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In total smartness: the institutional logics perspective on the Internet of things and people

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ABSTRACT

Following the institutional logics perspective and an inductive research design, this study is the first to outline the Internet of things and people as a new institutional order with a distinct logic. The rise of this new institutional logic is prompted by smart technology, which transforms the ideological field of technology and challenges consumers' self-concepts. In counterbalancing attempts, consumers internalize those "non-smart" practices that assist in maintaining the self's integrity and differentiate "Us" – humans from "Them" – smart things. In contrast to previous research describing the material as a passive carrier, this study provides evidence that the material can be the driving force behind the emergence of institutional logic.

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Introduction

Today, devices across nearly all product categories are described as possessing smartness. Examples include smartphones, smart watches, smart TVs, smart refrigerators, smart lighting, smart cars, smart water bottles, smart jackets, smart pillows, and smart floors. Although usually placed under the same category in stores as their automated predecessors, smart products possess a unique range of functional characteristics, including autonomy, adaptability, context awareness, reactivity, ability to cooperate, and human-like interaction (Rijsdijk and Hultink 2009). These characteristics result from embedded sensing, networking, and computing technologies that enable collecting, sharing, and processing environmental and personal data beyond human capability as well as from artificial intelligence and machine learning methods that make it possible to use the collected data for constant behavior adjustment and improvement (Mayer et al. 2011; Raff, Wentzel, and Obwegeser 2020). Since smart devices can integrate and communicate with each other and humans all over the world, their diffusion creates the foundation for assemblages of various sizes ranging from human–machine dyads to the Internet of Things and People (IoTP) (Hoffman and Novak 2018; Langley et al. 2021; Ng and Wakenshaw 2017; O'Leary 2013). For philosophical and ideological movements, such assemblages have already become signs of emerging "cyborgs," "transhumans," and "posthumans" (Belk 2019).

Despite their increasing popularity, smart products remain an underexplored topic in marketing and consumer research, with the majority of studies focusing on the definitional and technical aspects of smart devices and the theoretical implications of their functional characteristics (Raff, Wentzel,

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and Obwegeser 2020). Empirical studies on the adoption of smart devices have long favored the individual level of analysis, examining individual consumers' attitudes toward smart devices in light of the traditional adoption frameworks, such as the technology acceptance model (e.g. Chuah et al. 2016; Kim and Shin 2015), the diffusion or innovation theory (e.g. Rijsdijk and Hultink 2009), the theory of planned behavior (e.g. Yang, Lee, and Zo 2017), and the unified theory of acceptance and use of technology (e.g. Baudier, Ammi, and Deboeuf-Rouchon 2020; Mayer et al. 2011). Due to their narrow focus on technological designs and psychological impacts, such studies tended to reduce human agency to purely adoption/non-adoption decisions and overlooked the impact of technology on consumer behavior after the acquisition (Mick and Fournier 1998; Orlikowski and Barley 2001).

In recent years, the development of smart technologies has prompted the emergence of alternative views that emphasize the complex, collective, and dynamic nature of the adoption and consumption of smart devices and their interrelatedness with institutional contexts (e.g. Belk, Weijo, and Kozinets 2021; Novak and Hoffman 2019; Nysveen, Pedersen, and Skard 2020). As conceptual advances suggest, smart devices might develop complex relationships with humans and with each other (Novak and Hoffman 2019) and potentially induce institutional changes (Langley et al. 2021). In fact, artificial intelligence embedded in smart devices might depend as much on political and social institutions as on technical design and have the capacity to "both reflect and produce social relations and understandings of the world" (Crawford 2021, 8). Since assemblages of consumers and smart devices are essentially technological layers intertwined with socially constructed layers, there have been calls to apply the institutional logics perspective to elucidate emerging patterns of material practices and symbolic constructions (Faik, Barrett, and Oborn 2020; Ng and Wakenshaw 2017).

