Kurzweil’s predictions are coming to fruition. Many people use VR to interact with real and animated others, and for some, VR is reality. This will become even truer for larger society, as Kurzweil suggests that VR will expand extensively in the 2020s – work will occur in VR, and VR will be capable of fulfilling all our desires, perhaps even giving us options never before conceived. To date, we can see evidence of this shift, with universities holding virtual classes (Halvorson et al., 2011).

It is for these reasons outlined – namely, marketers’ use of VR despite the lack of academic research, widespread use of VR by consumers and its impact on lifestyles and shifts in technology coupled with the need to understand these shifts through future studies
research – that VR provides ample opportunities for marketing scholarship. Specifically, in this vein, VR provides benefits over traditional methods (e.g. lab experiments, convenience sample surveys and localized focus groups) and can promote new ways of thinking about and examining consumption, society, and marketing (Saren et al., 2013). Compared to 2D environments, VR permits more control, transports users to new experiences, incorporates sensory elements and elicits telepresence, the feeling of being in another world. Generally, VR can investigate alternative realities, new product ideas or simulated scenarios; moreover, VR continues to advance the potential of research designs (Berg and Vance, 2016).

Because VR applications differ in realism (Dholakia and Reyes, 2013) and immersion (Nah et al., 2011), a framework is needed for understanding how VR can be used to address marketing-related research, especially given that such a framework does not currently exist. Thus, the first goal of this paper is to identify VR applications, creating a typology for marketing research using dimensions of realism and immersion. This framework is rooted in flow theory given the role of immersion in VR (Csikszentmihalyi, 1997). Second, through a systematic VR literature review, we aim to elucidate differences across VR applications and how each contributes to flow. Third, we provide evidence of the lack of marketing research in VR and provide summaries on the current states of research in each quadrant, conflicting or unique findings, and literature gaps. Finally, in exploring the flow potential within each quadrant, we offer the following contributions for researchers using VR applications: operationalizations, considerations, advantages and disadvantages and amenability for future studies. The review culminates with a research agenda to inspire VR marketing research.

Definition of virtual reality
Evolving from the video game industry (Gutierrez et al., 2008; Vince, 2004), VR involves a simulated VE created or mediated by computing technology with which a user interacts (Harrison et al., 2011). Guttentag (2010) defines VR as the use of computer technologies to create perceptions of a 3D VE (from 2D imagery) that affords navigation and interaction, leading to sensory activation along one or more modalities. This latter definition synthesizes prior definitions by tapping into several aspects important to VR – visualization of, immersion into and interaction with the VE (Wilson et al., 2002) – and places emphasis on movement in and manipulation of objects in VEs (i.e. Gutierrez et al., 2008; Vince, 2004). Contrary to some arguments (c.f., Gutierrez et al., 2008; Vince, 2004), Guttentag (2010) suggests that VR immersion can exist at low levels, which we support and elaborate in the findings section.

Aside from VR’s ability to gather data non-invasively using traditional techniques, such as experiments and observations (Yee and Bailenson, 2008), VR uniquely incorporates spatial environments (Vince, 2004), providing real-world, real-time representation of cognitive and affective processing (Loomis et al., 1999; Parsons, 2015). Moreover, VR can incorporate social cues from real or computer-simulated avatars (Parsons et al., 2017), mimicking real-world responses (Young, 2010) as a result of seeing (vs reading) a scenario. Further, VR reduces non-representative sampling bias (e.g. no location constraints) and can examine unthinkable, untestable yet expertly controlled scenarios (Biocca and Delaney, 1995). For example, one study using VR testing helped reduce crowding in tourist sites (Gimblett et al., 2001).

Future studies: a foundation for virtual reality
In their editorial, Saren et al. (2013) argue that VR can be used to explore future technologies (nanotechnology, holographics, haptic devices, etc.) and ascertain how consumers may react
to and adopt technology within the sphere of social and economic influence. Imagine a world where social networking requires a virtual headset and dialogue occurs virtually; this is predicted to occur in the next eleven years (Fox et al., 2009; Kurzweil, 2005). Given that technological changes will create unprecedented economic, scientific and social shifts, it is important to understand the effect of these shifts on consumers (Bell, 2003). For instance, Cowen (2013) argues that American society will experience an increasingly bimodal distribution of wealth and economic returns, with fewer mid-level jobs, leaving society unprepared for this income gap. If these shifts, though, can be recognized with future studies, as suggested by Kostyk and Hyman (2015), then society could address changing needs and modify technology to anticipate effects.

Additionally, for marketers, it is important to understand the ramifications of technology to predict and understand consumer needs in the future (Van der Duin, 2016), including how firms cater to consumers (Wind, 2014), analyze uncertainties (Moutinho et al., 2014), lessen risk (Hines and Bishop, 2006), prepare for new roles and structures of society and examine the widespread impact on businesses and decision-making processes (Moutinho et al., 2014). While marketing research has largely ignored future studies approaches (Cowen, 2013), firms engaged in future studies have experienced greater profitability and growth (Kim, 2017). As another benefit, VR provides a relevant lens to explore future studies and to better understand consumer behavior in today’s environment (Kozlov and Johansen, 2010; Schonbrodt and Asendorpf, 2011). However, the type of VR can affect the transferability of VR findings to the real world in that not all VR results are realistic (Grinberg et al., 2014; Mazursky and Vinitzky, 2005); thus, VR applications may differ in relevancy for future studies research. Therefore, it is critical to understand VR application differences such as topics best suited for different applications, flow considerations, and miscellaneous factors. However, first, we systematically review the VR literature.

Methodology
Following a systematic review protocol (Tranfield et al., 2003), we analyzed the literature that has empirically examined VR to provide a foundation for our proposed typology and delineate the current state of research within the typology. Such a systematic review ensured that important works were included and that the state of VR knowledge was accurately represented. We utilized Scopus, EBSCO and ProQuest online databases to locate articles published in the past 15 years (2003 to 2018) using combinations of the following keywords: “virtual reality,” “immersion,” “immersivity,” “flow,” “realism,” “fantasy,” “simulation,” “virtual environment,” “AVE,” “CAVE,” “head mounted display,” “HMD” and “virtual world.”

The search process yielded a set of approximately 1,500 citations, which were downloaded into Excel and sorted to delete duplicates, non-peer-reviewed journals (chapters, conference proceedings, etc.) and articles in non-English languages. Next, we individually assessed the relevancy of the topic to the goals of the paper by reviewing the titles, keywords, and abstracts of each article. Because VR spans several disciplines, this search resulted in several studies with discipline-specific findings irrelevant to marketing (e.g. medical or manufacturing-related). After excluding these, 188 articles remained. Removing conceptual articles left 129. We also noted whether each article was published in a marketing-related publication and the empirical methodology used, providing these results below in Table I.

Next, PDFs of each article in the final dataset were downloaded, read, and coded to develop a concept matrix supported by the literature (Braun and Clarke, 2006). Specifically,
we coded the articles as to the VR class examined (automated VE [AVE], simulation, VW, or mixed) with sub-codes by specific application (head-mounted display [HMD], game, social VW, etc.). Codes were also created for the empirical strategy (e.g. netnography and experiment), independent and dependent variables and theoretical foundation (if appropriate). Disagreements in coding were resolved through discussion. The articles with a theoretical framework most commonly used flow theory: the review revealed common patterns related to flow, important attributes that produce flow, and the outcomes of flow. Figure 1, representing these themes, is included below. We next discuss flow theory and its relationship with VR.

Findings: virtual reality and flow theory
Flow theory argues that individuals can enter a cognitive state in which they become completely immersed, with higher alertness, concentration, involvement, agency and intrinsic rewards (Nakamura and Csikszentmihályi, 2001). A fundamental component of flow, immersion, is the degree to which an individual becomes engrossed in VR apart from reality such that users’ senses and thoughts are dominated by the VE (Guttentag, 2010; Harrison et al., 2011) and deem the real world unimportant (Biocca and Delaney, 1995). After

<table>
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<th>Q1. AVEs</th>
<th>QII. Simulations</th>
<th>QIII. VWs</th>
<th>QIV. Games</th>
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<tr>
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</tr>
<tr>
<td>Total</td>
<td>31 (1)</td>
<td>33 (9)</td>
<td>40 (14)</td>
<td>19 (3)</td>
<td>6</td>
<td>129 (27)</td>
</tr>
</tbody>
</table>

Note: Observations in marketing-related journals are noted in parentheses.
reviewing the literature, we found several themes evocative of flow, including the avatar, interactivity and application quality (Figure 1). Importantly, each theme uniquely contributes to the flow state individuals experience within each VR application.

Flow theory suggests that greater immersion may be required for fantastical locations (e.g. a land of dinosaurs, the moon) to achieve a high degree of realism that transfers to the real world (Jurassic Park, Avatar; Innocenti, 2017). Therefore, for VWs, the interactivity from social connections enables fantastical VEs to be capable of creating flow states (Animesh et al., 2011; Grinberg et al., 2014). For AVEs, high immersion is experienced, largely due to the application quality (Cummings and Bailenson, 2015). Although fantasy-related experiences are technically possible in AVEs, they remain unexamined. In fact, realism was expressed often as a theme (Baños et al., 2008; Guegan et al., 2017; Valtchanov et al., 2010).

Despite variations in immersion-eliciting states available, some researchers argue that only high immersion can create flow (Csikszentmihalyi, 1997; Huang et al., 2011). However, our systematic literature review reveals that all VR applications can produce flow states, though all may not be highly immersive. In low immersion states, users feel more connected to the real world (Gutierrez et al., 2008), which occurs in simulations. Simulations include product simulations, game simulations, 3D websites, and location simulations. As game simulations tend to exhibit more potential for fantasy, different criteria for immersion, and particular methodological considerations, game simulations were kept as a unique quadrant. For instance, for simulations (vs games), realism is critical to the experience and to flow, triggered by all three themes (Poeschl and Doering, 2013), and telepresence moderates the relationship between realism and flow (Krasnikolakis et al., 2018). Games elicit flow states from the avatar (Christy and Fox, 2016; Przybylski et al., 2012), and user motivations in games stem from fantasy and need for play (Molesworth, 2006).

Based on the findings of the literature review and the role of flow in VR, a typology clearly emerged from the analysis. First, VR applications vary in their immersion levels (Guttentag, 2010), with AVEs and VWs offering considerably higher immersion than simulations and games. Second, the use of realism versus fantasy differs across applications (Schultze and Rennecker, 2007) – AVEs and simulations integrate higher levels of realism, whereas VWs and games focus more on fantasy experiences. Thus, we classify VEs into varying levels of immersion and realism (real or fantasy) to form a typology of VR applications. We then present research questions to prioritize VR scholarship within each, presented below in Figure 2. Table II below also summarizes the research findings for each quadrant presented in the findings section, next.

**Result from findings: virtual reality immersion/realism typology prompting research questions**

**Quadrant I: automated virtual environments**

AVEs promote user control and simulation and integrate the five senses. Users experience the environment as real, can walk around the VE and engage with objects (Gutierrez et al., 2008). As an expression of application quality, heightened sensory stimulation and congruency with the VE enables flow (Cummings and Bailenson, 2015; Guttentag, 2010). AVEs include Cave Automatic VEs (CAVEs) and HMDs (Loomis et al., 1999). CAVEs involve stationary display surfaces from multiple projectors and surround sound from loudspeakers; this design integrates perspectives and manipulation. Like CAVEs, HMDs change position, orientation, visual stimuli, and auditory stimuli with user movements but have reduced field of vision and interactivity (Meißen et al., 2017). Comparisons of HMDs
and CAVEs reveal no differences in flow though HMDs allow a limited view of one’s own avatar (Vinayagamoorthy et al., 2004; Waltemate et al., 2009).

Consistent with Fox et al. (2009), the results of the systematic literature review reveal an emphasis on research on application quality. Marketing-related studies were few, though these demonstrate that task complexity can influence brand attitudes and product choice, thus making them generalizable to the real-world (Bigne et al., 2016; Dobrolowski et al., 2014). Thus, initial research shows promise in AVEs to study marketing phenomenon beyond other VR applications. For instance, compared to simulations, AVEs increase task performance, telepresence, navigation ability and learning (Slobounov et al., 2015), and results are more ecologically valid (Macedonio et al., 2007). Similarly, interactions with others (human avatars and others’ avatars) reflect real-world patterns, such as the bystander effect (Kozlov and Johansen, 2010) or discrimination (Tremblay et al., 2016). We next discuss themes of application quality, interactivity, and avatars.

**Application quality.** In a meta-analysis, Cummings and Bailenson (2015) found that application quality features influence immersion in AVEs and telepresence, especially the following features: tracking level (naturalness of movements, ability to act on the VE, etc.), stereoscopy (e.g. depth of perception) and user perspective (Alshaer et al., 2017; Cummings and Bailenson, 2015). However, the effects of user perspective and even update rate may be unreliable as very few prior studies have investigated these features. Sensory input moderates the application quality-flow relationship in which sensory incongruence with the VE diminishes task performance (Calogiuri et al., 2018; Chirico et al., 2018). However, these studies relied heavily on sound and visual cues, so more information is needed to assess how sensory features such as haptic and olfactory cues influence flow states.

Furthering the notion of realism, research finds that emotion-inducing AVEs increase flow, and vice-versa (Baños et al., 2004, 2008). In fact, much research concentrates on the role of the AVE (VE quality) in piquing emotions, thereby influencing telepresence and individual responses. One study finds that AVEs involving nature can serve as surrogates for nature itself (Valtchanov et al., 2010) and trigger the same emotions of the environment (e.g. relaxation while walking through a wooded area; Calogiuri et al., 2018; Chirico et al., 2018). When AVEs prime emotions in user experiences, emotions override the lack of

<table>
<thead>
<tr>
<th>User Immersion</th>
<th>Greater (HIVE)</th>
<th>Lesser (LIVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QI</td>
<td>Automated Virtual Environments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- CAVES (e.g., tourism and virtual stores)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- HMDs (e.g., retail concept/environment testing)</td>
<td></td>
</tr>
<tr>
<td>QII</td>
<td>Simulations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Product trials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Web-based remodeling simulations</td>
<td></td>
</tr>
<tr>
<td>QIII</td>
<td>Virtual Worlds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- MMORPGs (e.g., World of Warcraft)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Avatar-based social platforms (e.g., Second Life)</td>
<td></td>
</tr>
<tr>
<td>QIV</td>
<td>Games</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Mobile games</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Traditional video games</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Computer games</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2.** The VR Immersion/Realism Matrix
<table>
<thead>
<tr>
<th>VR characteristic</th>
<th>QI. AVEs</th>
<th>QII. Simulations</th>
<th>QIII. VWs</th>
<th>QIV. Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Realism</td>
<td>Realism Important</td>
<td>Realism Critical</td>
<td>Real-Fantasy</td>
<td>Unexplored</td>
</tr>
<tr>
<td>Fantasy</td>
<td>Fantasy Unexplored</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Immersion</td>
<td>High</td>
<td>Low-Mid</td>
<td>High</td>
<td>Low-Mid</td>
</tr>
<tr>
<td>Source of Immersion and Flow</td>
<td>Application quality</td>
<td>Reality and value</td>
<td>Social connection</td>
<td>Avatar</td>
</tr>
<tr>
<td>Avatar-focused Research</td>
<td>Quality</td>
<td>Liking</td>
<td>Clothing</td>
<td>Self-congruency</td>
</tr>
<tr>
<td>Realism</td>
<td>Field of View</td>
<td>Virtual Advisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personalization</td>
<td>Self-congruency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others’ avatars</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criteria for Application Quality</td>
<td>Update rate</td>
<td>Ease of navigation</td>
<td>Usefulness</td>
<td>Sensory feedback</td>
</tr>
<tr>
<td>Field of view</td>
<td>Visual control</td>
<td>Ease of use</td>
<td></td>
<td>Game content</td>
</tr>
<tr>
<td>Tracking level</td>
<td>Functional control</td>
<td>Navigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stereoscopy</td>
<td>Screen size</td>
<td>Space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound quality</td>
<td>Realism (scene, audience appearance, audience behavior, layout, scenario)</td>
<td>Communication exchange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User perspective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactivity Considerations</td>
<td>N/A</td>
<td>Connectivity with others</td>
<td>Co-creation</td>
<td>Connectivity with others</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customizability</td>
<td>Community</td>
<td>Control over game</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Space</td>
<td></td>
</tr>
<tr>
<td>Role of Telepresence in Predicting Flow</td>
<td>Telepresence mediates engagement-flow</td>
<td>Telepresence moderates enjoyment-flow</td>
<td>Telepresence mediates enjoyment-flow</td>
<td>Telepresence mediates enjoyment-flow</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Predictions of behavior</td>
<td>Task accuracy</td>
<td>Trust</td>
<td>Choices after the game</td>
</tr>
<tr>
<td></td>
<td>Emotions</td>
<td>Diagnosticity</td>
<td>Information value</td>
<td>Attitudes</td>
</tr>
<tr>
<td></td>
<td>Mood</td>
<td>Knowledge</td>
<td>Emotions</td>
<td>Brand attitudes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anxiety reduction</td>
<td>Exchange relationships</td>
<td>Beliefs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Purchase intentions</td>
<td>Emotional and rational judgments</td>
<td>Knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attitudes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brand equity</td>
<td>Predictions of behavior</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Goal-consistent behavior</td>
<td>Purchases</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral measures</td>
<td>Eye gaze</td>
<td>Navigation</td>
<td>Eye gaze</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Body movement</td>
<td>Time spent</td>
<td>Actions</td>
<td>Task accuracy</td>
</tr>
<tr>
<td></td>
<td>Head movement</td>
<td>Task completion time</td>
<td>Interactions with others</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physiological responses</td>
<td>Task accuracy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Virtual touch</td>
<td>Physiological responses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
application quality, such as stereoscopy, in contributing to telepresence and flow (Baños et al., 2008). Yet, few application quality factors were explored with emotions.

**Interactivity.** Within AVEs, very little research examines interactive factors, probably because AVEs by nature are highly interactive. Of the studies that do investigate interactivity, they consider body movements and avatar interactivity. Interestingly, Renaud et al. (2003) find that body movements (i.e. head rotation and eye gaze) represent VE interactivity, promote flow, and can be used as an operationalization of telepresence. That is, flow is created from a multi-step process of interaction over time with the AVE, where the user accepts the environment as real. Then, while interacting and engaging with the VE, they imagine the mediated environment and finally accept it as real; alignment of the imagination with the AVE accelerates flow (Cummings and Bailenson, 2015). Aside from the aforementioned studies, most interactivity research occurred within the framework of avatars.

**The Avatar.** Even though individuals have a limited view of themselves in AVEs (and no view in CAVEs), avatar representation can enhance flow and interaction quality with others, where more realistic and real-world-consistent interaction patterns occur when avatars are more realistic-looking (Bailey et al., 2009). Further, increased avatar personalization increases body ownership (Waltemate et al., 2009), though realistic avatars can also make individuals more self-conscious and lead to negative self-thoughts (Mountford et al., 2016). Therefore, the avatar representation is important in interactions with others, perceptions of realism within the VE, and even feelings toward the self.

**Quadrant II: simulations**

Simulations, defined as virtual interactions with virtual objects (e.g. viewing and evaluating) in VEs, enable object rotation, zooming, and virtual use, which can improve learning and satisfaction, diagnosticity and brand-user relationships (Algharabat and Dennis, 2010; Papagiannidis et al., 2013). Authenticity in simulations increases hedonic value and even consumers’ desire to purchase the product (Algharabat and Dennis, 2010). Although the virtual version of a product receives less positive comments than its real-world counterpart (Soderman, 2005), the virtual (versus real and sketched) version results in greater knowledge, cognitive and affective product imagery, telepresence, and purchase intentions (Daugherty et al., 2008; Hyun and O’Keefe, 2012).