Responding to this growing need, I use the institutional logics perspective to understand the interplay between emerging beliefs and practices associated with smart devices and established beliefs and practices. To examine in-depth meanings and behaviors related to the adoption and use of smart devices within a larger set of beliefs and practices, I followed an inductive qualitative approach to collecting and analyzing data. My findings explicate how the materiality of smart technology contributes to the emergence of the IoTP as a new institutional order with a distinct logic that is in many aspects incongruent with established beliefs and practices. This makes this study the first to provide evidence for the principles, symbols, and practices associated with the assemblages of humans and smart devices becoming an institutional logic in and of itself (Ng and Wakenshaw 2017).

Theoretical context

Following the tenets of new institutionalism, the institutional logic perspective (Friedland and Alford 1991; Thornton, Ocasio, and Lounsbury 2012) focuses on institutions, which are the formal and informal rules and norms that govern the behavior of individuals and organizations (North 1990). Established sets of related institutions (termed "institutional orders") form various domains of social life, such as family, religion, state, market, and corporation (Thornton and Ocasio 2008). Institutional orders provide frames of reference that guide actors' sensemaking choices and shape their self-concepts (Rao, Monin, and Durand 2003; Thornton, Ocasio, and Lounsbury 2012). The content of each institutional order is defined by its central logic, which consists of material practices (e.g. structures, routines, artifacts) and symbolic systems (e.g. ideas, beliefs, shared meanings) (Friedland and Alford 1991). In line with the corresponding domains of social life, institutional logics are present at a variety of levels, including organizations, markets, industries, inter-organizational networks, geographic communities, and organizational fields (Thornton and Ocasio 2008). However, in the micro-foundational sense, institutional logics ultimately shape and are shaped by actors' cognitions, emotions, and behaviors, and actors are key to understanding institutional persistence and change (Friedland 2018; Powell and Colyvas 2008; Thornton, Ocasio, and Lounsbury 2012; Zilber 2016).

The material and symbolic dimensions of institutional logics are interrelated, as actors concretize and elaborate upon the symbolic constructions of a given institution by engaging in material

practices connected to their lives and needs (Johansen and Waldorff 2017). The analysis of symbolic constructions and material practices relies on a set of categorical elements that reflect individual preferences and organizational interests, the ways of understanding one's own identity, and the repertoire of legitimate behaviors within a specific order (Thornton, Ocasio, and Lounsbury 2012; Bjerregaard and Jonasson 2014). For example, the nature of an institutional order is typically characterized by a basic analogy that serves as its root metaphor. The categorical elements also include the main qualities necessary for an actor to gain and maintain the acceptability of actions (source of legitimacy), an influential position (source of authority), and a connection with a broader community (source of identity) within a particular order. Moreover, the categorical elements include the primary requirement for actors' participation (basis of norms), actors' assumptions about what success is (basis of attention), and the primary means to achieve goals (basis of strategy). Finally, the categorical elements also include an informal mechanism that leads to conformity to values and rules (informal control mechanism) and a means to organize production, distribution, and consumption (economic system) (Thornton 2004; Thornton, Ocasio, and Lounsbury 2012; Thornton and Ocasio 1999).

Table 1 presents the definitions and examples of these categorical elements. In developing this set of categorical elements, Thornton and Ocasio (1999), Thornton (2004), Thornton, Jones, and Kury (2005), and Thornton, Ocasio, and Lounsbury (2012) relied on the conventional nomenclature of empirical social science research, sociological, anthropological, archeological, psychological, political science, and economic concepts that could allow the comparative interpretation of cognition and practice within and across institutional orders. As a result, this categorization is disciplinary agnostic and serves as a metatheory that enables integrative and interdisciplinary theorizing (Thornton, Ocasio, and Lounsbury 2012).

The categorical elements in Table 1 provide the basis for the construction of ideal types of institutional logics as abstract models that define the boundaries of institutional orders and convey their essential aspects (Swedberg 2005; Thornton, Ocasio, and Lounsbury 2012). As opposed to a description of particular instantiations, ideal types are analytical models that allow the analysis of a specific logic at multiple levels by enabling comparisons with empirical observations, as well as comparisons across logics based on the common reference points (Reay and Jones 2016; Thornton and Ocasio 2008). Importantly, observable changes along the categorical elements demonstrate changes in institutional logics (Reay and Jones 2016; Thornton 2004).

Table 1. Categorical elements of institutional orders.

Categorical element	Definition	Example: corporation	Example: profession
Root Metaphor	A basic analogy that describes the nature of an institutional order	Corporation as hierarchy	Profession as relational network
Source of Legitimacy	A quality necessary for gaining and maintaining the acceptability of actions	Market position	Personal expertise
Source of Authority	A quality necessary for gaining and maintaining an influential position	Board of directors, top management	Professional association
Source of Identity	A quality necessary for an actor's connection with a broader community	Bureaucratic roles	Association with quality of craft, personal reputation
Basis of Norms	The primary requirement for participation	Employment in firm	Membership in guild and association
Basis of Attention	The primary success criterion	Status in hierarchy	Status in profession
Basis of Strategy	The primary means to promote development	Increase size and diversification of firm	Increase personal reputation
Informal Control	An informal mechanism that leads to conformity to values and rules	Organization culture	Celebrity professionals
Economic System	A means to organize production, distribution, and consumption	Managerial capitalism	Personal capitalism

Note. Developed based on Thornton and Ocasio (1999), Thornton (2004), Thornton, Ocasio, and Lounsbury (2012), and Pahnke, Katila, and Eisenhardt (2015).

The symbolic and the material in institutional change

Institutional logics are not stable formations. They can replace each other, blend, segregate from a common origin, assimilate external elements, expand through internal elaboration, or contract in scope (Thornton, Ocasio, and Lounsbury 2012). Existing research suggests that the emergence of new logics typically occurs over long time periods through the accretion of separately theorized dimensions and changes in vocabularies used to characterize the environment (Nigam and Ocasio 2010; Rao, Monin, and Durand 2003). These processes typically start with the realignment of actors, such as the arrival of new members or the establishment of interorganizational collaboration, leading to actors reassessing symbolic constructions and eventually modifying material practices (Lawrence, Hardy, and Phillips 2002; Rao, Monin, and Durand 2003; Smets, Morris, and Greenwood 2012; Spicer and Sewell 2010). In analyzing such changes, existing research tends to show a strong preference for the symbolic dimension of institutional logics, whereas the material dimension has obtained a secondary role (Humphreys 2010a; Humphreys 2010b; Jones et al. 2017; Jones 2019). The literature on the place and role of physical objects in the emergence and evolution of institutional logics is especially limited (Jones, Boxenbaum, and Anthony 2013; de Vaujany et al. 2019). Material elements have traditionally been viewed as mere instantiations and embodiments of those symbolic constructions that have produced them or as passive recipients of novel meanings assigned to them (Gosain 2004; Jones and Massa 2013; Kozinets 2008; Scott 2014). Symbolic constructions, such as values, rules, and vocabularies, have also been seen as a determining factor in the choice of which material practices to adopt (Shipilov, Greve, and Rowley 2010). In certain cases, a change in symbolic constructions alone – with material practices remaining seemingly unaltered – has been considered as representing institutional change (Zilber 2002).

Recent years have witnessed a surge of attention to reassessing the place of materiality in institutions and institutional dynamics (Martin and Schouten 2014; Monteiro and Nicolini 2015; de Vaujany et al. 2019). Examples include studies of the roles of objects and technologies in institutional work (Jones and Massa 2013; Lawrence and Dover 2015; Monteiro and Nicolini 2015), strategic choice (Raaijmakers, Vermeulen, and Meeus 2018), identity conflict (Zanette and Scaraboto 2019), and legitimation (Huff, Humphreys, and Wilner 2021; Puyou and Quattrone 2018). As these studies suggest, the material does not merely embody ideas but can also incite strong reactions and conflicts, enabling actors to create and maintain institutions. The material's place becomes especially prominent in the growing literature on institutional change driven by consumers rather than powerful and resourceful actors, such as institutional entrepreneurs or media organizations (Ghaffari, Jafari, and Sandikci 2019; Slimane et al. 2019). For typically unorganized and nonstrategic individual consumers, the material provides common ground for their everyday activities and reactions that can collectively catalyze institutional changes (Ansari and Phillips 2011; Ghaffari, Jafari, and Sandikci 2019; Zanette and Scaraboto 2019). This common ground primarily manifests itself in affordances, that is, possibilities for action that objects and technologies enable in specific contexts, and in constraints limiting the range of desirable actions (Faik, Barrett, and Oborn 2020; Kozinets, Ferreira, and Chimenti 2021). With the accumulation of evidence for the interdependence between the materiality of technology and institutional change, it is becoming clear that the pace, scale, and pattern of change vary with the specifics of technology. In this regard, smart technology remains an underexplored area, and knowledge about the role and place of smartness as a specific material property in institutional logics is currently lacking.