3D simulations provide ecological validity (Baños et al., 2004), as evidenced through assessments in 3D versus 2D VEs (Fiore et al., 2009). Jiang and Benbasat (2005) classified online simulations as visually (e.g. move, rotate, and zoom) and functionally (e.g. testing and functioning in more sophisticated VE) diagnostic. At the most basic level, individuals interact with objects through keyboards, joysticks, and perspective (Fox et al., 2009). For example, home improvement websites use 360-views and life-like trials. However, more complicated devices, including haptic gloves, voice recognition software, and wands, enhance functionality and interactivity (Gutiérrez et al., 2008; Vince, 2004). Notably, several articles on simulations come from marketing-related business journals, most likely because the simulation context is relevant for store design and product simulations in e-tailing. These studies reveal that realism from all three themes from Figure 1 (avatar, application quality and interactivity) determines the extent of immersion and flow (Poeschl and Doering, 2013). However, as substitutes for one another, the platforms must be balanced – high levels of immersion across all three types can thwart the effectiveness of the application (Bhatt, 2004).

**Application quality.** Research has concentrated heavily on the VE, concerned with audience presence, scene realism and even factors outside of what Poeschl and Doering
EJM 53,8 (2013) identified as relevant in constructing realism, including the functionality of the simulation (Tan et al., 2006; Wallet et al., 2011). Even the screen size impacts cognitive efficiency (Tan et al., 2006). Based on what Poeschl and Doering (2013) termed scene realism, satisfaction (i.e. a comparison of expectations and reality) and enjoyment with the simulation environment determine simulation effectiveness. More expected scenarios increase purchase intentions and flow, with telepresence moderating these effects (Kim et al., 2014; Krasonikolakis et al., 2018). Therefore, the quality must be sufficiently high to make the VE appear real. More realistic environments increase navigation ease and task accuracy and even time spent in the simulation (Meijer et al., 2009), even with only low levels of immersion (Smolenstev et al., 2017). Vividness and detail increase the simulation experience, especially when users are more task-oriented (Wallet et al., 2011). Future research should build on the work of Poeschl and Doering (2013) to contribute to simulation realism.

Conflicting evidence exists as to whether emotional intensity can increase engagement and realism of the simulation (Baños et al., 2004; Kim et al., 2014). Still, even given a realistic simulated environment, consumers may not always make decisions consistent with their prior preferences (Mazursky and Vinitzky, 2005), and researchers should acknowledge this limitation. Further, flow stemming from application quality can be moderated by individual differences. For example, although searching versus browsing goals do not influence attitudes or purchase intentions in simulations (Schlosser, 2003), details in the VE can positively influence those who have search goals (Wallet et al., 2011). Also, simulations that appeal to promotion-focused consumers result in more efficiency and satisfaction, especially in high involvement (Sun et al., 2015).

Interactivity. More interactivity increases attitudes and purchase intentions because of mental imagery (Schlosser, 2003). Although visual control increases effectiveness of diagnosing appearance-related factors, functional control increases functionality-related and even appearance-related diagnosticity in the absence of visual control (Jiang and Benbasat, 2005). When testing a virtual mirror (vs 360 simulation and photo image), consumers experienced an increase in mental tangibility, physical tangibility, diagnosticity, and purchase intentions (Verhagen et al., 2016). Still, this was not the result of platform interactivity but was based on liking of the photo, such that the experience was interactive because it was co-created.

According to Bhatt (2004), service providers should provide less immersive, realistic detail and higher interaction through website design and connectivity with others. However, too much interaction can decrease the effectiveness of a simulation when high immersion stems from emotions (Baños et al., 2004). Likewise, interaction with others can increase cognitive load, except when simulations are more static (vs immersive; Van der Land et al., 2013). Still, little is known about how interactivity level within realistic (versus non-realistic) environments informs brand evaluations and product responses.

The avatar. As with real-world environments, the presence of others influences behavior in a simulation, even when those others are computer-generated (Poeschl and Doering, 2013; Silva et al., 2015). Social connectivity can decrease dissonance and increase satisfaction, especially for consumers with high brand trust (Liao, 2017). Very few papers, though, test the effects of others in the environment, and as such, there is a lack of knowledge of how others influence actions and perceptions within simulations. The avatar research complements that of AVEs, so none of the research overlaps. The findings indicate that avatar field of vision increases task performance, contributing to telepresence and thus flow (Alshaer et al., 2017). For the individual avatar, the self is localized in the simulation through avatar choice, bridging the virtual and real worlds (Wissmath et al., 2011). Once again,
realism is critical for flow. Realistic and similar avatar faces and bodies increase user identification, boosting emotional attachment and intentions to use the avatar again (Suh et al., 2011). However, individuals prefer avatars with their ideal (vs actual) weights, which influences their pursuit of long-term goals and their short-term behavior (Kuo et al., 2016).

Quadrant III: virtual worlds
VWs consist of computer-simulated spatial environments supporting communications among users via avatars (Schultze and Rennecker, 2007). The networks of users have avatars in either social VWs (SVWs), like Second Life, or Massively Multiplayer Online Role-Playing Games (MMORPGs), like World of Warcraft. Avatars relate to each other, motivated by play, creativity, and ritual (Boellstorff et al., 2012). Different from other VR applications, VWs have persistence. That is, they do not cease to exist when the user logs off but continue to evolve (Banakou et al., 2009). Moreover, VWs offer a continuum of progression to emergence – MMORPGs tend to have more progression as the game is scripted, while SVWs provide more emergence through natural interactions.

Application quality. VWs may offer varying degrees of fantasy and reality as VWs are more fantastical than other types of VR (Schultze and Rennecker, 2007). Further, as the most extensive form of VR (Harrison et al., 2011), VWs incorporate games and challenges, making them entertaining, involving and arousing, all of which increase immersion per flow theory (Roussou, 2004). However, skill and user challenges experienced by the quest or interactivity should be balanced to optimize flow (Domina et al., 2012). Much research on VWs investigates immersion and flow given the high interactivity and flow experienced in VWs such as Second Life (Faiola et al., 2013), failing to account for feature quality. Tourism, for instance, has benefited greatly by innovating tourism management in VWs (Ali and Frew, 2014). Given that more efforts are being made toward enhancing the feature quality of VWs (Gadalla et al., 2013), more research is needed to explore this gap.

Interactivity. Interactivity drives enjoyment (Animesh et al., 2011) but can also depend on the motivations users have for joining the VW (Whang and Chang, 2004). Given the nature of the VW, all users are agents in the production of the experience, including shopping in virtual stores and brand storytelling. By nature of the world, the co-creation of stories in VWs serves as a backdrop within the entertainment and fantasy that motivate participation. Partly driven by fantasy, emotions, and contact with others, co-creation activities in VWs influence service quality perceptions (Gadalla et al., 2013). Users can share their imaginations to enhance the VW (Boulaire et al., 2008), promote self-expression, achieve identity and attain social goals (Gadalla et al., 2013). However, co-creation efforts are different from findings of prior literature; they resemble lead users and brainstorming sessions in which more information is gathered as a team and all efforts are considered. The more hedonic the co-creation process, the easier it is to attract and engage participants (Kohler et al., 2011).

Users also experience interactivity through engagement with each other (i.e. social connections). While both spatial exploration and social connections increase engagement and immersion (Grinberg et al., 2014), social connection is the key to immersion, where social telepresence increases experience of place (Saunders et al., 2011). The type of language exchanged (e.g. positive vs negative) affects communication and community (Wu and Kraemer, 2017), with more positive interactions explaining reciprocity, commitment, and behavioral change (Chan and Li, 2010), especially when users have shared values (Wu et al., 2010). Yet, conflicts arise as to how realistic the social experiences are in VWs (Grinberg et al., 2014; Schonbrodt and Asendorpf, 2011). The research suggesting realism argues that
these interactions can foster learning and aid in the development of problem-solving skills, which is why medical and manufacturing industries use VWs to improve processes and train employees (c.f., Cram et al., 2011). However, the impact of interactions on trust is not clear as evidenced by conflicting results (Friend and Hamilton, 2016; Goel and Prokopec, 2009).

The avatar. Avatar appearance reflects a rational choice to represent oneself in a virtual manner, one degree of the manifestation of self-concept in VWs (Berthon et al., 2010). Further, multiple studies indicate that avatar representation can be used to prime certain behaviors, such as a long-term mindset (Hershfield et al., 2011) and emotions (Pena et al., 2009). Other papers examine avatars as virtual advisors within VW shops, represented by humans and/or computers. Virtual advisors are more credible when their dialogue is in textual (versus auditory) form (Jin, 2009). However, consumers can be skeptical of virtual advisors when they have privacy concerns or little product knowledge or the firm is perceived to have profit goals (Guo and Barnes, 2009; Li and Buchthal, 2012). Ideally, as another opportunity for interaction in a VW, virtual advisors should customize their responses, provide solutions and lead to value (Li and Buchthal, 2012). Unfortunately, observations indicate that very few brands in VWs have installed virtual advisors efficiently (Mackenzie et al., 2009).

Additionally, users can purchase virtual or physical products in VWs, which reflects an extension of the avatar and, by proxy, extension of the self (Guo and Barnes, 2009). Virtual consumption tends to be motivated by VW enjoyment and the connection between the real and the VW, such that items blur this line. Moreover, even virtual purchases hold real value (Domina et al., 2012; Kim, 2012) and are anteceded by perceived value (Kim, 2012), usefulness, network size, availability (Mantymaki and Salo, 2013) and telepresence (Nah et al., 2011). Brands can appeal to users in VWs, as these users look for virtual offers and unique items, where shop navigation is easy (Gadalla et al., 2013). Oddly, despite increased telepresence and purchase intentions in 3D VWs, 2D VWs engender better brand equity (Nah et al., 2011), leaving much more to understand from a brand perspective in VWs.

Quadrant IV: games
As an extension of simulations, Quadrant IV consists of 3D gamified simulations, such as advergames, computer games and mobile games. Compared to the other quadrants, Quadrant IV is represented by very little research. These games can reproduce the same results as AVEs, such as the bystander effect (Kozlov and Johansen, 2010), but they do not elicit the same emotions, even for experienced gamers, which creates more ideal training scenarios (Toet et al., 2009). Game players are motivated to participate in games for two reasons, which may enhance or dilute the effectiveness of brand communications in these games. Half seek brand placement to engage in imaginary consumption of products and brands, and the other half dislike brand placement, suggesting that placements detract from the fantasy. Still, for both groups, game use offers fantasy (Molesworth, 2006).

Application quality. Some research examining game play factors suggests that the type of feedback in the game influences brand personality. For example, more haptic feedback (e.g. vibrations) increases perceptions of ruggedness (Jin, 2010b). Additionally, in-game advertising also affects behaviors, such that when exposed to anti-DUI advertising in a game, participants reported reduced attitudes toward drinking and driving (Burrows and Blanton, 2015). When the game is incongruent with expectations, quality features matter more than interactivity in eliciting telepresence (Vashisht and Chauhan, 2017).

Interactivity. For training, games can be used to set and promote goal achievement (Ahn et al., 2016), and prevention goals can be more helpful for those who are more interdependent
(Jin, 2010a). Game training and/or prior video game experience can enhance the effectiveness of simulations in task performance and behavioral change (Sturz et al., 2009) because skill increases flow (Matthews, 2015). Likewise, interactivity improves immersion and flow when the game theme is congruent with the advergame brand (e.g. skateboarding brand and skateboarding-themed games; Vashisht and Chauhan, 2017).

The avatar. Immersion is ultimately underscored by avatar choice, where avatar identification increases immersion and telepresence (Przybylski et al., 2012), especially for individuals with higher interdependence tendencies (Jin and Park, 2009) or when the avatar represents a player’s ideal self (Przybylski et al., 2012). Although telepresence resulting from avatar choice does not impact social telepresence (Christy and Fox, 2016), players experience higher flow, telepresence and enjoyment when playing with real others than with a computer avatar (Weibel et al., 2008). Further, avatar identification increases motivations to play (Przybylski et al., 2012). For these reasons, avatar choice affects enjoyment, a necessary component in triggering flow and telepresence (Weibel et al., 2008).

Virtual reality application use in marketing research
The results support our initial assertion that marketers have yet to take full advantage of VR applications in research. Our literature review contributes to VR methodological research by drawing literature from different domains, highlighting research considerations within each VR application and signaling each’s advantages and disadvantages. Still, some of this research, especially concerning avatars, assumes all VR applications are comparable. This may or may not true; however, more research is needed to explore this assumption and to further marketing research within each of the four quadrants.

Given that all four quadrants hold promise in different regards for marketing research, we provide a more comprehensive list of potential future marketing research, shown in Tables III and IV below. First, Table III details the methodological considerations, gaps and conflicts within each quadrant, resulting from the systematic literature review. Table III should be used by marketers to evaluate the varying considerations to select the VR application most appropriate for the research objective and to address the research gaps and reconcile conflicting accounts. Further, Table IV builds from these considerations, gaps and conflicts to provide multiple research directions in VR for marketers in three key domains: methodology, future studies and consumer behavior. We hope that the classification of suggested questions into these three domains will help marketers better prioritize future research according to needs, expertise and capabilities. Next, we discuss some of these opportunities in more detail.

Given that the applications vary in immersion and potential for flow, certain applications (Quadrant I and III) are more conducive for conducting future studies research because AVEs and VWs promise high ecological validity. That is, the high immersion of these applications lead to more realistic representations of environments that could be believably encountered in the “real” world and, in the case of highly realistic VR environments, offer clearer blueprints for the replication of the virtual space. As such, scholars can make more confident assertions of generalizability to actual consumer contexts based on the findings of such studies. Specifically, scholars should consider using VWs and AVEs differently to study group-level versus individual consumer behaviors. For example, the social connectivity within VWs enable explorations of social phenomenon, which can be utilized to test group interactions in consumer environments. Such research would greatly benefit contexts in which group influences are strong in consumer decisions, such as restaurants, shopping malls, supermarkets and educational centers.
<table>
<thead>
<tr>
<th>Methodological consideration</th>
<th>Q1. AVEs</th>
<th>QII. Simulations</th>
<th>QIII. VWs</th>
<th>QIV. Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future Studies Potential Research</td>
<td>High</td>
<td>Very low</td>
<td>High</td>
<td>Low-Mid</td>
</tr>
<tr>
<td>Applications and Operations</td>
<td>Eye tracking (e.g. to operationalize variety seeking and telepresence)</td>
<td>Priming effects from avatar assignment</td>
<td>Co-creation value and participation</td>
<td>Background vs foreground messages</td>
</tr>
<tr>
<td></td>
<td>Movement</td>
<td>Encounter patterns (with objects or others)</td>
<td>Network size</td>
<td>Sensory feedback</td>
</tr>
<tr>
<td></td>
<td>Virtual touch</td>
<td>Avatar personalization</td>
<td>Priming through avatar assignment</td>
<td>Training</td>
</tr>
<tr>
<td></td>
<td>Avatar personalization</td>
<td></td>
<td>Communication patterns</td>
<td>Task accuracy and timing</td>
</tr>
<tr>
<td></td>
<td>Priming emotions through VE</td>
<td></td>
<td>Virtual Goal progress</td>
<td>Priming through game theme</td>
</tr>
</tbody>
</table>

Table III. Methodological considerations for conducting research in each quadrant.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological validity high (Kozlov and Johansen, 2010)</td>
<td>Quick experiments are less feasible as telepresence unfolds over time (Renaud et al., 2003)</td>
</tr>
<tr>
<td>Depth of vision unimportant (Baños et al., 2008)</td>
<td>External sensory cues can disrupt flow (Calogiuri et al., 2018)</td>
</tr>
<tr>
<td>Easy to use avatar confederates in experiment (Tremblay et al., 2016)</td>
<td>More difficult to encourage and observe group interactions</td>
</tr>
<tr>
<td>Surrogate for real world (Valchanov et al., 2010)</td>
<td></td>
</tr>
</tbody>
</table>

| Ecological validity high (Baños et al., 2004) | Arousal can reduce flow (Kim et al., 2014) |
| Learning potential (Daugherty et al., 2008) | Scenarios/scenes must be realistic and expected (Meijer et al., 2009) |
| No need to be immersive to create flow (Smolentsev et al., 2017) | Use large displays (Tan et al., 2006) |
| Easier to invest in Transportability | More detail is required to create realism (Wallet et al., 2011) |

| Ecological validity (Whang and Chang, 2004) | Generally, unaffected by emotions and anxiety traditionally evoked by training (Toet et al., 2009) |
| Easy to observe community interactions and patterns | Can have high ecological validity and realism for research |
| Evolving – newer formats of VWs Not location-specific | New way to answer research questions (Washburn, 2003) |
| Representative of society Large-scale scenarios testable | Lack of avatar-identification can decrease enjoyment and motivation (Przybylski et al., 2012) |
| Gaze is not a good variable because of the game lags (Bates et al., 2010) | May dislike brand presence in games (Molesworth, 2006) |
| Less realistic social patterns vs real world (Grinberg et al., 2014) | Skilled players may experience lower emotional responses (Matthews, 2015) |
| | Much unknown about this quadrant |