Methods

Given the exploratory nature and objective of the study, I followed an inductive research design (Creswell and Poth 2018). Aiming to explore the adopters' understanding and interpretations of smart devices, I relied on adopters' personal reflections as an essential source of data that were

collected through individual interviews, as well as from secondary data sources, such as newspapers, technical reports, and artifacts.

Data collection

Two research assistants and I collected data in Norway, one of the most digital countries in Europe and the world (see the Digital Economy and Society Index by the European Commission). The rapidly increasing use of smart technologies in the country makes the Norwegian market for smart technologies an ideal candidate for this study. In data collection, we followed the methodological guidelines for qualitative social research (Creswell and Poth 2018; Jorgensen 1989; McCracken 1988) to ensure the trustworthiness and richness of the data. The data collection process had three phases. The first phase involved a foundation-building stage, where the researchers approached academic and professional experts on technology development and consumer behavior to gain an initial understanding of various smart devices, their technical and functional characteristics, and their patterns of use. In these semi-structured and informal interviews, we focused on current consumer and technology trends, innovation and product development, and consumer adoption and acceptance of smart devices. The second phase was a qualitative pre-study, in which we focused on understanding consumers' thoughts, feelings, and experiences regarding smart devices to outline initial themes. To gain these insights, we conducted one-on-one semi-structured interviews based on predefined themes and key questions, leaving room for exploration and spontaneity and allowing participants to develop answers on their own terms, length, and depth. The interview guide covered two subjects: (1) thoughts, perceptions, and interpretations regarding smart devices and product smartness and (2) the distinction between smart and non-smart devices. The third phase was the main study, in which we conducted the majority of semi-structured interviews with consumers following the themes that emerged during the previous phases. We focused on investigating how practices and experiences changed with the transition from a non-smart to a smart environment and the influence of various contexts on consumers' interpretations of practices that smart devices enable. We used a refined and enlarged version of the interview guide from the second study phase. The guide covered four themes: (1) distinctions between smart and non-smart devices and practices that they enable; (2) connotations and experiences with using smart devices; (3) issues and challenges related to practices enabled by smart devices; and (4) the social context of smart devices and practices that they enable.

In total, we conducted interviews with 33 participants of different ages, genders, and backgrounds (Table 2) to ensure sufficient variation in cases (Creswell and Poth 2018). Interviews lasted 45–60 min in the first two phases and 45–90 min in the third phase. In compliance with the Norwegian Centre for Research Data's guidelines, all data were collected and processed in a way that excluded respondents' identity. In selecting participants, we started with convenience sampling (i.e. family members and acquaintances) and continued with snowball sampling. Although participants differed in their level of smart technology literacy and adoption rate, they were not novices to smart technology, possessing at least one smart device (typically smartphones and smart meters, but smart vacuum cleaners, smartwatches, robotic lawn mowers, smart sound systems, and smart TVs were also relatively common).

To validate and deepen our understanding of the emerging findings in various contexts and with multiple actors (Gray 2014; Swain and Spire 2020), we also engaged in informal conversational interviews with people of various ages in other accessible contexts (e.g. children playing Pokémon GO in the street, elderly people using smartphones on a bus, acquaintances using smart vacuum cleaners at home). These interviews helped contextualize and authenticate the elements of the IoTP's logic. In addition, to ensure the coverage of the broader institutional environment, we used secondary data in the form of articles from specialized journals, newspapers, reports, documents from nonprofit organizations, and pictures of smart devices from product manufacturers and advertisers.

Table 2. Data sources.

2.1 Interview data				
Pseudonym	Age	Gender	Occupation	Study phase
Noah	45	Male	Service design professional	1
Oskar	31	Male	Product developer (Internet of Things)	1
Oliver	60	Male	Professor (digitalization)	1
Nora	52	Female	Product developer (Internet of Things)	1
Emma	52	Female	Healthcare worker	2
Lukas	30	Male	Unemployed	2
Isak	29	Male	Banker	2
Olivia	79	Female	Retired accountant	2
Aksel	86	Male	Retired farmer	2
Emil	52	Male	Recruitment	2
Phillip	22	Male	Student (bachelor)	2
Jakob	24	Male	Student (master)	3
Ella	55	Female	Teacher	3
William	24	Male	PR Consultant	3
Ole	26	Male	Student (master)	3
Jonas	24	Male	Student (master)	3
Alexander	25	Male	Freelance photographer	3
Sophia	28	Female	Leader in a sports organization	3
Magnus	40	Male	Employee in an electronics retailer	3
Markus	25	Male	E-commerce professional	3
Anne	32	Female	Manager of a clothing store	3
Inger	35	Female	Stewardess	3
Lars	14	Male	Student (elementary school)	3
Frida	24	Female	Student (bachelor)	3
Ingrid	80	Female	Artist (painter)	3
Tor	26	Male	Student (master)	3
Kari	34	Female	Unemployed	3
Liv	25	Female	Student (bachelor)	3
Knut	25	Male	Customer service	3
Martin	40	Male	Consumer insight expert	3
Thomas	34	Male	Manager in an educational institution	3
Berit	30	Female	Project manager in a consultancy firm	3
Svein	36	Male	Social worker	3
2.2 Archival data				
News websites			*Norwegian news sites:* Aftenposten, Dagbladet, Dagens Næringsliv, E24, Nettavisen, NRK, Shifter, Tek, Teknisk Ukeblad, VG *International news sites (English-speaking):* BBS News, Bloomberg, CNET, CNN, Daily Mail, Financial Times, Forbes, Gizmodo, Reuters, TechCrunch, TechRadar, The Guardian, The New York Times, The Verge, The Wall Street Journal, The Washington Post, Wired	
Reports, documents, announcements			Huseierne, Ministry of Health and Care Services, Ministry of Local Government and Regional Development, Norwegian Labour and Welfare Administration, Nofima, Norges Bondelag, Norwegian Government, Simula Research Laboratory, SINTEF	
Images (including ads)			Google Images, Elkjøp, Power	

Note. Study phases: Phase 1–foundation building (January–March 2018); Phase 2–pre-study (April–May 2018), Phase 3–main study (June–September 2018).

Data analysis

My data analysis relied on building theoretical bridges between the micro- and macro-levels. I began at the microlevel by focusing on participants' views and interpretations and then proceeded to the macro level by examining the emerging institutional order and its logic. Finally, I moved back to the microlevel by investigating the interplay between established beliefs and practices and the emerging logic.

Within each phase, I analyzed data thematically and iteratively, treating each participant as a case and evaluating emerging patterns with respect to the data and literature. In constructing the ideal type of a new order and its logic, I followed Thornton (2004) and Reay and Jones (2016). I mapped

our data material into Thornton, Ocasio, and Lounsbury's (2012) elemental categories characterizing institutional orders and used this conceptual scheme as a guide for developing insight into the relationships between institutional logics and their elements. The elemental categories (i.e. root metaphor, sources of legitimacy, authority, and identity, bases of norms, attention, and strategy, informal control mechanism, and economic system) represent organizing principles that shape actors' preferences, beliefs, and behaviors (Thornton, Ocasio, and Lounsbury 2012; Table 1). Table 3 contains representative quotes and interpretations that illustrate the mapping process.