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<table>
<thead>
<tr>
<th>Methodological consideration</th>
<th>QI. AVEs</th>
<th>QII. Simulations</th>
<th>QIII. VWs</th>
<th>QIV. Games</th>
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<tr>
<td><strong>Additional Remarks and Considerations</strong></td>
<td>For group decision-making, use static VEs to avoid overload (Van der Land et al., 2013) Stereoscopy, field of view and tracking level – most important quality features (Cummings and Bailenson, 2015) Participants cannot see avatars with HMDs (CAVEs); avatar is important (Skarbez et al., 2017; Vinayagamoorthy et al., 2004) Body scan to create avatars Emotional priming can increase immersion (Baños et al., 2004)</td>
<td>Avatar role important in enhancing realism (Alshaer et al., 2017) Balance interactivity, connectivity, and immersivity (Blatt, 2004) Visual (functional) control increases appearance (functional) diagnosticity (Jiang and Benbasat, 2005) Choices made in 3D simulations do not always represent real-world choice; should also compare habitual to simulation choice (Mazursky and Vinitzky, 2005)</td>
<td>Social interactions must be realistic to increase immersion and enjoyment (Grinberg et al., 2014) Must balance use of skill and ease of navigating the VW (Domina et al., 2012)</td>
<td>Human (vs computer) opponents increase flow states (Weibel et al., 2008) Must balance use of skill and ease of navigating the VW (Domina et al., 2012) Little is known about this VR application</td>
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<p>| Gaps and Conflicts in the Literature | Gaps: Research in CAVEs Emphasis on user perspective and update rate despite limited research Factors outside of feature quality and the impact on immersion Varying sensory modalities (e.g. haptic and olfactory) Fantasy VEs Application quality and emotions The role of the self, or layers of self) in VE Interactivity Co-creation activities Future Studies | Gaps: Interactivity within realistic (vs fantasy) VEs Interaction of realistic features Connectivity in VE, and realism VR application type (e.g. magic mirrors vs use simulation, etc.) Assumption that avatar research in others Qs transfer to QII Product and Concept Development Conflicts: Realism and generalizability Emotional intensity and engagement | Gaps: Feature Quality Avatars and the self-concept Relationship between virtual advisors and consumers Influencers Source Effects and Avatars SERVQUAL in VWs Social Connectivity and Purchases Co-Creation Realistic vs Fantasy VWs Future Studies Conflicts: 2D vs 3D online vs offline trust Telepresence increases equity, but VWs decrease brand equity Realism of social experiences | Gaps: Research in QIV Gamification Interactivity of Game Attributes Realism vs Fantasy in games Avatar-player relationships Assumption that avatar research in others Qs transfer to QIV |</p>
<table>
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<tr>
<th>Quadrant</th>
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<th>Future Studies Questions</th>
<th>Consumer Behavior Questions</th>
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<tr>
<td>QI. AVEs</td>
<td>How does telepresence affect research effectiveness? How can AVEs test telepresence in more reliable ways? Given that sensory incongruence can disrupt flow, how do external sensory factors influence AVE-based experiments compared to traditional experiments? How do emotional experiences interact with immersive features and impact telepresence, given varying emotions and immersive features? Does actual vs ideal portrayal of the self in AVEs influence telepresence and attitudes? How does the use of fantastical (vs real) scenes affect the ecological validity of studies in AVEs? Do HMDs and CAVEs differ in their viability for research and produce consistent findings?</td>
<td>How can AVEs anticipate the needs of consumers in the future, ascertain consumer learning, and foresee potential issues? How can the integration of 3D holographic images of people change the communication landscape, especially for the younger generation? How do individuals respond to superior AI (e.g. emotionally, behaviorally)? What are the potential misuses and abuses of new technologies (e.g. driverless vehicles, face recognition software)? How can technology (e.g. automatic language translation) influence communication and human interactions? How does telepresence in new environments change the desire for real-world existence and alter perceptions of real locations? How do relations with automated personalities and robots reflect human patterns? How will AI affect human relationships? What rights should robots be afforded?</td>
<td>Beyond cognitive style, embodiment, emotional engineering, body image, and variety seeking, what theories can be advanced using AVEs? How can AVEs enhance retailing and services research through examinations of touch, eye gaze, and body position? What is the role of sensory marketing in AVEs in decision-making? How can co-creation through concept and product design enhance consumer relationships? How can retailers effectively design virtual store offerings?</td>
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Table IV. Research questions proposed by quadrant.
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<tr>
<td>QII. Simulations</td>
<td>Which factors contribute to the realism of a simulation? How does audience behavior affect realism? What is the role of simulations in eliciting telepresence and diagnosticity for diagnosticity vs product or concept development? Does avatar research with simulations complement that of AVEs? If avatar use is dependent on user goals (i.e. ideal vs actual self), how does design of the avatar (realistic vs not) influence realism?</td>
<td>How can simulations be used to understand the human brain? How can the effectiveness of new drugs be tested in simulations, given that simulations can mimic human body responses? How can improvements in manufacturing and medical treatments influence job training and practice?</td>
<td>How does interactivity in realistic (vs non-realistic) environments inform brand evaluations? How do others in the VE affect actions and perception? How can simulations foster co-creation efforts? How might others promote creative thinking (i.e. novel problem-solving scenarios)? What effect does sensory information have in value co-creation within simulations?</td>
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<td>QIII. VWs</td>
<td>How can VWs be implemented to study common marketing issues in new and more realistic ways (i.e. reactions to crowding, emergency situations, process improvement)? What issues should problem solving challenges address in VWs? How should results and activities be measured (i.e. through motion tracking vs qualitatively)? Are the effects of community more observable in certain VWs over others? What types of criteria should be used to create flow states depending on the type of VW?</td>
<td>How can the lack of physical boundaries in VWs enable investigations into social consumption, community interactions, and societal issues? Can VWs help conceptualize future products? Are VWs effective for testing yet-unexperienced scenarios (e.g. what would happen if high speed jets could make transcontinental travel easier)? What effect will a bimodal society have on behaviors toward others? What effect will mass society working from home in VR have on lifestyle and consumption? What effect will falling death rates</td>
<td>How should brands use VWs? How can co-creation in VWs maintain hedonic experiences and emphasize community? Does emergent nature produce more creative solutions in VWs as it does in the real world? How can realistic (vs fantasy) VWs be used to engage consumer co-creation energies? How can virtual advisors build relationships? Which factors influence advisor effectiveness when VWs are more fantasy (vs real) or emergent (vs</td>
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<td>Q1V. Game Simulations</td>
<td>How can flow occur in low immersion? How can fantasy and avatar selection be tailored to improve flow? How do sources of immersion differ based on consumer motivations? Based on motivational differences across VR types, how do avatar relationships transfer to other types of VR? Can gamification improve ecological validity, involvement, and behavioral metrics to test new products and identify ease of technological or product adoption?</td>
<td>have healthcare costs, housing systems, the economy in general, and more? How can artificial intelligence change classroom instruction and the demand for education? What will the effect of global, ubiquitous surveillance have on privacy concerns? How will advances in technology and job automation influence poverty, war, and disease? How will merging of the SWs in developing a metaverse shape how individuals experience the real vs VW?</td>
<td>progressive? Does relationship marketing apply in VWs? How does the avatar (self-identity) affect credibility? How can source effects be used to explain VW source credibility aside from trust?</td>
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<td></td>
<td>Can businesses use influencers to promote co-creation? If virtual consumption practices make VR seem less virtual and more &quot;real,&quot; what are the implications for blurring of both worlds? How does community affect VW shopping?</td>
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Table IV.
Testing new environments or consumer input (e.g. co-creation activities or behavioral responses) provided new stimuli, such as innovative shopping environments, would be a fruitful endeavor with AVEs because such environments will likely require the high immersion and realistic multisensory engagement that AVEs can offer, which cannot be achieved through less immersive applications or is less easily achievable in more fantastical environments, like VWs. For instance, co-creation research may greatly benefit from AVE studies in that high immersion draws consumer attention and focus to the context, which can boost engagement with the task and likely lead to stronger co-creation outcomes. Moreover, AVEs can be used to evaluate how co-creation activities enhance consumer relationships with brands.

Given that the findings of some research suggest that not all VR applications provide ecological validity, it is imperative to better comprehend differences, especially as the world is becoming more virtual in all aspects of life and more purchases are likely to occur virtually. In fact, some VR research indicates that virtual service quality perceptions (e.g. related to SERVQUAL) and co-creation processes are not comparable to those of the real world (Gadalla et al., 2013; Kohler et al., 2011). The fact that limited research has attempted to explore this fact further motivates more marketing research. Specifically, scholars should investigate and document these differences so that marketers can develop more effective service strategies in the virtual space. For example, the use of avatars in virtual service environments can increase perceptions of agency and humanity in virtual assistants, though additional research is needed in this vein. Can avatars build consumer-brand relationships and actual humans, and if so, what conditions must exist for this relationship building to occur? Additionally, would the use of avatars actually be detrimental in certain situations, such as with the purchase of sensitive products or handling of sensitive information?

While VR applications represent invaluable research tools for understanding the far-off future for marketers, VR also provides several opportunities for undertaking research to understand consumer behavior in the present and near future. Simulations can be used to evaluate consumer behavior and conduct research to understand theory from a less immersive standpoint, offering the ability to implement more realistic, believable manipulations in experiments. Additionally, simulations represent a low-cost, low-risk approach for marketers to invest in VR. In many cases, the use of more extensive and immersive VR equipment (i.e. AVEs) would not yield more advantages in conducting quick experiments (Renaud et al., 2003), such that evaluating reactions to product/package designs, pricing information, or navigability of online retail spaces are better served using simulations.

As another example of how simulations can be useful in answering present-day research questions, VR offers a unique opportunity to study crossmodal correspondences – that is, perceived “matches” across multiple sensory cues that lead to more positive consumer responses to stimuli (Spence, 2011) – in more realistic settings. The testing of sensory manipulations often involves contrived settings in laboratory rooms due to the need for high experimental control, and testing in actual field settings can introduce several confounds to crossmodal correspondences. VR in a laboratory environment affords the ability to induce perceptions of realistic settings while also maintaining the same degree of experimental control (Baños et al., 2004; Kozlov and Johansen, 2010; Whang and Chang, 2004). Given the high interest in and steady growth of the crossmodal correspondence literature (for examples of recent works, see Adams and Douce, 2017; Brunetti et al., 2018; Chen et al., 2018; and Jones et al., 2017), VR can advance the research possibilities and ecological validity of such studies.
Similarly, the use of games in research is important to study marketing phenomena. Yet, little progress has been made in understanding this VR application, even outside of marketing. Some of the future research conducted using game simulations should be directed to evaluating the role of flow in low immersion, the role of the avatar, and gamification, among other topics. For instance, it would be relevant to explore how gamification affects consumers and affects consumer attitudes and decision-making, especially given the increasing use of gamification strategies in CRM. Clearly, more marketing research should be devoted to exploring gaming simulations from a methodological, theory-driven perspective and a strategic perspective to improve consumer-brand relationships.

Conclusion

This systematic literature review provides several contributions. First, this work unifies divergent literature areas to provide a typology of VR (Figure 2). This is one of the first instances in which all VR applications have been combined to generate considerations for VR research. Second, through the systematic literature review, we examine differences in VR applications, including their viability for future studies and consumer research, and identify three themes (i.e. application quality, interactivity, and the avatar) that uniquely contribute to flow (Figure 1) depending on the application. Third, we gauge the current state of research in Table I and provide evidence of the lack of marketing research in VR. While marketing has focused some research in VWs and simulations, much of this research is either qualitative and self-focused (in the case of VWs) or related to virtual stores (in the case of simulations). Clearly, there is a paucity of marketing research in VR.

An overwhelming majority of this research either treated VR applications as silos and very rarely examined multiple VR applications or assumed that the results from the study transferred to other VR applications. As a fourth contribution, we summarize the state of research, detailed in Table II, and suggest that prior assumptions may not hold. More research is needed to ascertain assumptions of VR application utility and the highlighted gaps and research conflicts. Fifth, we speak to how marketing research can use VR applications to further marketing-related research. Based on the unique operationalizations, advantages and disadvantages of each quadrant, we present Table III to advance scholarship. Each quadrant presents a particular opportunity for marketers depending on immersion and realism. Last, we prioritize research for marketers (Table IV), demarcating how each application can be used in future studies research and proposing directions for future research. These ideas should be a springboard to launch marketing research in VR applications and make methodological and theoretical contributions to the marketing discipline.

References


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How real are virtual experiences?
For a better understanding of virtual experiences and their impact on consumers’ real life

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Abstract
Purpose – This paper aims to explore the virtual experience to understand its components and its effects on consumers’ real world.

Design/methodology/approach – Our approach relies on a rarely used projective method: “Album-on-Line” (AOL). This technique allows identifying consumers’ representations of their experience. It uses images to immerse participants in a virtual experience and to lead an individual reflection, then a group reflection.

Findings – Virtual experiences have utilitarian, hedonic, psychological and social dimensions. When immersing in virtual experiences, consumers’ perception and consumption of products and services change. A projection occurs leading to an identification to virtual characters. This projection also leads to a consumption aiming at finding back the excitement and challenge lived during virtual experiences.

Research limitations/implications – The main limitation of this research relates with the fuzzy distinction between the virtual and the electronic in consumers’ minds and even in the literature. Future work should propose a multidisciplinary definition of the virtual experience, considering its specificities and components.

Practical implications – This research offers companies a better understanding of consumers’ motivations to live virtual experiences. It may bring insights on how to provide a more customized offering and a more adapted communication.

Originality/value – Compared to previous work, the present research offers a better understanding of the components of online and offline virtual experiences by considering the virtual in its broadest meaning. The use of the AOL technique enabled a closer look at the specificities of the virtual experience as perceived by consumers. It was also possible to explore the “post-experience” stage by understanding the effect of virtual experiences on consumers’ perceptions and consumptions.

Keywords Consumer behaviour, Projective techniques, Virtual reality, Album-on-Line, Virtual experiences

Paper type Research paper

Introduction
Virtual environments are increasingly present in consumers’ lives. Because the real life is sometimes not flexible enough to bend to their will, consumers use the virtual to escape reality, learn, to play, increase their power of imagination or simply communicate (Holbrook et al., 2008). Researchers in sociology and psychology have studied the virtual, its components and its implications (Mäntymäki and Islam, 2014; Wu, 2014; Mäntymäki and Salo, 2015). The internet has increased the number of opportunities to live virtual experiences. These experiences are unique as they do not necessitate the physical and logical structure that men need, such as the body and other material
artifacts (Ensslin and Muse, 2011). In virtual environments, the imagination is stimulated by a multitude of activities, seemingly heterogeneous: viewing movies or videos, listening to music, simulator training, enjoying painting, photography, images or even going on a simple reverie that transport individuals in an ideal world, modeled according to their wishes (Green, 2001; Liarte, 2005; Grumbach, 2007).

Immersion in virtual realities impacts real life. This impact has been the subject of work in anthropology, psychology and sociology. In these disciplines, researchers have tried to analyze this phenomenon and to study the impact of the internet and video games on behaviors (Islas-Sedano et al., 2013; Mäntymäki and Salo, 2015). In marketing, the study of virtual communities and e-shopping behavior accounts for most of the work on the virtual environment. Researchers have primarily attempted to analyze individual or collective behaviors in virtual worlds (Michel, 2009). However, few studies relate consumers’ virtual life to their real life (Jayawardhena and Wright, 2009; Javornik, 2016; Lowe and Johnson, 2017). This research ambitions to explore how virtual experiences may have an impact on consumers’ real lives.

In the marketing literature, research on the virtual experience is clearly focused on the electronic virtual experience and its components. The dimensions of Holbrook and Hirschman (1982) describing consumer experience have very often been a benchmark for researchers who have approached the virtual experience. Despite a similar theoretical positioning in this research, the dimensions of the virtual experience were nuanced in the results. Indeed, the back and forth between the virtual and the real makes that these dimensions are simultaneously linked to both worlds. Consumer’s perceptions are strongly conditioned by their virtual experience, which gives it two “facets”: one associated with the virtual life and a second related to the real life. A second contribution consists in examining the impact of these experiences on the individual in general and the consumer in particular.

The presence of companies in virtual universes can have an impact on consumers’ attitude toward the brand and their intention to buy in real life (Haenlein and Kaplan, 2009). The richness of the virtual can lead consumers to dream more, to go beyond the real, to get used to an environment where everything is to their liking. The substitution of the real world by the virtual is sometimes so strong that the real may no longer please them (Quéau, 1993). Consumers question the real because of the virtual: they live new experiences and unleash their imagination to the point that new requirements appear (Jauréguiberry, 2000). Immersion in virtual universes influences their perceptions of the real world and, from a marketing perspective, their perception of products, communication actions, and situations. Consumers’ definition of the notion of need can also change: they find in the virtual everything they desire and get used to evolving in a far from ordinary world. This affects the type of products they are looking for. They become more demanding, asking for more customization and looking for meanings, experiences, signs and symbols in their consumption experiences which companies must consider (Fornerino et al., 2005). The managerial interest of this research consists in providing insights for companies to better focus on the way consumers live the experience and especially its impact on them, their perceptions and their future consumption.

The virtual game experience has been used to promote emotional commitment to brands. It ended up affecting real players and their perception of the brands present in virtual universes (Islas-Sedano et al., 2013). Video games, for example, even influence players’ lives and their perception of the various daily stimuli they are exposed to (Poel et al., 2014).

In virtual worlds, representations, ideas, images and non-verbal cues are more important than words (Tanenbaum et al., 2014). Our research aims:
to better understand the virtual experience and its components; and
to explore its different implications for the consumer.

We have tried to mobilize a technique taking this characteristic into account. Our approach relies on AOL, a rarely used projective technique allowing to identify consumers’ representations of their experience (Vernette, 2008). This method is qualitative and uses images to immerse participants in a virtual experience. It uses the photos available in search engines to lead an individual, then a group reflection. This paper is structured as follows. After presenting the literature review, we describe the AOL technique and its implementation in our particular case and our results before discussing theoretical, methodological and managerial contributions.

**Literature review**

*The virtual, beyond digitization*

Different disciplines have defined the virtual in different ways. Etymologically, the word “virtual” finds its origin in the Latin word “virtus” designating courage, moral energy, and power (Plantard, 1999). Virtus also refers to virtue (Quéau, 1996), which is, in turn, derived from the word “vir”: man. Thus, the Romans used to consider that the true man is the virtuous man. According to them, only virtue can transform the real (Quéau, 1996). Transforming reality, in this context, means that individuals are bound to constantly improve their lives, imagining, and creating new perspectives for a much better world. The virtual is a process of transformation from one way of being into another. One of the principal terms of virtualization lies in the “detachment from the here and now”.

In a virtual experience, individuals interact with a universe independently of the physical world around them. This universe has the appearance and signs of a reality but is not one. Virtual experience is characterized by the immersion of individuals. They perceive, experiment and modify the virtual world and its components in a way close to reality. Reilly and Bates (1992) speak of the illusion of reality: objects, characters and situations presented in the virtual world arouse the imagination and have similarities with real life, which creates the illusion of reality. A virtual experience can be electronic or not. An electronic experience can be totally devoid of virtualization. This is the case when this experience does not go in pair with immersion, imagination and interactions related to a virtual world (Grumbach, 2007).

Long before computerization and digital networks, imagination, memory, cognition and religion were already vectors of virtualization that made consumers leave the “there” (Lévy, 1995). The virtual world goes far beyond electronic environments (Green, 2001; Grumbach, 2007; Liarte, 2005; Michel, 2009). The most natural and spontaneous manifestation of the virtual is the mental representation, a construction of a symbolic representation that the individual realizes after being exposed to one or more stimuli (Petitat, 2009). The virtual applies to social phenomena whose effect on individuals, consumers or workers is real and tangible (Quéau, 1996). Even children have always been able to create their own virtual worlds from simple objects they have on hand (Hedegaard, 2016). Books, stories, and cinema transport individuals to universes that allow them to identify with characters who have no real existence (Bittarello, 2008). This is the case when the universe lets individuals imagine a new category of beings whose existence is totally imaginary such as science fiction, 3D technology, and image manipulation. In these examples, the virtual is at the service of the scenario and art (Cheng et al., 2014). Consequently, the virtual does not limit itself to one environment. Companies are trying to take advantage of this feature by creating virtual
worlds covering many devices and environments. For example, the virtual world of Harry Potter is present in books, movies, video games, operas and theater.

**The virtual and the real: a frontier not always mastered**

Two types of virtual exist: the positive and the negative (Flichy, 2001). The positive virtual comes from a set of simulations whose purpose is the creation of “new worlds” helping consumers embellish their daily lives. It relies on three positive values: simulation, interaction, and immersion. It is, therefore, a utopia or a “support to dream” while ensuring a complementarity between the real world and the virtual world. The negative virtual, which is more of an ideology, presents itself as an escape from an unpleasant reality. Today, it is the virtual to be wary of. In this case, the return to reality could be painful for the person. In addition, the virtual imposes itself as a substitute of the real (Flichy, 2001).

Photography, movies, television, video games and the internet are beginning to merge to become one. It is a vast entity, part of which is not entirely virtual, but rather potential (Mabuya, 2010). In simpler terms, what the virtual offers to the individual is partly imaginary, but also likely to be later materialized in real sound (Mabuya, 2010). In an artistic context, photography or painting could be an extension of the real, in that they represent aspects of the consumer’s experience. At the same time, ambiguity is often bound to happen in arts, calling therefore for reflection and meditation. Works of art provide access to a better definition of the real and make consumers discover elements they cannot otherwise see (Patricio, 2000). However, the virtual becomes dangerous when the individual does not master the links between reality and virtual representations (Quéau, 1996). The evolution of technologies helps consumers to escape their daily routine to afford an extra dimension from a virtual environment where he/she becomes an actor (Arnaldi et al., 2006). It is a “near-reality” that has the appearance and behavior of a reality but is not one (Tisseau, 2001).

**Virtual experience: definitions and components**

The literature considers that the virtual experience shares similar components with more common consumption experiences (Jeng et al., 2017). Understanding the virtual experience and its components is thus a way of enriching our knowledge of the components of the consumption experience in general, while analyzing the particularities of the virtual experience. The consumption experience is “a subjective state of consciousness” designated by the pursuit of three multisensory objects: desired unrealities developed through imagination; emotions such as love, joy; jealousy or sadness; and hedonic sensations derived from activities that make it possible to escape a difficult daily life (Holbrook and Hirschman, 1982; Hirschman, 1983). It also provides access to an aesthetic response (Schmitt et al., 2015). It is thus a personal occurrence, often accompanied by significant emotional meanings. It relies on the interaction with stimuli that invites individuals to use all their senses. This occurrence could be at the origin of a transformation of the individual, particularly when it comes to “extraordinary” experiences (Arnould and Price, 1993). The experience-seeking models replace the traditional cognition–affect–behavior approaches by the imaginary–feelings–pleasure triad (Holbrook and Hirschman, 1982). The symbolic aspects and goals sought by during such experiences add value to the consumer experience (Holt, 1995; Holbrook, 1999).

When considering the virtual experience, the photography, the painting, or the cinema offer consumers a vision of a fictional world presented through the eyes of another, namely the photographer, the painter, or the filmmaker. The perception of the virtual experience is highly dependent on the way the designers of virtual universes present things. The virtual artistic experiences do not cover all the possible virtual experiences that the consumer could
live. Several other possible experiences also transport consumers, such as experiences on the internet or virtual worlds. With the development of new technologies and the appearance of three-dimensional images (3D), the solicitation of the senses is more important, the border between the virtual and the real becomes less significant (Schmoll, 2005).

The components of the virtual experience can be classified into four main categories: utilitarian, hedonic, psychological and social. Figure 1 summarizes the main components of the virtual experience in the literature.

The *utilitarian dimension* refers to the “utility” of the virtual experience and to the concrete benefits it brings to consumers. Here, individuals are interested in knowledge enrichment, information exchange, or the acquisition of pre- or post-purchase information (Childers et al., 2002; Prebensen and Rosengren, 2016). The virtual experience has cognitive and emotional aspects (Storgards et al., 2009; Storgards, 2011; Lin et al., 2012; Chang et al., 2014). From this perspective, the virtual experience is a cerebral sport characterized by a strong reflection on the part of the person who lives it. It is also a moment of freedom of high experiential value (Paez, 2012). The best virtual experience remains the one that guarantees the right balance between these two seemingly paradoxical visions: the virtual experience that encourages reflection and the one that presents a moment of freedom for the individual (Paez, 2012).

The *hedonic dimension* relates to the entertainment and pleasure that the virtual experience allows to live (Wu and Holsapple, 2014). The virtual experience can lead to pleasure, as a result of the stimulation of the five senses through multisensory devices. The pleasure sometimes comes from the stimulation of the imagination aroused by a multitude of activities: stories, narratives, intrigues, and images. The context of the experience is not the only determinant of consumers’ pleasure. It can also stem from the subjective operations that consumers undertake when they interact with the context of the experience (Carù and Cova, 2003). This pleasure could be aroused by several dimensions of the virtual environment, in particular the aesthetics which is at the origin of several emotions. The aesthetic dimension is strongly related to the nature of the virtual experience. Whether it is video games, movies, mangas or virtual universes, the 3D environment, the sharpness of the image, the beauty of the fictional characters, and the colors attract the individual who experiences pleasure in living this rewarding experience (Thuillier, 2011). The visual aspect plays a determining role in the evaluation of the virtual experience. A virtual experience such as a video game involves a strong personalization of its design and the physical environment in which players find themselves. Animated films such as mangas also have a very strong aesthetic value (Kinsella, 2000). The characters are inspired by our daily life with a caricature touch that adds aesthetics. The colors and staging are designed to really

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**Figure 1.**
Summary of the main components of the virtual experience

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capture viewers’ attention. This aesthetic dimension is more a matter of imagination during an experience such as reading (Pelletier, 2005). In this case, readers create their own imaginary worlds and mentally build from scratch universes where the aesthetic will materialize their own perception of what is written (Duchan et al., 1995).

The psychological dimension relates to consumers’ state of immersion during the virtual experience. Immersion is often a condition sought by individuals who want to escape a hard everyday life. Immersion is very strong when the environment stimulates a high level of challenge and requires the mobilization of the person’s skills. Immersion then becomes an optimal experience called flow (Csikzentmihalyi, 1997; Nakamura and Csikszentmihalyi, 2014; Nah et al., 2014). When they are in a flow state, individuals control all of their actions, the notion of time no longer matters to them, as they make no distinction between the past, the present, and the future (Hoffman and Novak, 1996). Their concentration is so high that it no longer responds to the stimuli that are supposed to disturb them. Thus, time passes faster than usual. This results in a rewarding state for consumers, who are no longer aware of themselves, or of everything around them. The psychological dimension also relates to escaping from everyday life resulting from entertainment or games (Hirschman, 1983; Holbrook et al., 2008; Calleja, 2010). Escapism is a component of immersion (Fornerino et al., 2006). People seeking escapism are usually those who face a painful or difficult life (failures, psychological disorders, loneliness, etc.). Through virtual experiences, they try to avoid the real and to find some happiness, even fictitious (Jolivalt, 1995; Reading and Jenkins, 2015; Zarantonello and Luomala, 2011). In a virtual consumer experience, the person may create a virtual self. By identifying with a fictional character or by immersion in a different universe, this experience allows consumers to live situations that they cannot experience in their real life (Dampéart et al., 2002; Bongkoo and Shafer, 2002; Ciussi, 2007). The concept of the extended self is present in consumption experiences, particularly when they occur in a virtual context (Belk, 1988). In virtual universes, an avatar, a sports car, a villa, or an island allow users to explore new facets of their identity. The ability to customize an avatar relates to themes such as ethnicity, gender, and other aspects of the self (Markos and Labrecque, 2008). This makes the virtual experience unique for the individual who appropriates it. In marketing and consumer behavior, appropriation relates to the way individuals manipulate physical objects, places, and ideas (Filser, 2002; Bonnin, 2006; Ladwein, 2004; Carù and Cova, 2003, 2006; Braun, 2017).

The social dimension relates to the interactivity lived during the virtual experience and the interaction with other users. Interaction and interactivity are major components of the electronic virtual environment. Indeed, the person who lives in a virtual world can interact with it and model it according to his/her imagination (Draper et al., 1998; Steuer, 1992; Grumbach, 2007; Zheng et al., 2017). The experiential approach assumes that the consumer experience becomes more rewarding when it is shared with others (Pine and Gilmore, 1999; Filser, 2002). Evolving in a virtual world implies a strong social exchange with the other people present in this universe. This exchange remains, unlike “real” exchanges, reasonably controllable by the user (Blascovich et al., 2002). Social interactions between different participants may reveal special, as many individuals seem to confuse avatars and “real people” (Jakobsson, 2006; Loyer, 2015).

These dimensions are subject to study in electronic contexts: primarily video games, the internet and virtual worlds. Research on the impact of the virtual experience on the consumer is however very rare. Based on the AOL technique, this research proposes a new way of approaching the link between the virtual and the real, by examining the components of the virtual experience and its effects on the real of the consumer.
When analyzing the virtual experience, authors usually refer to the broad frameworks developed to account for the general consumption experience (Holbrook and Hirschman, 1982; Pine and Gilmore, 1999). However, the virtual experience has its own specificities. It is first done in the absence of a tangible physical support. The tactile experience that characterizes it is intimately linked to the devices used to immerse in virtual universes. The spatio-temporal landmarks are also different: the places and times of the experience end only when the consumer decides to put an end to the experience. The third specific characteristic of virtual experiences is related to a higher level of control. Consumers are neither undergoing a predefined setting, nor just being a subset of the process defined by the company. They are the protagonists of their experiences as they are the ones who determine the actions, situations, and interactions composing the experience (Ermi and Mäyrä, 2005).

Methodology

Methodological difficulties in studying virtual consumer experiences

Virtual experiences are unique and involve a specific cognitive sense of depth and presence (Faïola et al., 2013). These experiences are reshaping consumers’ identity. Consequently, to date, no model is able to account for the complexity of virtual experiences (Nagy and Koles, 2014). Researchers who study virtual consumption explore a very particular experience, rich in emotion, cognition and social sharing (Piyathasanan et al., 2015). Indeed, individuals evolving in virtual worlds do not share their experience easily. This experience remains indeed very private and intimate. It refers to a universe that individuals prefer to keep for themselves, as it may involve taboos and unconfessable themes such as addiction, interaction with fictional characters, avatars and even sensuality and sexuality (Whitty et al., 2011; Sadowski and Lomanowska, 2018). Researchers may face several psychological screens veiling individuals’ behaviors (Gavard-Perret et al., 2012): screen of conscience (as consumers are not always aware of their deep motivations to immerse in virtual worlds), screen of irrationality (as informants will tend to give logical explanations to their behaviors in virtual worlds), screen of tolerance (consumer’s social environment may disapprove of their immersion in virtual worlds) and the screen of politeness (in front of a research consumers’ discourse will tend to be acceptable). Moreover, individuals who are passionate about virtual experiences such as mangas, video games or virtual universes may be very reluctant to an interviewer who does not share the same experiences and who does not really belong to their “world.” These individuals evolve in tribes – in the postmodern meaning of the word – who share common codes, signs, symbols, artifacts, values and lifestyles (El Kamel et al., 2011). They use a specific “jargon” of their own. To be able to question them, interviewers would first have to be part of their community. Researchers studying virtual experiences need to engage in a co-creative relationship with other members of the community, and to co-immersion into the field (Banks, 2013; Carù and Cova, 2008). Even then, they are not sure to succeed. Declarative methods are indeed not very effective in understanding their experiences and the possible effects of these experiences on consumers’ lives. In some cases, directly approaching interviewees could create strong resistance, particularly when dealing with aspects that he/she does not want to admit, or even discuss. Those who have done so have observed several contradictions in the respondents’ testimonies (Trabelsi-Zoghla, 2015). Another difficulty may be related to immersion. On the one hand, traditional interviews reveal to be insufficient to account for this phenomenon. On the other hand, interviewing gamers during the game is very difficult: players are so concentrated that they are not able to reveal their feelings, emotions and experiences. In this case, immersion becomes an obstacle to the collection of rich and deep data. It is important to go beyond the stated to deeply understand what “makes sense” in a virtual consumption
experience. The goal is then to help respondents to speak more easily about their experience. This would also provide access to the unsaid, to better understand the virtual experiences, what they represent for consumers, and the likely repercussions on their lives. In the next section, we present the AOL technique that meets these criteria.

**AOL: a methodology adapted to the study of virtual universes**

**Presentation of the method.** This method finds its basis on the following observation: “Consumers’ desires and needs are so deeply rooted in their minds that language becomes an insufficient communication tool. Instead, researchers are turning to metaphors. Cognitive psychologists have learned that human beings think in images, not in words” (Wells *et al.*, 2000). The theoretical foundations of the AOL technique fit into the Zaltman’s paradigm. Zaltman (1997) have contributed to develop new marketing research tools that can reveal and understand the hidden meaning of consumption acts. The aim of the method is to explore and understand the elements that “make sense” in a consumer experience (Vernette, 2008).

The multiple methodological difficulties encountered during data collection, explained in the previous section, justify the use of this method. Informants have difficulties expressing themselves about their virtual experience and its impact on their daily lives. Generally, informants deny, voluntarily or unconsciously, any possible negative effect on their lives. They just talk about their virtual experiences, what attracts them, and leads them to relive them. They do it avoiding to mention the impact of these dimensions on their lives. However, they declare having consumed and/or purchased products and/or services reminding them of these experiences. This also justifies the use of the Album-on-line technique. This method takes as an assumption the idea that all thought relies above all on images, and not on words. When verbal communication is difficult for the person, a visual metaphor could facilitate communication to access hidden knowledge (Vernette, 2008). In the majority of cases, the deepest thoughts of consumption are indeed unconscious (Zaltman, 1997).

To better understand consumption experiences, several researchers have proposed adopting methodologies relying on the exploitation of real or mental images (Heisley and Levy, 1991). This approach involves bringing the respondent to take pictures and comment on these photos. The photos usually relate to a consumption experience that informants describe, while explaining their motivations for choosing them. The AOL technique builds on what image search engines provide on the web (Google image). Each participant selects the images that best match the proposed experience on the internet. In our case, this involves bringing the informant to choose images associated with a virtual experience they lived, and to produce narratives about it. This method is close to life stories. A total of 22 people were invited to talk about a lived virtual experience. Among these, seventeen participants went through the AOL stages. The search engine used was Google Image.

**AOL and close methods.** AOL may be related to narrative techniques. The first step of this method, immersive scenarios take indeed a narrative form, reminding other narrative methods such as diaries, essays and storytelling. During immersive scenarios, researchers focus on informants’ stories – especially “turning point moments” that contribute to illustrate the playing experience (Bertaux, 2015). Researchers ask informants to tell them about their lived experience, while the discursive production takes a narrative form. Like for other narrative techniques, immersive scenarios are not based on a set of questions related to a product or a brand. They are centered on the individuals and the way they tell their stories. There are no initial questions, but researchers invite the informants to share their experience and events with them. The order is not necessarily a chronological one. This
approach aims to identify the meaning given by consumers to their consumption because participants are invited to tell their personal stories, with their evolutions and rupture points. This narrative facet of immersive scenarios is particularly adapted to study multi-layered and multi-actor network processes and more specifically consumer experience (Makkonen et al., 2012; Becker, 2018). It also allows to reveal players’ motivations, interactions with other players, experiences, feelings, emotions, thoughts, perceptions and behaviors (Özçaglar-Toulouse, 2008; Zarantonello and Luomala, 2011). However, AOL goes beyond typical narrative techniques and benefits from the power of images. It is more adapted to capture emotional non-verbal responses and consumption experiential contents. If well implemented, it is liable to generate more data than verbal interviews (Ganassali and Matysiewicz, 2018). The use of images as a support for informants’ expression is considered as less biased than verbal tools (Yoon et al., 2013). It also allows to reach finer and deeper insights (Ganassali, 2016).

AOL is not the only qualitative research method that uses image as the primary means of expression for the participant. The idea of combining the “non-verbal” with the “verbal” is not new. ZMET (Zaltman Metaphor Elicitation Technique) is also image-based (Zaltman, 1997). The researcher calls the participants to select images. In-depth interviews come, in a second step, to complete the justification of the choice of the selected images. They usually take the form of a structured narrative that includes ten steps (Zaltman, 1997). During data collection, the respondent copies, pastes, and groups together all the selected images until producing an imaged narrative, representative of the way he or she has lived or perceived the experience.

In the same spirit than visual metaphors through image production, the MIEL (Online Image Wall) method relies on images (Ganassali, 2016). This more structured gives however less freedom to participants. Moreover, it mixes quantitative and qualitative analyses. The protocol involves getting respondents to choose images and justify their choices by answering closed questions. The study then leads to trends and/or generalizations. AOL is a less structured and more open approach. Indeed, the researcher gives participants absolute freedom in the choice of images, and in the way they wish to tell their experience. Moreover, the choice of keywords captured in the search engine, during the image collection, may also be subject to an analysis likely to add depth to the respondent’s initial justification. Then comes a group step as informants then participate in the constitution of the final photo album, after receiving all the individual albums made by each participant.

AOL can also be compared to the online multi-image elicitation: OMIE (Ganassali, 2016; Ganassali and Matysiewicz, 2018). This technique also relies on the strong evocation power of images and the possibilities offered by the image search engines. It is based on a self-reported protocol and a projective approach inspired from ZMET (Zaltman, 1997). Like AOL, this method provides deep emotional insights. Similarly, they are adapted to study rich contextual meanings and emotions related to consumers’ experience.” However, this technique is different from AOL because its approach is not purely qualitative. Rather, it is a mixed method also involving quantitative data analysis. Besides, the images that serve as a starting point are selected by the researchers themselves and not by the respondents (Ganassali, 2016; Ganassali and Matysiewicz, 2018).

Another comparable visual approach is the on-line collage presented by Ganassali and Matysiewicz (2018). Like the AOL, this method relies on the use of search engines to access images that best describe the individual’s experience. This method is very close to AOL and could be described as a reduced or simplified version of this technique. Nevertheless, the AOL requires the implementation of an initial immersion stage during which individuals gradually relive their own experiences and remember their details. Following a narrative
approach, respondents begin by telling their stories: they give details about their virtual experiences and their specificities, as they perceive them. The AOL requires to go through this first step to help the participants to find more easily the state of mind and the main elements of their experiences. Later, this will allow them to choose the most representative images of this experience.

**AOL stages.** The application of the AOL is done in five stages:

1. **Life story, also called “immersive scenario”**: Informants verbally give details about the virtual experiences that they consider as important. Then they choose one of these experiences. The main topics of discussion revolve around the virtual experience deemed important by the respondent. The interviewer then invites informants to discuss the different impacts of these virtual experiences. This implementation of this stage is close to comprehensive interviews (Kaufmann, 1996). The takes an open conversational form and allows informants to get immersed in their familiar virtual environment.

2. **Keywords selection**: Participants choose the keywords that best describe the chosen experience. They enter them in the search engine. They justify the choice of keywords when entering them on the search engine. These selected keywords are supposed to best represent the chosen virtual experience.

3. **Image generation and selection**: Participants choose, among the images that appear, those that best match their virtual experience, while verbally justifying their choices. All the collected photos allow building an *initial individual album*. Later, they can find images more representative of their experience, in the photos chosen by other members of the group. In such a case, they have the possibility to replenish their albums.

4. **Synthesis of the experiences**: Researchers gather all the selected images and constitute a collective album, called *intermediary album*. Researchers send back the album to the informants, inviting them to assess the relevance of the pictures and

<table>
<thead>
<tr>
<th>Stage</th>
<th>Procedure</th>
<th>Output</th>
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<tbody>
<tr>
<td>Immersive scenario</td>
<td>Informants are invited to (1) provide details about their virtual experiences, (2) expand on one of these experiences and (3) discuss how the impacts of these experiences</td>
<td>Testimonies about the informants’ experience</td>
</tr>
<tr>
<td>Keywords selection</td>
<td>Informants select a set of keywords that best describe the chosen virtual experience. They provide a justification of these keywords. Simultaneously, they enter these keywords in an image search engine</td>
<td>Keywords and justification</td>
</tr>
<tr>
<td>Image generation and selection</td>
<td>Informants select the images that are the most evocative or representative of their own virtual experience. They also verbally justify their choices</td>
<td>Individual albums</td>
</tr>
<tr>
<td>Synthesis of the experiences</td>
<td>Researchers gather all the selected images in a collective album. They get back to the informants, inviting them to assess the relevance of the pictures and to justify their assessment</td>
<td>Intermediary albums</td>
</tr>
<tr>
<td>Experience centering</td>
<td>Based on informants’ feedback, the most relevant pictures are selected to constitute the group’s final collective album</td>
<td>Collective albums</td>
</tr>
</tbody>
</table>

Table I. AOL stages
to justify their assessment. The goal was to help them find and select images that seem most representative of their experience, and that they may not have not been able to find themselves.

(5) Experience centering: This stage allows to rebuild a final collective album. It relies on the informants’ feedback: the most relevant pictures are selected to constitute the group’s final collective album. In some cases, and given the very fast update of images on search engines, some informants add new images. This is the case when the collection spreads over time.

In our specific case, the qualitative sample included 17 individuals. We have divided these individuals in two groups. The first includes those who have chosen to speak of their electronic virtual experiences (nine people). The second includes those whose experience is not exclusively virtual (eight people). A description of the informants and their selected virtual experiences are presented in Appendix. A primary scenario was proposed to the participants (Table II). The purpose of this scenario was to help the informants to re-examine their lived experience, and to find back the significant details associated with this moment. The informants had the opportunity to review the way with which they wanted to tell each step of their experience. Their narrative covers the stages ranging from the intention to live the experience to their feelings once the experience is over. The scenario also depended on the experience chosen by participants, who had absolute freedom in choosing which virtual experience to tell.

**Analysis.** The analysis of the whole corpus includes a thematic analysis of the informants’ representations and the meanings induced by the different albums. The participants’ testimonies were analyzed according to a thematic approach to identify the major histories, stories and associations and a lexical approach based on the keywords used for the search of images on the internet. The visuals composing the different albums were then classified according to the thematic categories resulting from the verbal representations (Vernette, 2008, 2007).

**Results and discussion**

In the literature, researchers have focused on the electronic virtual environment and the antecedents of virtual experiences on the internet and online purchase intention

<table>
<thead>
<tr>
<th>Groups</th>
<th>Stages of the experience</th>
<th>Primary scenario</th>
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</thead>
<tbody>
<tr>
<td>Group 1: people whose narratives deal with an electronic virtual experience</td>
<td>Step 1: intention to engage in the experience</td>
<td>“Remember the last time where you had to live this experience. Tell me about your motives. Why did you want to live it?”</td>
</tr>
<tr>
<td></td>
<td>Step 2: beginning of the experience</td>
<td>Choice of representative images of this step</td>
</tr>
<tr>
<td></td>
<td>Step 3: core of the experience</td>
<td>“You fully live your experience. You have a total control over what you do. Tell me what you feel”</td>
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<tr>
<td></td>
<td>Step 4: end of the experience</td>
<td>Choice of representative images of this step</td>
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<tr>
<td>Group 2: people whose narratives deal with a not exclusively electronic virtual experience</td>
<td></td>
<td>“You have completed your experience. What is going on? How do you feel?”</td>
</tr>
</tbody>
</table>

Table II. Primary scenarios
(Hsu et al., 2014). This has allowed them to identify several components of the online experiences. In this research, we study offline and online virtual environments. The analysis of the qualitative data collected from participants' stories and selected images allowed us to note some differences from previous work. Our results highlight new experiential aspects that are increasingly sought after by consumers and likely to influence their behavior.