Findings

Smart devices as the offspring of Western institutional orders

There is no common understanding of what "smart product" means. According to Nora (a product developer), even developers "struggle to define smart products within the industry, so one can only imagine how confusing this can be for users." Most people base their interpretation of smart devices on a smartphone. Its constantly developing software applications (apps) gradually change or substitute established practices that traditionally have little connection to using mobile phones (e.g. buying a bus ticket or controlling lights). For many, a life without a smartphone and return to previous practices have become practically unimaginable. As Sophia admitted:

> I liked my Nokia 3310. But things have evolved, and new functions are needed. I want to be able to do more stuff with my phone, and when I look back upon how happy we were with the limited functionality of the old dumb phones, it kind of feels ridiculous. I would never want to go back to that.

In Anne's words, smart devices are "things with electricity and software; things that have technology in them." The current mainstream interpretation of technology is associated with digital information and electricity, the latter being arguably reminiscent of the dominant design of machines and devices of the twentieth century. For example, a Google Images search with the keyword "technology" results in images that exclusively depict digital technologies. The keywords "digital technology" and "smart technology" bring virtually the same results, indicating the near-synonymity of these three terms currently. The technology makes smart devices "work without human effort" (Jonas) and allows "doing things faster or in a better way" (Ella and Nora), "doing many things at once" (Phillip and Tor), "dropping the chores" (Isak and Emil), and "saving time" (Markus) for "more pleasurable things" (William and Thomas). As Berit concisely summed up, "By outsourcing my mundane tasks to smart devices, I get the freedom to prioritize activities I enjoy."

Such views are consistent with the tenets of Western institutional orders (e.g. market, nuclear family, corporation, and the democratic state) that emphasize freedom and autonomy, private property, efficiency in terms of cost minimization, and effectiveness in the form of utility maximization (Friedland and Alford 1991; Thornton 2004). Similar to how corporations strive to increase economic profits, individuals seek ways to reduce their own costs and increase personal wealth and their quality of life. Increasing efficiency is one such way, and consumers expect that buying smart devices will provide them an opportunity to improve their practices or reduce their burden through simplification. As Inger framed it, "Smart devices that are difficult to use are stupid."

In this sense, the emergence of smart devices represents an evolutionary step on the technological trajectory of Western societies seeking automation and increased productivity through steam-powered mechanization, electrification, and computerization (Crawford 2021; Freeman and Louça 2001). Striving for increased performance through technological upgrades is particularly evident when comparing smart devices to their predecessors in the same product category (e.g. 2015 Apple Watch vs. 2000 Casio Wrist Camera vs. 1980 Casio Game-10 vs. 1972 Hamilton Pulsar P1).

Table 3. IoTP as an institutional order.