Understanding the virtual experience and its components

Photo collection suggests a great diversity in the components of the virtual experience. We have categorized the images selected by the participants into albums, each album representing a theme (Table III). In some cases, respondents struggled to find keywords to enter. This is the reason why we have used follow-up questions, reformulated and rephrased their own sayings to help them clarify their ideas.

The virtual experience has several dimensions. Some are explicit and utilitarian. Others are implicit, psychological, emotional and social. Each dimension represents some characteristics and encompasses several sub-themes. The common point between these different components remains the determination of the real of the consumer. The results show that consumers cannot fail to be impressed, after living these experiences. The virtual offers them an idealized universe, a personalized world adapted to their own desires. They are dazzled, completely immersed in a fictional universe. They try later to find back some of its elements in real life. The testimonies we have collected show that this is not always possible.

Finally, we have analyzed all the photos by album, each album representing a theme. In other words, we have categorized the photos belonging to the same theme in albums dedicated to this theme. We have elaborated a mapping of the representations. In this mapping, we have positioned the most selected images by participants on the two main axes most representative of the results.

The analysis of the selected images shows that the type of virtual experience (electronic or not) plays a decisive role. It influences the dimensions of the virtual experience and the consumer's virtual and real lives. A “map of representations” (Vernette, 2008) was constructed. The two axes of this mapping represent the factors that allow to place the images according to the type of virtual experience. The first group (i.e. people who preferred to talk about their electronic virtual experiences) selected images related to the following themes: “others (extraversion)” and “strong emotions.”

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>Data collection</td>
<td>Immersion and bigger commitment of the informants</td>
</tr>
<tr>
<td></td>
<td>Taking advantage of the profusion of images and technological possibilities of the internet</td>
</tr>
<tr>
<td>Findings</td>
<td>Spontaneous expression of affective states and experiences</td>
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<tr>
<td></td>
<td>Metaphoric and creative thinking</td>
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<tr>
<td></td>
<td>Deeper insights, beyond psychological screens</td>
</tr>
<tr>
<td></td>
<td>Possibility to unveil unexpected knowledge</td>
</tr>
<tr>
<td>Application</td>
<td>Adapted to study consumption experiences through illustration and contextualization</td>
</tr>
<tr>
<td>Validity and generalization</td>
<td>Possible member-check</td>
</tr>
<tr>
<td></td>
<td>Co-validation of the findings by researchers and informants</td>
</tr>
</tbody>
</table>

Table III. Advantages and limits of AOL
(video games, experiences on the internet, social networks, virtual universes, etc.) represent a strong social value. Sharing and strong emotions are the main motivations of this group. Members of the second group (who live non-electronic virtual experiences such as reading and watching movies) have chosen images related to “self” and “well-being.” Their motivations are more oriented toward well-being and identification with virtual characters. For this second group, their experiences are unique, extremely personalized and highly dependent on their experience. Virtual experiences immerse consumers into an idealized world characterized by the presence of intense and sometimes contradictory emotions. This world is composed of several interrelated elements. Previous research has often focused on virtual experiences on the internet, mainly video games, and the recreational dimension as a major component of these experiences (Chang et al., 2014). Our results show that the cognitive dimension contributes significantly to the appropriation of the experience, materialized by the consumer’s will to create a real “home.” This is done by appropriating both the experience and the central virtual character of the experience, such as the avatar in a video game, or the hero in an animated movie.

A useful experience is an experience that brings a benefit to the consumer. “It’s about opening the doors of an unknown and desired world, a new and sometimes different world from what we daily experience” (M.K., Male, 27 years old). When consumers consider the experience as useful, they are tempted to explore it, to discover its benefits, to understand what advantages it could bring, and the different ways in which they may learn from it. This is the dimension of appropriation explained by the perceived usefulness of the virtual experience: exploration (Carù and Cova, 2003). Exploration is thus determined by the usefulness of the virtual experience, and could lead the consumer to appropriate this experience to make it his or her own customized world. Feeling attached, protected, and loved by those who share the same virtual experience helps the consumer to appropriate it: the sense of belonging makes the individual feel supported by other members. The consumer feels being better understood and more comfortable with those who share the same experience. This helps him/her to better appropriate it in the sense that he/she will be more willing to explore and customize it according to those with whom he/she shares the same emotions. For example, people who are passionate about manga share this passion with others and feel supported: it is a rather small community whose members share common values and orientations. Feeling bonded helps them to feel more “at home,” to better appropriate the experience and to guide their mental representations.

One component seems to stem from everything else: flow, a state of total detachment from reality (Csikszentmihalyi, 1997)

Flow is a state that depends on several other elements, mainly the appropriation of the experience. Before they find themselves in a state of total immersion, individuals need to discover the virtual environment and begin to personalize the experience according to their own needs. This result confirms the findings of Carù and Cova (2003), according to whom appropriation is a major antecedent of the state of flow. Virtual experiences can give consumers the opportunity to access a fictitious world that is perfectly tailored to their own needs. They can bring their personal touch, really or virtually. For example, in the context of online games, players have the possibility to personalize their experiences, to have their own avatar, a personalized situation, or a
particular staging. This makes them more attached to the game but also to their virtual character:

– What if one day your avatar disappears? What would you do?
– I’d be a dead man (long, nervous laughs) (F.A., Male, 35 years old)

By immersing themselves in a virtual world, consumers imagine the scene, develop their own vision of the possible scenarios, the situation, and the characters, and appropriate the experience. This appropriation makes them more absorbed by the virtual experience, which facilitates the state of flow. These imaginary situations can have various forms depending on the experience consumers live. In all cases, the idea of the imaginary corresponds to the access to a totally personal world, where every detail counts:

What I love in the virtual, it’s the fantasy. It takes me to a world that I love so much that my life is not the same anymore. Sometimes I like to chat with strangers, I like to build images, imagining how they look. But as soon as they want to meet me, there it starts to irritate me. I feel they want to ruin everything! What I like is this imaginative side. I do not want to go back to reality. If they insist too much, I cut off all contact with them (S.L. Female, 53 years old).

Despite the similarities with the dimensions mentioned by Holbrook and Hirschman (1982), the way in which participants expressed themselves in relation to these dimensions is different. What makes the components of the virtual experience different from those of a typical consumer experience is the ongoing relationship between the virtual and the real. This experience accompanies consumers throughout the experience. The components of this experience have indeed two interrelated facets: one relating to the virtual context and one to the real. The virtual experience evolves according to the evolution of the context: from virtual to real or from real to virtual. The perceived utility in a virtual experience is not the one perceived after the virtual experience. The same applies to the hedonic, psychological and social dimensions. To appropriate a virtual experience when one is living it is to explore it and to personalize it. To appropriate it, once the experience is completed, is to consider it as an essential component of one’s life, to speak of it as if it were an integral part of one’s experience. The pleasure felt during the virtual experience also continues afterwards but not in the same way. For example, by examining the photos chosen by the participants, the pleasure felt during the virtual experience was represented by images that illustrated very strong emotions, such as climbing or parachuting. To represent the “post-experience” stage, informants choose photos that represent much more well-being and zen moments.

Moreover, the usefulness of a virtual experience entirely lies in the way in which the individual perceives and evaluates the contribution of the experience. Not necessarily tangible, this contribution could be perceived differently by two people who had very similar experiences. The players perceive different utilities of the game according to their experience, and therefore of their reality. Those who are satisfied with their reality appropriate the virtual in a totally different way from those dissatisfied with their real.

For example, in a video game, the way in which individuals personalize their avatars is totally dependent on their experience. If they are satisfied with their reality, their avatar will be like them. They will opt for an avatar representing an extension of the self (Belk, 1988). Otherwise, the avatar will be an “idealization of the self” through which the individuals will feel better about themselves by being what they want to be. But in both cases, avatar personalization is a form of appropriation of the virtual experience of the game. Thus, the boundaries between the two worlds are so fine that it would be essential to explore the “virtual post-experience” and ask the question: What happens next?
Virtual experiences: endless experiences

Our results also allowed us to explore the consequences of the virtual experience to clarify its different impacts on consumer reality. The majority of the participants expressed themselves on these impacts through visual metaphors, namely the selected images but also through certain words or expressions. For instance, we have found that most informants spoke of their avatar using the personal pronoun “I.” Likewise, when they explain the details of their virtual experience, they talk about it as if it had really taken place. This finding reveals how strong the identification to the characters, the immersion in the virtual world, and the state of flow are. Once detached from the real world, individuals fully live the virtual experience. In many cases, they ignore everything that surrounds them. They look for gratification, reward, and mobilize all their skills to reach the highest level of challenge. The transition to the real world can be hard (Quéau, 1993, 1996). They may be willing to continue to live in the virtual characters’ skin, to endorse this new role in trying to live their lives, to adopt their lifestyle and to behave like them. They may also begin to perceive the world differently, feeling less satisfied with their existence and with what the real life has to offer.

The virtual character ends up sticking to the skin of the individual. Some participants had facial expressions that strongly recalled those of animated characters such as mangas. Others adopted the posture and manners of their favorite characters. The choice of photos was also very revealing of the continuity of the virtual experience: some chose “Cosplay” contest photos where individuals disguised themselves to best resemble their favorite virtual characters. When justifying this choice, the participants spoke of the difficulty of detaching themselves from this “other self.” After these experiences, the person may see the world differently. Indeed, the virtual allows individuals to get used to a world completely shaped according to their desires, a world where personalization is at its peak. Some participants admit they are no longer satisfied with certain products. Their virtual experience has affected their perceptions of the existing offering:

Since I started playing on pet society, I no longer feel the same [. . .] Have you seen the furniture? Where would I find such beautiful furniture? I have been looking for months, I do not like anything anymore [. . .] It has to change! [. . .](S.A., Female, 28 years old).

Consumption may change as a result of a virtual experience. The individual then begins to search for and consume products that were not previously of interest to him or her. These products are then likely to reflect the new orientations and perceptions acquired after this experience. Consumers will be looking for products that can symbolize their new state of mind and vision. Some participants purchased products that reminded them of virtual experiences. This confirms Ladwein et al. (2008) who point out the social and behavioral implications of immersion experiences in TV shows. Accustoming the consumer to a fictional world, often desired, the virtual experience ends up directing individuals’ consumption toward products likely to remind them of the virtual world. They may also acquire products that can allow them to better live their future virtual experiences: a more powerful computer or more suitable consoles, to better play and interact during the game. Similarly, they could adopt the same lifestyle – dress and have the same eating habits – as the virtual character they admire or the heroes of their favorite movies, TV series or novels.

For a future vision of the market

In a world where time has become a real constraint, and where the social rules and the gaze of others deeply affect individuals, the virtual has become a refuge for the majority of people evolving in it. The virtual gives consumers a power that no other experience can give: a second chance at life. A virtual experience is first and foremost a way to start from scratch,
to imagine everything, to build, to rebuild, to deconstruct, and to reconstruct. The virtual allows individuals to be reborn, to customize everything at will, to create a new home, a new life, which is sometimes totally different from reality. Such an experience is certainly sought after by consumers, but when it ends it affects them. What happens when consumers get back to reality? What do they feel when the ideal ends and they have to face their daily life, their “real” life? Do they perceive things the same way? What about brands? Are they aware of post-virtual consumers and their very particular expectations? Our research brings some answers to these questions and allows identifying the particularities of the virtual experience, and its different effects on consumers. Impacts on individuals’ reality can be categorized as psychological, perceptual and behavioral.

On a psychological level, through immersion and appropriation, some consumers can be so affected by their virtual experiences, and what they have felt, that they will tend to continue to live in the virtual character’s skin even when these virtual experiences are over. Some others will tend to isolate themselves and be less receptive to the observations of their entourage about the time spent on virtual experiences. Through perceptual defense mechanisms, the most addicted consumers will not be receptive to their entourage’s criticisms and suggestions, considering that only they are capable of distinguishing the virtual from the real, something that is most cases untrue.

By dint of wanting to bring elements of the virtual in their daily lives, but also by dint of wanting to show their belonging to the groups who share their virtual experience, individuals’ future consumption is affected. Indeed, the virtual, accustoming consumers to an ideal universe, their benchmarks change and their requirements increase. Their perceptions and consumption of products and services also change. They try to consume according to what they have experienced in their virtual experiences, reminding traditional memorabilia (Pine and Gilmore, 1999). When projecting themselves in virtual universes and vicariously living stories, consumers are more liable to experience a special relationship to the characters: this may translate in identification and/or admiration. This phenomenon is in relation with the Aristotelian concept of catharsis, defined as an imitation that, though compassion and emotions, reaches the “purging of emotions.” This has real consequences on consumption behaviors, particularly for those willing to revive some aspects of their virtual story or experience.

Managers must ask themselves how to react to a consumer who is swaying between two so different worlds. Recent research has very often raised the importance of digitization and its effects on brand marketing strategies (Tsimonis and Dimitriadis, 2014). Adopting technologies, such as Web communication, to adapt to consumers’ needs is not sufficient. Virtual is indeed not synonymous with digital. The post-experience has very rarely been the subject of research, while brands are more aware of the challenges ahead. At this level, understanding how to retain consumers may reveal helpful. Research has been able to develop tracks on the involvement of brands in virtual experiences, mainly in video games (Yoo and Eastin, 2016), and virtual worlds such as Second Life (Haenlein and Kaplan, 2009). This research highlights the importance of brands’ presence in virtual worlds to promote, and market their products. However, brands do not necessarily have to be virtually present: some online gamers highly criticize the presence of brands in virtual worlds, considering it as an intrusion in a world that must remain fictitious to keep all its surreal charm and that they would rather keep for themselves. Thus, brands may have to react indirectly by creating virtual experiences around their products, making sure to make the virtual an essential component of their offers, but above all their communications.

In the future, researchers and managers may focus their attention on a marketing that draws on consumers’ virtual experiences, a marketing that reproduces their “fictitious”
experience, and that may have very concrete, and visible consequences. The marketing of
the future may not rely solely on the adoption of technologies, virtual reality and simulators:
innovation is not necessarily technical. The innovation may be that of the processes adopted
and the concepts created. In the future, marketing may have to adapt to a market difficult to
segment, a one-to-one market, where consumers may be looking for escapism, a world of
their own, a fictitious but unique experience. That may guide their future consumption.

Conclusion
Compared to previous work, we have been able to better understand the components of the
virtual experience by considering the virtual in the broadest sense of the term, as defined
by the multidisciplinary literature. The use of the AOL technique allowed us to get a closer look
at the specificities of the virtual experience in the eyes of those who live it. By getting participants
to tell the story of their experience through visual metaphors, we have shown that it is an
experience that is both utilitarian and emotional. It also makes it possible to enter an extraordinary
world that can be very customizable and to escape the real life. Our results also explore the links
between the different components of the virtual experience. Flow seems to be the consequence of
several components of the experience: the individual enters in a state of total detachment from
reality after appropriating the experience. This appropriation is achieved if the individual
perceives the experience as useful and feels supported by those who live the same experience.

The present research shows that, despite the similarities between the typical
consumption experience and the virtual experience, the two experiences are not lived in the
same way. Indeed, during a virtual experience, the permanent back and forth between the
virtual and the real makes the experience special, as consumers continuously oscillate
between a component associated with the virtual experience and a second one relating to
the reality surrounding them. Besides, the impact of the virtual experience on the individual
is psychological but also marketing: a virtual experience is never totally completed. The
virtual characters and universes continue to live in consumers’ minds, conditioning their
perceptions and future consumption.

Once the experience is complete, the individual is no longer the same. The consequences
of the virtual experience manifest themselves in the individual’s will to continue to live in the
skin of the virtual character: this phenomenon is called projection. The virtual character
could be a video game avatar, a character from a novel, or the hero of a movie. Our results
also show that other perceptual implications are possible. After such experiences, the virtual
gets consumers accustomed to an ideal universe, modifies their benchmarks, and increases
their requirements. They become demanders for customization, but often remain
dissatisfied. Indeed, it is still very difficult for them to regain the virtual in their real. As a
result, their perceptions of products and services change. Their consumption may also
change in the sense that they try to consume according to what they have experienced in
virtual universes: dress as their hero or avatar, or buy products that remind them of their
excitement, and the challenge they felt during a virtual experience. These results are of a
particular interest from a marketing point of view.

From a methodological perspective, the use of visual metaphors goes hand in hand with
research topics where data collection presents difficulties. If participants’ comments
contradict the “unsaid,” images are useful to help them speak more easily and reveal the
hidden meaning of their behavior. Being rarely used in the literature, the AOL allowed a
better understanding of the participants’ testimonies. Most informants have difficulty
recognizing the impact that the virtual has on their lives. Therefore, the AOL allowed us to
cross their words with the selected visual aids. Crossing direct and indirect qualitative
methods therefore brings more depth to the subject under study and more distance from the
participants’ comments. Combining the “said” and the “unsaid” has considerable methodological potential, mainly in the study of taboos and/or complex subjects.

From a theoretical perspective, this research provides answers to questions raised in various disciplines about what might happen after virtual experiences. Indeed, most of the work, especially in marketing, has focused on the components of the virtual experience. Marketing researchers have mainly focused on experiences on the internet, unlike researchers in psychology and social psychology who have addressed topics related to the likely changes that may occur after a virtual experience. However, their works were of a conceptual nature, and did not deal empirically with the different impacts on the individual. Our results show that virtual experiences will have deep and meaningful impacts on consumers’ behavior in future marketplaces. The proliferation of virtual experiences makes consumers accustom themselves to non-tangible worlds, but which considerably affect the way in which they perceive and evaluate objects and situations. This could not be without consequences on future market places: consumers who can have everything to their taste should expect an offering (products and services), communication campaigns but also store visits that resemble their virtual experiences. Consumers who live in the shoes of characters who have no real existence are likely to transform classic explanatory models of consumer behavior.

At the managerial level, it would be possible for businesses to better understand what drives consumers to live virtual experiences, and the components that are important to them. Consumers increasingly need to escape, live rewarding experiences that allow them to mobilize their skills, and develop their collective intelligence. Companies are therefore required to meet consumers’ needs through a more customized offer. It is also led to develop a more original communication, focused on what individuals seek through consumption. The use of virtual reality could bring a more personalized touch to the company’s communication that could build on consumer presence in virtual worlds to develop new concepts, new products, new advertising campaigns, or even new distribution channels. Virtual reality also gives brands the opportunity to refine the definition of their marketing strategies by creating a representative model of their target, called the Persona, to ensure a common vision of the target within the company and to gain a better understanding of the target’s characteristics, lifestyle, preferences and what matters most to them.

This is an important avenue for communication professionals, particularly in the field of tourism, where it is important to succeed “a mental journey” (before turning it into physics), and to choose the right means of communication likely to reflect the best of what one can see in a country of destination.

In addition, virtual experiences seem to have perceptual and behavioral impacts on consumers who try to rediscover, through their consumption, the emotions they may have experienced during these experiences. Customizing the experience seems to further increase the demands of consumers who are beginning to crave products they may not find in the real world. It is in this perspective that several multinationals are now trying to be present on the virtual worlds, to have avatars, to discover these virtual worlds, and even to communicate through fictional characters.

In an effort to understand consumer behavior in a virtual environment, it would be opportune for businesses to create experiences similar to virtual experiences around their products and services. They could achieve it by creating a personalized shopping environment, bringing an innovative touch to their offerings, highlighting the dimensions of the virtual experience sought by consumers. Some virtual experiences could also help companies to opt for niche strategies: for example, targeting people who are passionate about a writer, those who enjoy a popular soap opera, people who play video games such as World of Warcraft, or those who follow manga adventures. These niches may provide them
some interesting tracks to differentiate themselves from the competition, launch new offers and products adapted to these specific segments' needs, a distribution consistent with their expectations, and a communication that could only be deciphered by this target.

The main limitation of this research lies in the confusion that exists between the virtual and the electronic in the minds of many informants. We had to explain and define the virtual before starting data collection. In future research, it would be relevant to propose a new definition of the virtual experience by considering its components, but also by clearly defining the boundaries of the virtual, comparing and contrasting this concept to the broad framework of consumption experience available in the literature (Schmitt and Zarantonello, 2013).

References


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**Further reading**


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<table>
<thead>
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**Table AI.**

Sample description

**Note:** *Informants who participated in the AOL procedure*
LARPnography: an embodied embedded cognition method to probe the future
Davide C. Orazi and Angela Gracia B. Cruz
Monash University, Melbourne, Australia

Abstract

Purpose – This paper aims to propose LARPnography as a more holistic method to probe the emergence of plausible futures, drawing on embodied embedded cognition literature and the emerging consumer practice of live-action role-playing (LARP). Current research methods for probing the future of markets and society rely mainly on expert judgment (i.e. Delphi), imagery or simulation of possible futures (i.e. scenario and simulation) and perspective taking (i.e. role-playing). The predominant focus on cognitive abstraction limits the insights researchers can extract from more embodied, sensorial and experiential approaches.

Design/methodology/approach – LARPnography is a qualitative method seeking to immerse participants within a plausible future to better understand the social and market dynamics that may unfold therein. Through careful planning, design, casting and fieldwork, researchers create the preconditions to let participants experience what the future may be and gather critical insights from naturalistic observations and post-event interviews.

Practical implications – Owing to its interactive nature and processual focus, LARPnography is best suited to investigate the adoption and diffusion of innovation, market emergence phenomena and radical societal changes, including the rise of alternative societies.

Originality/value – Different from previous foresight methods, LARPnography creates immersive and perceptually stimulating replicas of plausible futures that research participants can inhabit. The creation of a fictional yet socio-material world ensures that socially constructed meaning is enriched by phenomenological and visceral insights.

Keywords Ethnography, Delphi method, Embodied embedded cognition, Futures and foresight, Live-action role-playing (LARP), Scenario method

Paper type Conceptual paper

1. Introduction

If anyone knows how to imagine better worlds and build a more engaging reality, it’s larpers. Jane McGonigal (2011)

All futures start with a vision. In ancient times, Alexander the Great imagined himself the ruler of an empire extending from Macedonia to the river Indu. In modern times, the signatories of the Paris Agreement for Climate Change envision a future in which our planet survives the consequence of our technological advancements. As the future is hard to probe, future thinkers of different times sought and seek guidance to enact their vision. Alexander the Great travelled far to consult the Oracles of Delphi and Ammon, to receive confirmation of his vision of everlasting glory. The signatories of the Paris Agreement based their decisions and agenda on the systematic construction of likely scenarios (Rogelj et al., 2016), and so do researchers envisioning new technological (Narayanan and Fahey, 2006), energetic (Hussler et al., 2011) and socio-economic advances (Cicarelli, 1984; Barnes and...
Mattsson, 2016). And yet the Oracle of Delphi still provides guidance to modern future thinkers, albeit in a more systematic and shared manner.

The Delphi method is the dominant paradigm in futures and foresight research (Linstone and Turoff, 2011), combining the opinions of an expert panel to derive likely representations of a possible future event (Linstone and Turoff, 1975; Strauss and Zeigler, 1975; Skulmoski et al., 2007). Scenario and role-play methods are also widely used, the first to create descriptive or mathematical representations of plausible futures and probe into what could happen (Shearer, 2006; Ramirez et al., 2015), and the second to simulate conflicting situations and foresee what the actors involved will decide (Armstrong, 2001; Green, 2002). Yet to what extent can our judgment and imagination inform our future expectations and behaviours?

Knowing, learning and imagining are not abstracted processes: they are thoroughly rooted in the unfolding interaction and immersion of embodied beings within the materiality and presence of the world (Merleau-Ponty, 1962; Shapiro, 2007; Wilson, 2002). Literature on embodied cognition, in particular, speaks of immediacy to indicate that the body is always immersed in an ecology of materials, meanings and potentialities (Adenzato and Garbarini, 2006; Clark and Chalmers, 1998; Ingold, 2000; Semin and Smith, 2002). As understandings emerge through the physical and material character of embodied immersion rather than the mind “telling” the body what to do (Damasio, 1994; Ignatow, 2007; Lord and Shondrick, 2011; Wilson, 2002), current methods for futures and foresight research are thus limited in their exclusion of an embodied component.

Moreover, consumers increasingly organise live-action role-playing (LARP) events to explore themes yet unexplored by the market or society at large. Conscience, for instance, is an independently organised LARP set in the cinematic universe of Westworld, where visitors to a futuristic Western-themed park explore the moral implications of human–AI interaction (Conscience LARP, 2017). Transcending the traditional catalytic role of science fiction in providing a shared understanding of possible futures (Morgan, 2003), LARPs set in plausible futures allow people to inhabit, rather than imagine, the focal future scenario.

Drawing on the emergence of futuristic LARPs, we propose an evolution of current foresight methods that includes the elements of embodiment and embeddedness: LARPnography. LARPnography combines LARP and ethnographic methods to plan, design and enact a fictional future world in which participants can live for extended periods of time and researchers can observe the natural unfolding of social and market dynamics in the best possible approximation of an alternative reality. The immersion in a socio-material environment in which participants are afforded with phenomenological, social and material dimensions allows the emergence of new corporeal schemas, insights and practices (Adenzato and Garbarini, 2006; Semin and Smith, 2002) that can better inform our understanding of the future. Owing to its embodied embedded nature, LARPnography is best suited to understand how consumers will interact with radical innovations, regulate social or marketplace exchanges in the future and, in general terms, inhabit the future.

In the following, we begin with a review of current foresight research methods to surface their merits and limitations. We then explain LARP and tap into embodied embedded cognition theory (O'Malley et al., 2009; Varela et al., 2016; Wilson, 2002) to clarify the similarities and differences with prior foresight methods. After clarifying the epistemological underpinnings of LARPnography, we articulate the stages of our proposed LARPnography method. We conclude by discussing strengths and limitations of the proposed method, alongside with fields of applicability in marketing.
2. Review of futures and foresight methods

Futures and foresight research emerged in the 1960s as a way to enhance decision-making and support strategic planning (Kuosa, 2011; Son, 2015). While foresight research draws on a diverse range of methodologies from many subject areas, here we review four of the most commonly adopted qualitative methods (Popper, 2008): Delphi, scenarios, simulation and gaming, including the variant of role-playing games (Linstone and Turoff, 2011; Son, 2015). Table I provides selected studies using single methods and combined techniques in addressing future questions.

2.1 Delphi

The Delphi method is a qualitative forecasting technique that combines the expertise and recommendations of a panel of experts to reduce uncertainty or complexity surrounding the focal topic (Helmer and Dalkey, 1962; Linstone and Turoff, 1975; Skulmoski et al., 2007; Strauss and Zeigler, 1975). The Delphi method is thus a process of structured communication (Linstone and Turoff, 1975) that places emphasis on expertise and group judgment rather than statistical representation or hard data analysis (Donohoe and Needham, 2009).

**Method.** While multiple variations exist, the classic Delphi method is defined by five core tenets: expertise, anonymity, iteration, controlled feedback and gradual consensus development. A group of experts – typically between 10 and 30 – is first selected for their demonstrated knowledge on the topic of study (Okoli and Pawlowski, 2004; Powell, 2003). Anonymity between participants is essential to avoid biases related to peer influence and social pressure (Skulmoski et al., 2007; Strauss and Zeigler, 1975). After selecting the expert panel, written questionnaires are distributed individually between two and five times, with each set of questionnaires considered as one “round” (Amos and Pearse, 2008). Every round, the surveys are returned to each expert with a summary feedback based on the current consensus. The controlled feedback between each round allows participants to reflect, re-evaluate and potentially modify their prior judgements (Bolger and Wright, 2011; Makkonen et al., 2016), allowing for the gradual development of consensus over the course of multiple rounds (Day and Bobeva, 2005; Powell, 2003).

**Applications.** Delphi is most relevant to probe issues characterised by incomplete knowledge and high complexity, in which expert opinions can bridge knowledge gaps and unravel said complexity (Adler and Ziglio, 1996; Skulmoski et al., 2007). For these reasons, Delphi is used in a variety of fields to, among others, forecast global economic changes (Cicarelli, 1984) and alternative energy futures (Hussler et al., 2011), envision urban and tourism development (Kaynak and Rojas-Méndez, 2014; Masser and Foley, 1987) and predict terrorist attacks (Parenté et al., 2003). In a business context, Delphi has been used in supply chain management (Melynky et al., 2009), e-commerce (Holzmüller and Schlüchter, 2002) and collaborative consumption contexts (Barnes and Mattsson, 2016).

2.2 Scenario

Scenarios are “descriptions of possible futures that reflect different perspectives on past, present, and future development” (van Notten et al., 2005, p. 176) to probe into what could (rather than will) happen (Ramírez et al., 2015; Shearer, 2006). First developed as a military tool in World War II strategic planning, the scenario method became an established forecasting tool following the successful planning strategy employed by the Royal Dutch/Shell Group (Bradfield et al., 2005). Scenarios are thus storylines about plausible futures developed both individually and collectively (Wright et al., 2013).
<table>
<thead>
<tr>
<th>Reference</th>
<th>Domain</th>
<th>Method</th>
<th>Topic investigated</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melnyk et al. (2009)</td>
<td>Supply Chain Management</td>
<td>Delphi</td>
<td>Strategic supply chain development (e.g. evolution of future supply chains and strategic obstacles) strength of industry–academic ties</td>
<td>Strong agreement found between practitioners and management researchers on expected futures of supply chains, anticipated to be marked by increasing complexity. Significant obstacles to firms’ transition to future supply chains identified.</td>
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<tr>
<td>Hussler et al. (2011)</td>
<td>Futures Studies</td>
<td>Delphi</td>
<td>Objectivity and accuracy of forecasting diversity in Delphi panels (e.g. experts vs laypeople)</td>
<td>Non-expert judgements on the study’s Delphi panels are discovered to differ greatly from expert opinions and to be less stable but not less accurate than those of experts. Diversity is expected to enhance Delphi analyses and results.</td>
</tr>
<tr>
<td>Bilgin (2011)</td>
<td>Futures Studies, International Relations</td>
<td>Scenarios</td>
<td>Energy security (e.g. oil and natural gas) economic futures (e.g. oil prices) policy futures (e.g. actions of European Union/Russia)</td>
<td>Four policy scenarios were developed and combined with four previously developed economic scenarios to forecast the future of European energy security. Findings point to four, distinct futuristic probabilities for European Union energy security, all of which pivot upon the reference point of Russian policy.</td>
</tr>
<tr>
<td>Jiang et al. (2017)</td>
<td>Emerging Technologies Innovation</td>
<td>Scenarios + Delphi</td>
<td>The probable future of additive manufacturing (three-dimensional [3D] printing) and its predicted societal and economic impacts in the year 2030</td>
<td>A Delphi panel of experts was used to develop one probable and four extreme scenarios estimating how 3D printing will change industry and business models in 2030. Results confirm the high future importance of this still underdeveloped technology. Both simulation models were found to be suitable for predicting energy consumption.</td>
</tr>
<tr>
<td>Neto and Fiorelli (2008)</td>
<td>Energy</td>
<td>Simulation</td>
<td>Reliability of two simulation models in forecasting energy consumption</td>
<td>Both simulation models were found to be suitable for predicting energy consumption. The simulation tool was found to improve participants' understanding of climate dynamics and the impacts of proposed policies. These effects were consistent across diverse range of participants.</td>
</tr>
<tr>
<td>Sterman et al. (2015)</td>
<td>Climate Change, Serious Gaming</td>
<td></td>
<td>Uses the interactive tool WORLD CLIMATE as a way to educate and train diverse groups on negotiation techniques in the context of global climate negotiations</td>
<td>Both simulation models were found to be suitable for predicting energy consumption. The simulation tool was found to improve participants' understanding of climate dynamics and the impacts of proposed policies. These effects were consistent across diverse range of participants.</td>
</tr>
</tbody>
</table>

**Table I.**
Selected literature on Delphi and scenario methods in futures and foresight research
Method. While the scenario method can vary significantly across fields and contexts (Bishop et al., 2007; Zentner, 1975), eight steps are typically recognised as the building blocks of scenario development (Schwarz, 1991; van der Heijden, 2011; Wright et al., 2013). According to Wright et al. (2013), scenario development involves the following:

- setting a clear research agenda and delineating the timespan and area of study;
- working both individually and in groups to determine and cluster the most likely causal forces that have the potential to drive the future event under investigation;
- defining plausible outcomes for these clusters;
- assessing which scenario factors have the highest level of uncertainty and potential impact;
- framing the scenario within a larger context;
- drafting the scenario in descriptive terms; and
- develop the scenario into a storyline.

The intuitive approach to scenario development aims to produce multiple scenarios that seek to anticipate alternative pathways into the future through creative storylines (van Notten et al., 2003; Wright et al., 2013).

Applications. Similar to Delphi, scenarios are widely used in business planning (Godet and Roubelat, 1996; Ramirez et al., 2015), strategic decision-making (Miller and Waller, 2003; Varum and Melo, 2010), technology forecasting (Jiang et al., 2017; Narayanan and Fahey, 2006) and energy forecasting (Bilgin, 2011; Devezas et al., 2008). Scenario methods are also used to envision climate change (Cobb and Thompson, 2012; Hulme and Dessai, 2008), global political equilibria (Calleo, 1967) and socio-ecological futures (Wollenberg et al., 2000).

2.3 Simulation
Simulation methods in foresight are electronic or non-electronic models of the real world in which “yet-non-existent realities can be explored, tasted, and tested through participation of human and non-human elements” (Zackery et al., 2016, p. 41). While scantily used in foresight research (Popper, 2008), simulations are popularly used in forecasting to generate probability estimates through mathematical modelling (Zackery et al., 2016).

Method. One of the greatest criticisms surrounding simulation is the lack of clarity surrounding its application as a research method (Davis et al., 2007). Because simulations are often custom designed, there is no overarching framework defining how this technique is used and developed. Simulation models can also vary drastically in their level of complexity with the simplest ranging from two to three variables and the more complex models encompassing upwards of thousands of variables (Popper, 2008).

Applications. Simulation has been applied across several fields as a predictive tool. In medicine and healthcare, simulations are used to improve safety (Gaba, 2007) and to prepare emergency room staff for future problems (Monks et al., 2016). Simulations are adopted in the fields of energy and climate change to examine future energy networks (Barrios-O’Neill and Hook, 2016), forecast energy consumption (Neto and Fiorelli, 2008) and predict global climate change negotiations (Sterman et al., 2015). In business contexts, simulations are often used to enhance problem solving along the supply chain and to assess future systemic enhancements (den Hengst et al., 2007).
2.4 Gaming and role-playing

While in foresight research, the term gaming indicates both game theory models (Goodwin, 2002; Green, 2002, 2005) and “serious games” (Connolly et al., 2012; Popper, 2008), in this review, we only consider serious games, an umbrella term encompassing strategy games, business war games and role-playing games (Connolly et al., 2012; Augier et al., 2018). All these games share common features including participants actively engaging in decision-making processes within a context defined by fixed rules. In role-playing, in particular, participants interpret characters and interact among each other to reach consensus, not dissimilar from famous tabletop role-playing games such as Dungeons & Dragons or virtual role-playing games such as World of Warcraft or Second Life. In this sense, role-playing is a structured social process in which players can influence the state of a fictional world through the actions of their characters or, more precisely, “an interactive process of defining and re-defining the state, properties, and contents of an imaginary world” (Montola, 2008, p. 23) through the actions of participants acting through imagined characters.

Method. While there is no formal design procedure for serious games, all games have at least three things in common: a challenge or goal, a decision-making framework and a way to assess those decisions (Chussil, 2007). As an imaginative, experiential learning method, gaming relies on interaction between players and collective learning through collaboration. Thus, playing games provides a way in which to learn about the world and others through a shared, experiential process (Dieleman and Huisengh, 2006). Game dynamics and the fun that is generated through the process is found to stimulate emotional involvement and greatly increase participants’ motivation in solving complicated and challenging problems (Fabricatore et al., 2002).

Application. Gaming techniques have been widely used in business planning (Chussil, 2007), urban planning (Davies et al., 2012) and event management (Minis and Tsamboulas, 2008) to create scenarios or simulated realities with which users interact. Increasingly, gaming techniques are used in the area of cybersecurity (Adams and Makramalla, 2015; Herr and Allen, 2015). Most interestingly, role-playing games in foresight research are typically used to “role play the responses of individuals or groups to unfolding situations” (Popper, 2008, p. 59) by assigning roles that participants enact. Prior foresight research has mainly used role-play to derive the outcomes of conflicting situations between opposing parties (Armstrong, 2001; Green, 2002). Interestingly, Green (2002) demonstrates that role-play exercises have superior forecasting accuracy in comparison to both expert opinions (i.e. game theorists) and the general population.

2.5 Current limitations in futures and foresight methods

A review of the most popular futures and foresight methods reveals that the process of knowing, learning and imagining is abstracted and removed from the socio-material contexts in which such cognitive processes are deeply embedded. Specific methods have their own limitations. Delphi revolves around expert opinions and, as such, suffers from protracted length contributing to low participation and high dropout rates (Huckfeldt and Judd, 1974; Webler et al., 1991), and is entirely subjective and non-interactive (Winkler and Moser, 2016). Scenarios are often criticised for lack of plausibility, consistency and relevance because of the lack of an overarching methodological framework (Wason et al., 2002) but have the benefit of being collaborative (O’Neill et al., 2008). In both Delhi and scenario methods, however, the process of probing the future is confined to the realm of abstract imagination and geared towards the prediction of discrete, quantifiable outcomes. For the same reason, simulations constrain action within their relatively rigid underlying quantitative frameworks, impeding the subjectivity and agency afforded by more discursive
methods (Zackery et al., 2016). On the other hand, role-playing games overcome many methodological limitations previously cited, using perspective-taking to foresee the outcome of conflicting interactions (Armstrong, 2001; Green, 2002). However, traditional role-playing as a foresight technique suffers from the inherent difficulty “in suppressing one’s own tendencies and emulating another’s party beliefs, values, viewpoints” (Popper, 2008, p. 59). Role-playing games thus enable a more nuanced understanding of how complex processes may unfold in the future and empower social interaction, yet they are still constrained to the realm of imagination. While Armstrong (2001) proposes realistic casting as a way to minimise the discrepancy between the desired roles and the actual participants, we believe the lack of character embodiment prevents a more nuanced understanding of how people would actually behave in the situations explored (cf. Popper, 2008).

Overall, current futures and foresight methods aim at reaching consensus rather than providing a verisimilar simulation of unfolding social dynamics in plausible futures. That is, extant methods and their applications have focused predominantly on discrete outcomes (i.e. forecasting accuracy), limiting their applicability to the unfolding of more complex processes and dynamics that lead to understanding of novel scenarios. Moreover, we believe that current research methods are deprived of bodily, material and perceptual dynamics, mostly relegating the unfolding of social and market dynamics to mere imagination. Table II provides a comparison of the methods reviewed in terms of focus on the predicted outcome, social interaction and embodied embeddedness (i.e. the ability to use senses, above and beyond imagination, and to interact with the socio-materiality of a plausible future world, to understand it).

Within foresight research, the lack of an embodied dimension and the emphasis on outcomes rather than processes are both surprising. Focusing on the continuous interaction between embodied actors, the material world and social structures (Clark and Chalmers, 1998) would produce deeper insights and afford a more refined understanding of the process through which plausible futures may unfold. We thus build on existing role-play methods to bring forth LARP games as a fruitful research instrument because of their leverage of embodied embedded cognition and process-oriented nature. In the following sections, we first introduce the live-action component that differentiates LARPs from traditional role-playing games, and then articulate our arguments for an embodied embedded cognition turn in futures and foresight research.

### 3. A LARPnography method

In this section, we propose LARPnography as an embodied embedded cognition research method to probe the social and marketplace dynamics of plausible futures. We begin by explaining the context of LARP, and then provide theoretical reasons on why embodied embedded cognition allows for the emergence of richer insights when probing specific future scenarios. After clarifying the epistemological stance on which our method is premised, we provide procedural recommendations on how to design and run a LARPnography study.

<table>
<thead>
<tr>
<th>Method</th>
<th>Focus on...</th>
<th>Social interaction</th>
<th>Embodied embeddedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delphi</td>
<td>Discrete outcomes</td>
<td>Typically absent</td>
<td>Absent</td>
</tr>
<tr>
<td>Scenario</td>
<td>Discrete outcomes</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Simulation</td>
<td>Discrete outcomes</td>
<td>Absent</td>
<td>Absent</td>
</tr>
<tr>
<td>Gaming</td>
<td>Discrete outcomes</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Role-playing</td>
<td>Both discrete outcomes and processes</td>
<td>Present</td>
<td>Absent</td>
</tr>
</tbody>
</table>

Table II. Taxonomy of qualitative foresight methods reviewed
3.1 Context: live-action role-playing
LARPs have emerged in different areas of the world as a general response to the limitations of traditional role-playing that constrained action within the realm of imagination. In LARPs, action is lived within a physical space rather than verbalised around a table. Characters are embodied rather than imagined, and operate within real spaces, for instance, a ruined desert for a post-apocalyptic event. While LARPs are mainly played for fun and recreation, as they allow the suspension of reality and immersion within a fictional world that procures enjoyment (Seregina, 2014), in Europe, the Nordic LARP movement promotes LARPs as a more sophisticated form of thematic and psychological exploration (Nordic LARP, 2010), allowing participants to access and explore roles, situations, places and times that are normally inaccessible to them (Seregina, 2014).

This latter category of self-discovery LARPs is more akin to psychodrama – the spontaneity-centred psychiatric method developed by Jacob Moreno to facilitate therapeutic growth (Montola, 2008). Different from psychodrama, however, self-discovery LARP participants are (usually) non-psychiatric patients, seeking the experience of living alternate lives to better understand themselves and the implications of specific roles, social situations and plausible futures. Ground Zero (Stenros and Montola, 2010), for instance, was a LARP run in 1998 to explore how the inhabitants of a tranquil American neighbourhood would have behaved in the event of a nuclear holocaust. Another example is Mad About the Boy, a LARP played by females only (with one sole exception) exploring a future where a pathogen kills all men in the world in minutes, leaving “the surviving women [...] facing not only the enormous task of rebuilding society, but also the possible extinction of humanity (Nordic Larp, 2017).” The event specifically investigated the social dynamics among a group of women who applied for an extremely selective artificial insemination programme. Yet LARP events set in the future do not necessarily focus on dystopia. Conscience, for instance, was a LARP played in January 2018, Spain, set in the cinematic universe of Westworld, where visitors to a futuristic, Western-themed park explored the social and moral implications of human–AI interaction (trailer: https://youtu.be/GfrftCBf-qA; Conscience LARP, 2017).

Interestingly, the concept of LARPs as a way of exploring alternative realities beyond discursive and imagery-based methods is already understood by the Nordic LARP gaming community, who states that “it is one thing to postulate an alternative society on paper; constructing and living in one is another thing entirely. The compelling experiences of both utopian and dystopian ideas that such simulations offer are why LARP lends itself so easily to critical play” (Stenros and Montola, 2010, p. 25). Surely, the narrative lens of science-fiction in novels and movies (Morgan, 2003), and some tabletop role-playing games such as Cyberpunk represent a catalyst to understand plausible futures, as much as Delphi, scenario and simulations represent viable imaginative tools to explore said futures. Yet we believe that what truly makes LARPs an unparalleled research tool for foresight researchers is this element of constructing and living in the fictional world, relying on embodied embedded cognition as a gateway to extract deeper insight on the future explored.

3.2 Theoretical grounding: embodied embedded cognition
Embodied embedded cognition rests on two key tenets: the centrality of embodiment and socio-material embeddedness.

Embodiment. The first tenet emphasises the central role of embodiment in processes of knowledge creation. To say that cognition is “embodied” is to emphasise that our embodied phenomenology forms the fundamental ground for perception, action and imagination (Csordas, 1990; Merleau-Ponty, 1962; Varela et al., 2016). Socio-cultural understandings are
viscerally experienced through the body, and often in ways that exceed conscious articulation or discursive expression (Barsalou, 2008; Polanyi, 1967). In essence, the corporeality, immediacy and viscerality of human embodiment offer a unique window into the phenomenological meanings of social practices (Csordas, 1990; Merleau-Ponty, 1962; Shilling, 2001). Because discursive research methods can only capture deliberate mental representations, researchers run the risk of rendering invisible practices which reflect unconscious processes or tacit dimensions of embodied knowledge (Barsalou, 2008; Polanyi, 1967) which, despite their relative invisibility, can powerfully shape the evolving arc of socio-cultural understandings and practices (Csordas, 1990; Valtonen et al., 2010; Wegner and Bargh, 1998). As Johnson (1987, p. 47) explains, “our structured experience is an organism-environment interaction in which both poles are altered and transformed over the course of an historical process”.

Related to the centrality of embodiment is the inseparability of cognition from embodied action (Varela et al., 2016). Even the most abstract representations, concepts and metaphors are built upon intuitive concepts derived through phenomenological experiences of inhabiting and interacting with the physical world (Damasio, 1994; Lakoff and Johnson, 2003). This is not to say that the body “knows” in a fundamentally different way to the mind, but that the Cartesian dualism of body/mind or perception/action is a false dichotomy to begin with (Adenzato and Garbarini, 2006; Damasio, 1994; Ignatow, 2007; Lord and Shondrick, 2011). Instead, this tenet emphasises that thought and embodied action are deeply intertwined. As Ignatow (2007, p. 127) summarises, “The body is never absent from thought”. This central idea in embodied cognition redirects researcher attention to the importance of embodied action in processes of perceiving, learning about and imagining the future. Even while current discursive methods may provide a window into the possibilities of how we might inhabit the future, these methods are limited because they decouple the production of knowledge from embodied action. Our view of embodied embedded cognition aligns with Varela et al. (2016), who underscore the convergence between a relatively recent turn to embodiment in cognitive science and the classical phenomenology of Merleau-Ponty, Heidegger and Husserl. Collectively, these views assert the “pragmatic, embodied context of human experience” (Varela et al., 2016, p. 19). Our first key tenet on the centrality of embodiment is aligned with well-established views of cognition as socially situated (Claim 1 in Wilson, 2002), time-bound (Claim 2 in Wilson, 2002) and purposive processes of perception and action (Claim 5 in Wilson, 2002) which are rooted in the body’s being-in-the-world.

Wilson (2002, p. 626) further distinguished between “off-line” embodied cognition, where cognition occurs “in the absence of task-relevant input and output”, and “on-line” embodied cognition, where cognition is “embedded in a task-relevant external situation” (Claim 6 in Wilson, 2002, p. 635). Further, the effect of embodiment on cognition is stronger in the context of on-line (versus off-line) embodiment (O’Malley et al., 2009) and, importantly, off-line embodiment is reliant on previous episodes of on-line embodiment (Wilson, 2002; Niedenthal et al., 2005; O’Malley et al., 2009). As cognitions are deeply tied to the embodied states that produce them, the depth and quality of cognitions is different for participants asked to reflect in an “off-line” situation compared to those who are asked to reflect after a period of immersion in an “on-line” embodied context. The distinction and interplay between on-line and off-line embodiment is useful for understanding the power of embodiment in foresight-related sense-making. While table-top role-playing methods rely on off-line embodiment, where visualisation occurs in the absence of the sensorial-material structures of a lived world, with LARPography, processes of sense-making are enhanced through on-line embodiment in a situated scenario and direct immersion in a social-material
environment. LARPnography, therefore, enables researchers to foreground embodied mechanisms, such as mimicry or emotional contagion (O’Malley et al., 2009), in contesting emergent interpretations or converging on shared understandings of the future. Researchers can observe not only deliberate mental representations about an “off-line” future but also immediate, pre-reflective and visceral responses in an “on-line” environment. Consider, for example, the marked difference between verbally discussing how one might respond to prolonged disruptions in a city’s water supply, and the embodied experience of conducting socio-material adaptations and negotiations under the visceral imperative of actual or impending thirst. In reintroducing the component of online embodiment, LARPnography re-contextualises, re-situates and re-embodies processes of creating knowledge about the future.

Embeddedness. The second tenet, socio-material embeddedness, underscores the social situatedness of cognitive activity and importance of the material environment in shaping schemas for action. As Clark and Chalmers (1998) argue, knowing, learning and imagining are rooted in the unfolding interaction and immersion of embodied beings within the materiality, presence and immediacy of the world. In a similar vein, Ingold’s (2000) “ecology of culture” approach emphasises that understandings and meanings emerge through the physical, relational and material character of embodied immersion in a context; the body is never not immersed in an ecology of materials, meanings and potentialities.

Moreover, because the material environment offers a set of affordances (Gibson, 1979) or potentialities for action, the environments in which social actors are embedded provide rich fields which continuously shape thought and action (Adenzato and Garbarini, 2006; Semin and Smith, 2002). Rather than the mind “directing” the body’s actions, action can also recursively influence thought. For the purpose of research on futures, this tenet underscores the ecological and material embeddedness of our emergent cultural understandings about gradual or disruptive macro-level changes. That is, the material environment is critically important in shaping the types of knowledge produced in a research interaction. A research participant sitting in a research room is likely to generate different insights compared to, say, a participant immersed in a dynamic and evolving field of practice.

This second tenet of embodied embedded cognition aligns with the key claim that because human cognitive processes are frequently “offloaded” onto the environment (Claim 3 in Wilson, 2002), the environment plays an active role in sense-making processes. However, in contrast to Wilson’s (2002) Claim 4 against considering the environment as part of the cognitive system, we consider the environment to be an integral part of sense-making processes. Our social constructionist stance, which we discuss in further detail below, moves beyond the cognitive functioning of an individual brain, and instead emphasises that knowledge construction occurs in a dynamic network of social actors interacting continuously with objects and spaces which offer affordances for action.

3.3 Epistemological underpinnings of LARPnography

Futures and foresight scholars have increasingly critiqued the use of tools without theory, instead emphasising the importance of explicating and critically considering the epistemological underpinnings of foresight methodologies (Karlsen et al., 2010; Mermet et al., 2009; Piirainen and Gonzalez, 2015; Popper, 2008). In this spirit, we position LARPnography within the view of foresight-as-invention, rather than foresight-as-prediction (Cunha, 2004), meaning that LARPnography is a tool better suited to construct dynamics, processes and shared understandings which will shape the future than to predict discrete outcomes. Within the foresight-as-invention paradigm, our epistemological stance is aligned with the well-accepted social constructionist perspective in futures research.
(Fuller and Loogma, 2009; Jørgensen et al., 2009; Piirainen and Gonzalez, 2015). As the future is yet to happen, a social constructionist epistemology holds that foresight research is in essence a process of constructing, representing and negotiating images of the future in actors’ minds (Inayatullah, 2006). Moreover, the future is viewed as the outcome of complexity, uncertainty and ambiguity (Karlsen et al., 2010). This is contrasted with a positivist epistemological stance which views “the future” as an objective reality waiting to be discovered, or focuses on observable signals which enable claims about probable and less probable futures (Karlsen et al., 2010; Karlsen and Karlsen, 2013).

As summarised in Table III, our epistemological stance augments a social constructionist perspective, which underscores the constructed, situated and inter-subjective character of knowledge, with a renewed attention to the importance of embodied experience and the socio-material textures of the immediate environment in processes of knowledge creation, as enabled by our theoretical grounding in embodied embedded cognition. A social constructionist epistemology underscores the socially constructed nature of reality, the importance of inter-subjective interaction in generating these social constructions, the situated and perspective-based (rather than “objective” or “universal”) nature of knowledge, and the emergence of symbols and linguistic forms which emerge from, but also shape, these unfolding inter-subjective interactions (Fuller and Loogma, 2009). In its emphasis on intersubjectivity, processual construction and situatedness, a social constructionist approach aligns with the second key tenet embodied embedded cognition, where the idea of social situatedness emphasises that cognition is inevitably influenced by, and inextricable from, the social character of our relationality and being in the world (Adenzato and Garbarini, 2006; Barsalou, 2008). As Semin and Smith (2002, p. 386) explain, “the relevant “situation” in which cognition takes place is, almost always, a social situation defined by an individual’s group memberships, personal relationships, and social and communicative goals” (emphasis in original). Sharifian (2008) takes this argument a step further, asserting that cognition is an evolving and emergent process which is not merely a property of individuals but also of groups.

However, the current social constructionist paradigm in foresight research heavily relies on representational processes (Karlsen et al., 2010), assuming that knowledge can be found in, and is constituted through, linguistic and symbolic constructions which are independent of our embodied form (Lord and Shondrick, 2011). This approach de-emphasises the role of embodiment in sense-making, providing less insights into the phenomenological, tacit and embodied aspects (Lord and Shondrick, 2011) of creating a shared understanding of future developments.

While our epistemological stance subscribes to the assumption that knowledge is mediated through, and results in, language and symbols, embodied embedded cognition offers an additional interpretative filter to social constructionism through its emphasis on

<table>
<thead>
<tr>
<th>Epistemology</th>
<th>Distinguishing tenets</th>
<th>Shared tenets</th>
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<tbody>
<tr>
<td>Social constructionist</td>
<td>Knowledge is constructed through symbols and language</td>
<td>Knowledge is constructed (rather than “real”)</td>
</tr>
<tr>
<td>Embodied embedded cognition</td>
<td>Knowledge is grounded in, and shaped by, embodied experience and environmental interaction</td>
<td>Knowledge is situated and perspectival (rather than “universal”) Knowledge is generated through inter-subjective interaction (relational ontology)</td>
</tr>
</tbody>
</table>

Table III. Epistemological underpinnings of LARPography
phenomenological and corporeally driven insights. LARPnography emphasises the potential for new practical schemas that arise through the lived, “live”, experience of intercorporeal interaction, both between actors and actors-environment. In so doing, LARPnography brings forth the idea that knowledge about the future is “created through practice, and it can be codified, tacit, embodied, and articulated” (Ahlqvist and Rhisiart, 2015, p. 98). The embodiment and embeddedness afforded by LARPnography allow knowledge to be grounded, and shaped by, embodied experience, tempering Mermet et al.’s (2009, p. 70) claim regarding the centrality of the linguistic perspective which “underscores the importance of language as the major, if not only, tool of futures research”. We now turn to the procedural aspects of our proposed method.

### 3.4 Procedural recommendations of LARPnography

We propose LARPnography as a four-stage process consisting of planning, design, briefing and fieldwork. Figure 1 provides a process map that can assist researchers in setting up a LARPnography project. In the following, we discuss each of the three phases in detail.

#### 3.4.1 Phase 1: Planning

During the planning phase, researchers ground the phenomenon of interest and articulate the research questions they wish to pursue (scoping). Depending on the scope of the research question and on the level of control they want to exert, researchers in the planning phase need to consider the availability of research sites in the form of existing LARP events they can piggyback and, should they decide to opt for creating their own event, consider budgeting.

**Scoping.** An important consideration at this stage is whether the scope of the research question is broad or narrow. Are researchers interested in the large-scale social dynamics emerging from a future scenario? Or are they trying to understand how a specific technological breakthrough would affect the life of users? The research scope will influence the size of the fictional world, and thus the design phase. In this sense, the planning phase of LARPnography overlaps with the pre-foresight phase described by Popper (2008).

**Availability of suitable research sites.** A second interrogative is whether an upcoming LARP can be used to explore the research questions set in the scoping sub-phase. When it comes to deciding whether to join on an existing LARP or create an independent research setting (see Figure 1), researchers first need to be aware of the trade-off between investment and control. LARPs run by consumers that are independent from the researchers drastically reduce the research cost of the project, provided the researchers obtain permission to interview and film participants. At the same time, consumer-organised LARPs may explore themes that are not entirely aligned with the research question, which will lead to either re-defining the research question or setting up a dedicated event. For research events organised by researchers, the increased control on the exploration of the research question results in higher organisational and time costs. In the end, the choice between using an existing LARP as the research site or creating an own research event will often depend on factors not entirely in control of the researcher, in particular, the availability of the following:

- LARPs touching on themes pertinent to the research questions;
- monetary and time resources to organise a research setting;
- availability of participants willing to engage in a research project for extended time periods; and
- access to the appropriate locations, to name a few.

**Budgeting.** If researchers settle upon organising their own research setting, a second trade-off to consider is between the depth of insights extracted and the costs sustained
to set up the event. Researchers thus need to ponder whether enabling participants to experience the distinctive phenomenology intrinsic to embodiment (Merleau-Ponty, 1962; Shilling, 2001) will justify the higher financial and time costs. Financial costs mainly cover the following:
the location hire, including lodging for multi-day events;
- the material structures necessary to sustain the suspension of disbelief and immerse in the future world (e.g. scenography and costumes);
- food costs; and
- logistics, including transportation to the event site.

These costs vary depending on the number of participants recruited, the duration of the event and the complexity of material structures needed to facilitate immersion in the future scenario. Personal communications with a serial LARP organiser (F Pregliasco, 2018, personal communication, 13 February) confirm the notion that, while more futuristic settings (e.g. high-future setting and high level of technology deployed) increase the cost of the LARP, as extra resources need to be devoted in the recreation of the plausible future world, the overwhelming majority of these events end up spending more on food and lodging than in scenography and props.

Specifically, the number of participants involved greatly increases the costs for lodging, which command a larger location, as well as food, given at least three meals a day needs to be provided. For the same, the duration of the event can triplicate these costs for a three-day event, which is standard practice in the LARP community when examining the emergence of complex themes. This timeframe allows both enough time to participants to immerse in the fictional world, as well as sufficient time for the desired dynamic to unfold and be observed. Last, costs for material structures increase the more complex the future portrayed, and yet tend to be contained. For these reasons, a social marketing-focused event exploring how people will face a severe draught in a 50-member isolated rural community may have organisational costs close to a similarly sized, high-future event exploring the interactions and moral implications of visitors of a themed park populated by sentient robots (acted by other players). In summary, anecdotal evidence suggests that, on average, organisational costs are mainly size-dependent than scenario-dependent. Table IV provides a snapshot at different typologies of future LARPs and associated budgets depending on participants involved, event duration and complexity of the material structures employed.

3.4.2 Phase 2: Design. Creating a fictional future world with the prospect of letting real people live it is a complex task. Building a fictional future world requires painstaking attention to details to ensure that the experience is as immersive as possible. Transportation theory (Green and Brock, 2002) indeed states that individuals transported in a narrative world suspend the rational imperatives of reality, and then emerge from the fictional world changed, with beliefs and attitudes consistent with the story told (van Laer et al., 2013). The “suspension of disbelief” (Stenros and Montola, 2010) is thus necessary to be transported in the fictional world, and thus fully embody the character played, transcending the limits of traditional role-playing (Popper, 2008). Yet, differently from reading a book or watching a movie, individuals participating in a LARP live the action and inhabit the space, so that a number of structures are rendered necessary to maintain the suspension of disbelief.

Structures define both the “frameworks for understanding” necessary to enact action (Kamoche and Cunha, 2001) and the boundaries within which action unfolds (Weick et al., 2005). At the very least, researchers approaching the design phase need to decide on three core structures: background, social and material. We will illustrate the importance and implementation of each structure using the example of *Ground Zero*, a “30-hour LARP for 21 characters portraying the first day of the atomic war in the sixties” (Stenros and Montola, 2010, p. 66).
Background structures. Background structures define the narrative framework of the setting and are necessary to create the fictional world where action will take place, as well as to facilitate the emergence of the dynamics the researchers wish to observe. Background structures refer mainly to the following:

- the background story shared by all participants to orient their actions within the fictional world (e.g. “It’s 1962, and the Cuban Missile Crisis has gone south”); and
- the reason why participants/characters gather in a specific place (e.g. “You gather with your neighbours to listen to the most recent radio news”).

Ground Zero, while set in an alternative “past” in which the Cuban Missile Crisis of 1962 ends in a nuclear holocaust, qualifies as a “future LARP” in its exploration of people’s reactions to an atomic fallout, a crisis scenario not that far from public imagination even in modern times. In Ground Zero, background structures provided the backstory that Tulsa, in Oklahoma, would have been a primary target by enemy forces because of its oil extraction plants and the prolific aviation industry.

Social structures. Social structures refer to the links between participants within the fictional world. Social structures consist of personal plots and character backgrounds that enable meaningful social interactions and the exploration of how archetypical personalities (e.g. “How would a violent person behave in this situation?”) or professional stereotypes (e.g. “What would an engineer do in this situation compared to a soldier?”) might behave. Social structures in Ground Zero were necessary to clarify the pre-existing social dynamics occurring between characters. To constrain the focus

<table>
<thead>
<tr>
<th>Focus of the analysis</th>
<th>N</th>
<th>Duration</th>
<th>Material structures</th>
<th>Budget</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group dynamics</td>
<td>5+</td>
<td>Limited</td>
<td>Simple</td>
<td>Low</td>
<td>Ground Zero (2001), group dynamics during thermonuclear conflict, 21 participants, 30 hours, €200 budget</td>
</tr>
<tr>
<td>Community dynamics</td>
<td>15+</td>
<td>Prolonged</td>
<td>Simple to Complex</td>
<td>Low</td>
<td>The End is Over (2015), community dynamics in post-apocalyptic future, 30 participants, 72 hours, €1,000 budget</td>
</tr>
<tr>
<td>Market dynamics</td>
<td>30+</td>
<td>Prolonged</td>
<td>Simple</td>
<td>Medium</td>
<td>Life After Capitalism (2007), alternative economic system, 52 participants, 97 hours over extended timeframe, €8,000 budget</td>
</tr>
<tr>
<td>Near future global change</td>
<td>60+</td>
<td>Prolonged</td>
<td>Simple to Complex</td>
<td>Medium to High</td>
<td>Conscience (2018), consumer enculturation and consumption of radical innovation, 100 participants, 72 hours, €30,000 budget</td>
</tr>
<tr>
<td>Far future global change</td>
<td>60+</td>
<td>Prolonged</td>
<td>Complex</td>
<td>High</td>
<td>Icarus (2017), global reconfiguration of society and production after exhaustion of resources, 220 participants, 72 hours, €50,000 budget</td>
</tr>
</tbody>
</table>

Notes: aResearchers are reminded that the main cost driver for LARP design comes from the number of participants, which commands larger locations, increased food and lodging costs, and increased coordination costs. For LARPs focusing on global changes, researchers can piggyback the numerous international LARPs dealing with future themes at a fraction of the cost. Icarus (2017) tickets ranged between €150 and €380 and Conscience (2018) ones were priced between €140 and €265.
on social dynamics in a time of crisis, the focus of the event was on a small neighbourhood, and characters were designed in a rather stereotypical way to facilitate their assimilation by participants:

The characters [...] were neighbors, on a small strip of road with eight homes. The cast was rather stereotypical: a proud but bitter father who held his family in a tyrannical grip of respect born out of fear, a retired marine colonel suffering from post-traumatic stress disorder, a wizened high school teacher in deep denial, a Mormon questioning his faith, a loving wife of a truck driver. Such stereotypes were chosen on purpose, as that’s what your everyday people are (Stenros and Montola, 2010, p. 66).

Beyond the clarification of roles provided by the organisers, however, recreating the realism of a neighbourhood interaction required more than a script with some guidelines on the characters' psychology. Players needed to be aware of not only their character but also others', including their psychology, virtues, vices and mannerisms. Quite ingeniously, the organisers strived to recreate these dynamics before the event through a preparatory phase, which took the form of a neighbourhood dinner:

One method of creating this kind of familiarity with the characters, and the players, was to give the players the chance to experience and practice what their characters are like in a non-stressful environment: a short dinner party hosted by the newcomers to the street served as the perfect pregame. Such a simple thing as a basic dinner get-together proved to be an invaluable tool in creating as stark a contrast as possible with the everyday life and the life in the bunker (Stenros and Montola, 2010, p. 67).

The articulation of these social structures pertaining to roles and social dynamics, in particular, finds its roots in the embeddedness aspect of social situatedness, namely, the idea that cognition is deeply intertwined with, and ends up being affected by, a social ecology of relations through which meanings and potentialities unfold (Adenzato and Garbarini, 2006; Barsalou, 2008).

*Material structures*. Material structures define the spaces and visual aspects on which the fictional world, as defined by background structures, is superimposed. Material structures include the following:

- The location where the event is set.
- The material artefacts, including scenography, costumes and props, which contribute to the suspension of disbelief necessary for the participants to enact the dynamics of the future scenario created.

These structures are necessary to confine the scope of action of participants while creating the illusion that the characters are immersed in the fictional world and not in the real one. The following excerpt from *Ground Zero* exemplifies the key role played by material structures:

The bomb shelter isolated the players from any outside influence, and also restricted the area that needed to be scenographed, thus allowing the immersion to feed on itself. [...] In reality, the shelter was the basement of a local youth centre. While the building dated back to sixties the modern day gadgets like a Coca-Cola vending machine had to be concealed with cardboard sheets, and spreading props conveying the proper zeitgeist around. [...] Time magazines from early sixties were placed on the tables, old toys on the floors, books that had been published by that time on the shelves, and sheets from food cans were removed so they’d be as plain as possible. For the duration of the LARP, the players would be confined to this basement and left to their own devices (Stenros and Montola, 2010, p. 67).
Within this basement, the LARP would proceed with an unfolding of events predictive of a nuclear bombing, starting from flickering lights and alarming radio reports, and ending with the sound of a deafening detonation and the lights going off for over 20 hours. Hence, material structures are fundamentally aligned with the centrality of embodiment and its material embeddedness. In the space of LARP, material structures both enable a heightened relation to the sensorial immediacy of visceral experience (Csordas, 1990; Merleau-Ponty, 1962; Shilling, 2001) and reflect the importance of physical objects and spaces in affording potentialities for action (Clark and Chalmers, 1998; Gibson, 1979; Giddens, 1979).

3.4.3 Phase 3: Casting. The casting phase is essentially overlapping with the recruitment phase cited in the five-stage framework of foresight research (Popper, 2008). In this phase, researchers that chose to organise their own event need to source as many participants as they deem necessary to recreate a realistic future scenario (see Table III). A small community dealing with the adverse consequences of climate change during everyday life could require a dozen participants. The recreation of an alternative consumption community living in an isolated village may require thirty participants. A Westworld-inspired sci-fi park exploring the moral and identity boundaries of human–robot interaction will require about 100 participants between park employees, security guards, robot hosts and guests. Incentives for participants need to be agreed in this phase. In the famous Stanford Experiment (Haney et al., 1973) on how personality traits affect the emergence of abusive dynamics in prison settings; for instance, Zimbardo and colleagues recruited 24 white males assessed to be psychologically stable and compensated them with the equivalent of $90 in 2017.

Importantly, all participants need to be briefed on the structures discussed. Overview documents can be prepared to provide background information accessible to all participants, as well as explain the physical boundaries of the location (e.g. the event area). Personalised briefs can then be assigned to each individual in case researchers want to provide some information to some but not other participants. A general briefing on-site is recommended to clarify the material structures of the event, for instance, the limits of the event area, whether a certain “real” object exists or not in the fictional scenario (this should be minimised as much as possible), and whether certain areas are not accessible. Again, in the Stanford Experiment, half of the participants were assigned the roles of guards and the other half the role of prisoners, while the two researchers took over the roles of director and warden to better observe the unfolding social dynamics. The day before the experiment, Zimbardo briefed the guards on their roles, the fact they had to call prisoners by numbers, the limits of the location (a prison recreated in the basement of Stanford University) and the need to establish power distance. Additionally, he provided guards with uniform, wooden batons and mirrored sunglasses to avoid eye contact, to strengthen the feeling of power distance between guards and prisoners (Haney et al., 1973).

3.4.4 Phase 4: Fieldwork. Once the LARP is in motion, the researcher’s primary aim should be to observe and capture their situated perspective of the unfolding social action with a high degree of fidelity, in line with principles of participant observation, thick description and multimodality. Following the event, additional insights can be extracted through retrospective reflection using established methods of inquiry including interviews, focus groups and diaries. As these methods are widely discussed in qualitative research books (Strauss and Corbin, 1990), below we focus on the three key principles LARPographers need to consider during the event.

Participant observation. First and foremost, this involves enacting their prescribed social role and immersing themselves within the socio-material dynamics of the field. As the presence of a non-participant observer undermines the suspension of disbelief, the only
admissible observational method is participant. Through participant observation, the researcher can immerse into the diegetic universe and grasp mechanics and subtleties that may escape an external inquiry. At the same time, participant observation also allows the researcher to facilitate the flow of the event and inject new content while embodying a character within the fictional universe (Stenros, 2013). Such an orientation is in line with the principles of participant observation, where the LARPographer actively participates in and contributes to the evolving dynamics of the field and, in doing so, engages in the “empathetic process of verstehen” (Elliott and Jankel-Elliott, 2003, p. 216). At the same time, the LARPographer adopts a reflexive attitude, in essence tackling between an insider’s and outsider’s orientation to the dynamics of a social field (Goulding, 2005; Valtonen et al., 2010). This perspective aligns with the situated role of “the researcher as a locus of investigation from which the relationships that construct a culture may be collated and interpretations built” (Canniford, 2005, p. 204).

**Thick description.** A second concern that the LARPographer should keep in mind is documentation of field descriptions and events in line with the principle of thick description. Field notes in particular provide a reflexive instrument through which the researcher can construct a perspective on his or her embodied experiences, observations of and reflections on emergent social interactions in the field, while allowing for a sense of distance required to generate theoretical insight (Canniford, 2005; Goulding, 2005; Valtonen et al., 2010). While ethnographic guidelines usually advise that field notes be written up as soon and as regularly as possible (Elliott and Jankel-Elliott, 2003), researchers will need to balance between the need to capture thick descriptions of unfolding social action, and the imperative for the researcher to remain in character so as to preserve collective immersion in the scenario.

**Multimodal data sources.** Finally, in line with the growing recognition of the value of multiple modalities in data collection (Rossolatos, 2015; Valtonen et al., 2010), LARPographers should aim to capture data through a range of written, audiovisual and sensorial modes. Where the boundaries of the narrative world and the researcher’s character permit, this may involve the use of recording devices to capture photographs or videos, the use of written or audio-recorded field notes, the use of informant diaries (Elliott and Jankel-Elliott, 2003), or the re-writing of field notes with particular attention to sensory experiences such as smell, sound or kinaesthetics (Valtonen et al., 2010). The use of videography is particularly encouraged as an ancillary supporting tool to facilitate subsequent analyses. GoPro cameras or equivalents are relatively inexpensive and they can be easily concealed if their visual impact is deemed inappropriate to the type of event studied. These multimodal forms of data can serve as auto-driving devices for interview participants in the “debriefing” stage, as well as provide an occasion for triangulation between multiple sources of data to increase the trustworthiness of the final analysis.

**4. Discussion and conclusion**

LARP has become an increasingly mainstay social practice. Inspired by this growing cultural phenomenon, this paper introduces and outlines the process for conducting LARPography, an ethnography of the future made possible by physically recreating plausible scenarios, marketplaces and societies. Rooted in the basic idea that processes of apprehending and adapting to the changing environment are inextricable from our embodied perspectives (Merleau-Ponty, 1962; Shapiro, 2007; Wilson, 2002) and our embeddedness in socio-material environments (Adenzato and Garbarini, 2006; Ingold, 2000; Gibson, 1979), LARPography offers a view into how contextualised corporeal actions emerge in response to a future scenario.
As a research method, LARPnography brings forth the strengths of extant qualitative foresight methods by not only asking participants to imagine a future scenario but also to inhabit it. In such a highly engaging and immersive situation, participants experience the world and its socio-material texture first-hand. As one’s actions carry consequences for the survival, well-being and socio-political status of one’s character, during a LARPnography the researcher obtains a view into practices, thoughts and insights that arise in and through the participants’ embodied immersion in the world of the LARP. By providing a heightened, hyper-real environment in which emergent behaviours and socio-material interactions can be observed and reflected upon, LARPnography reduces the gap between discourse and lived practice (Elliott and Jankel-Elliott, 2003; Wason et al., 2002). In essence, LARPnography enlivens, embodies and enfleshes processes of imagining the future.

Some may raise a question about the usefulness of insights derived from “artificial” scenarios where participants in essence inhabit a character. It may additionally be contended that the role-playing component in a LARP creates an additional remove from how an individual would typically act, and instead encourages the rote performance of stereotypes. This hyper-real quality, however, is an important ingredient in encouraging a degree of suspension of disbelief and heightening participants’ immersion in the simulated world. While it may be argued that the LARP is a simulated, “make-believe” reality, it is nonetheless an immersive, generative and instructive reality. In essence, the background, social and material structures of the LARP provide a structured surface on which social performances can emerge. In the same way that the Delphi and scenario-based methods represent an approximation of a possible future, LARPnography similarly represents a hyper-real approximation which is more conceptually aligned with a growing interdisciplinary consensus around the concept of embodied embedded cognition (Ignatow, 2007; Semin and Smith, 2002; Shapiro, 2007).

4.1 Possible applications of LARPnography
LARPnography offers a flexible research method to understand how consumers may “play out” plausible future scenarios. LARPnography, in its embrace of the integrated and interactive elements of the social, spatial and material, is particularly suited for generating foresight regarding emergent, ambiguous, yet-to-be-fixed and potentially nonlinear marketplace phenomena. Table V presents several research areas in which LARPnography may offer substantial insights.

LARPnography could be particularly useful for examining the key processes through which key stakeholders frame, negotiate and accept emerging technologies into everyday practices (Lee et al. 2003). Embeddedness within the socio-material environment allows studying human–product interactions within a social environment, adding realism to standard product tests (e.g. behaviours and consumption patterns of a family living for two days in a completely automated and interconnected home).

As an additional example, LARPnography can be applied to narrative transportation and entertainment consumption (see van Laer et al., 2013), as it enables a move from abstract identification with characters and imagery of the fictional world into character embodiment and embeddedness within the future world. As such, LARPnography is particularly suited to understand consumer reactions to advances in narrative entertainment and consumption including, but not limited to, augmented and virtual reality, narrative agency and the ability to live-act a story, and the diffusion of narrative themed parks not dissimilar to Westworld.

LARPnographic explorations could also extend the literature stream on post-human consumer culture, which aims to understand how philosophies and visual representations of post-humanism shape marketplace imaginaries of human–machine
interaction (Buchanan-Oliver et al., 2010; Campbell et al., 2010; Giesler and Venkatesh, 2005). Specifically, LARPnography can enable consumer-driven explorations of the following questions. How will consumers embody and make sense of a post-human future? How many laws of robotics do we need, and what will they look like? What marketplace practices and social norms will emerge in light of the growing uses of robotics and AI? How do these practices emerge and what are the ways in which consumers make sense of their moral, existential and ontological implications? How are consciousness and morality being reconfigured in light of our intensified interactions with AI?

As a final example, LARPnography could also help extend the literature stream on utopia and dystopia in the marketplace, enabling an entry into the following questions in relation to this stream. How do utopic and dystopic marketplace ideologies emerge? How do consumers negotiate these diametrically opposed mythologies? Can utopic mythologies emerge in the context of dystopic scenarios? While consumer culture theorists have explored the socio-cultural construction of myths of utopia (Kozinets, 2002; Maclaran and Brown, 2005) and, to a lesser extent, dystopia (Podoshen et al., 2014), there have been no studies which explore how these mythologies might co-exist and undergo transformation and negotiation in relation to one another. LARPnography can offer a space for such an exploration.

<table>
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<th>Theoretical advancements</th>
<th>Practical uses</th>
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<td>Technology diffusion and acceptance</td>
<td>From discursive and abstracted scenarios to embodied sense-making and experiential reflection</td>
<td>Introduction of radically new innovations</td>
<td>Lee et al. (2003)</td>
</tr>
<tr>
<td>Narrative transportation and entertainment consumption</td>
<td>From mental imagery of the fictional world and identification with the characters to phenomenology and character embodiment as the drivers of transportation and enjoyment</td>
<td>Future forms of entertainment characterized by increased narrative agency (e.g. augmented reality and AI themed parks)</td>
<td>Van Laer et al. (2013)</td>
</tr>
<tr>
<td>Social marketing</td>
<td>From downstream segmentation and tailored intervention to piloting the effectiveness of upstream regulations on consumption behaviours</td>
<td>Understanding how upstream policy interventions will affect the consumption patterns of wicked consumption behaviours and potential substitutes</td>
<td>Koch and Orazi (2017)</td>
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<tr>
<td>Post-humanism and marketing</td>
<td>From symbolism, representational realms, and cultural authorities to lived practices and consumers as creative sources of future schemas</td>
<td>Embodied consumer responses to AI and machine learning</td>
<td>Buchanan-Oliver et al. (2010)</td>
</tr>
<tr>
<td>Utopia and dystopia in the marketplace</td>
<td>From hyper-reality enabling reinforcement of utopic myths or creative resistance against mainstream ideologies to embodied reality enabling invention and negotiation of future-oriented corporeal schemas</td>
<td>Understanding how utopic and dystopic myths shape embodied consumer reactions to new technological and market systems</td>
<td>Maclaran and Brown (2005)</td>
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Applications of the method are limited by the researchers’ imagination only, spanning from the everyday use and social meanings which emerge in interactions with new-to-the-world products (e.g. interactive AI) to marketplace dynamics emerging in alternative scenarios of abundance (e.g. what if Nikola Tesla’s vision for free, unlimited and wireless-transmissible energy was realised?) or scarcity of a particular resource (e.g. what if a solar storm destroys the world’s power grid?). Additional examples of consumer-generated independent projects around future scenarios are available in the Appendix.

4.2 Limits of LARPnography

LARPnography is not introduced as a way to substitute existing qualitative foresight methods: rather, LARPnography aims at complement these methods by offering a novel technique particularly well-suited for research question dealing with sensoriality and socio-materiality. A first limit of LARPnography is in its inapplicability to cross-sectional future scenario dealing with concrete phenomena. LARPnography can shed light on the hypothetical proximal consequences of a new product launch (e.g. consumers’ evaluations and usage), an unexpected or catastrophic event (e.g. a nuclear fallout) and even the cohabitation with different “life” forms (e.g. the introduction of adaptive and embodied AIs). At the same time, the time horizon of LARPnography (typically three days), alongside the emphasis on embodiment and embeddedness, makes it less suitable for understanding long-term and abstract macro-environmental changes such as climate change or the economic growth of a nation. While exceptions to the rule exist (e.g. After Capitalism), traditional techniques appear more suitable to this end.

A second limit of LARPnography is well documented in the early literature on live simulated scenarios (Haney et al., 1973). While LARPs can be engaging, immersive and even transformative for participants, they may also be viscerally taxing and, depending on the research question, raise profound ontological and existential disquiet. Accordingly, researchers should be aware of a number of ethical considerations across all phases. In the planning, design and fieldwork phases, attention should be paid to participants’ physical and psychological safety, ensuring a “black room” or separated space is available should players require to withdraw from the future world for a moment. In particular, the briefing process is pivotal in communicating, negotiating and reinforcing shared boundaries and understandings of acceptable behaviours and practices. For example, in dystopic scenarios where participants are competing for scarce survival resources, researchers should carefully design the mechanics through which to simulate violence and aggression.

Finally, LARPnography is comparatively more costly and time-intensive than other foresight methods. In Phase 1: Planning, we detail the typical budgets for events of different size and focus and explain the trade-offs in terms of budgeting vs control between organising a LARP event and attending an existing one on the themes of interest. Still, researchers unfamiliar with LARPs may raise a question about the costs of familiarising oneself with the mechanics, dynamics and lived experience of a LARP. To facilitate this process and understand the rich potential offered in socially playing out a future scenario, we recommend that aspiring LARPnographers attend at least one well-executed existing LARP prior to designing their own LARPnographic study. International LARPs in English are widespread and played every month in several countries, last as long as a typical marketing conference, and demand only one third of the typical conference fee. Researchers interested in the method may encounter unsettling embodiments and learn far more.
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Further reading


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