Categorical element	IoTP	Representative quotes with interpretation
Root Metaphor	Ecosystem	"Smart is when different things can cooperate and together make our lives better" (Lukas). "After the smartphone, the first thing I think about when I hear 'smart' is a smart home: when the whole house is connected to each other" (Emil). "Everything is being connected in a network. I am used to things talking to each other and sending me messages to my phone. When we are all connected, it gives me a better overview. In the end, everyone knows everything, but I do not care, it works well for me" (Phillip). *Interpretation: Things and people become increasingly interconnected in an ecosystem-like manner.*
Source of Legitimacy	Up-to-datedness	"The voice command update for this sound system will not come to the country until later this year – so it is not smart yet, but it will be then. Although you can already control all functions of this sound system from your phone, the developers release frequent updates for it. So, it will only get smarter with time" (Magnus). "Things have to be able to update themselves to be smart" (Liv). *Interpretation: Updates indicate a growing smartness, probably in likeness to how learning makes people more intelligent. "Outdated" means "dumb."*
Source of Authority	Technological competence	"You need technical competence to have all these smart things. Learning about technology is problematic for me. When the Internet is down at my work, I can eventually fix it, but I do not dare to try doing this in front of my colleagues, if they are also there" (Sophia). "My son has all kinds of those things: a vacuum cleaner and a lawn mower that fly around the ground, a car that drives by itself. I do not fully trust that these things really do their jobs. But my son says they do; he has technical knowledge, and it makes me trust them more" (Aksel). *Interpretation: Technological competence is associated with trust and superiority; the lack of technological competence may be perceived as embarrassing and requiring an excuse.*
Source of Identity	Association with lead users	"The first ones to use smart products are those who think it is cool with tech stuff and have money. I do not have special needs for smart products right now; they are more for people who want extra, for whom normal things are not enough." (Ole). "These things are not for me because I am not technical. I do not need to check my pulse or distance when I run. I'll see how it goes with those people who use their time on those things, then may be give some of these things a chance at some point" (Sophia). "Using smart things means you are modern" (Lukas). "I do not use Siri, so I am old-fashioned" (Inger). *Interpretation: Owning smart devices and getting them first signifies technological competence, creativity, pioneering, and "futuristic" needs (associated with lead users).*
Basis of Norms	Accessibility in IoTP	"I don't want my children to lag behind. So I am buying them new gadgets and apps, especially as soon as other kids in the school get them. Despite that, they use these things just for fun. Even my grandmother starts to understand that this is how the world is now, although she is still disappointed that my daughter spends more time playing with others on iPad than outside" (Kari). "I have to make sure that I am always accessible, both for co-workers and friends. If I had not had a smartphone with all its apps, I would miss out on everything, and they would forget that I exist! I could just as well live in a forest. Having a smartphone is not an option anymore" (Knut). *Interpretation: Constant accessibility, typically through access to the Internet, is required for participation in the IoTP.*
Basis of Attention	Status in IoTP	"I find myself more and more in competition with my friends on strange stuff: who made more steps or slept more hours according to the smartwatch, who found a cooler app, who was the first one to test a new phone, new appliance, new function. Sometimes, I am not sure whether we do it because we enjoy it or we keep up appearances" (Berit). *Interpretation: The level of activity in the IoTP becomes a measure of social status.*

(*Continued*)

Table 3. Continued.

Categorical element	IoTP	Representative quotes with interpretation
Basis of Strategy	Increase IoTP size and participants' activity	"The more things are co-dependent and the more they are willing to cooperate, the better it is for smart environment" (Noah). "Nowadays, you must have several smart gadgets. You see other people getting all those gadgets and wanting to share it with you, consultants in shops recommending them, and the government introducing them everywhere. And honestly, if you already have one, what use does it have alone? So, you start getting more, too" (Thomas). *Interpretation: The functions and value of the IoTP depend on the number of participants and their level of activity.*
Informal Control Mechanism	Surveillance and nudging	"Getting reminders or suggestions becomes more and more normal. It's good when it helps you make a choice. But sometimes it is a bit irritating when you get more notifications than necessary. You put your phone away to get some peace just to get the same reminder on the smartwatch" (Ole). "Smart technology could help me with living healthy and sleep properly. For example, I'd like to have a toothbrush that does not stop until the time recommended by doctors. Or smart kitchen stuff that could make me reduce food waste or give recommendations by measuring nutrients. But it could give you bad conscience as well: of all things, I would be stressed most if my phone was telling me how much beer I had had" (Lukas). *Interpretation: Smart technology monitors human behavior (surveillance) and can influence human decision making by giving specific choices (nudging). In some cases, this influence may be perceived as manipulative and patronizing.*
Economic System	Data capitalism	"As we get increasingly connected, as we get more of a quite an advanced and powerful technology at hand, we become more dependent on each other than traditional product firms or service providers. In general, people are more engaged and more satisfied with services that they co-produce, they enjoy personalized solutions, and they like to receive extra income. Think about models behind such platforms like Uber and Airbnb – they are not that different from the idea of the Internet of Things. And in this case, we are talking primarily about smartphone technology; imagine the business opportunities if you add other smart devices. Of course, you have to contribute too. Either with money or your own service, and almost always with your personal data. As the saying goes, "If the product is free, you are the product." But it becomes harder to differentiate between consumers and producers. Setting aside the pros and cons, it is fair to say that the 20th century business models are dying out." (Oliver). *Interpretation: Smart technology enables the commoditization of data. It also facilitates peer-to-peer transactions and resource sharing among users (e.g. through platforms).*

Smart devices as the driving force behind a new institutional order

Although smart devices as a phenomenon originate within the established Western institutional orders, the data further show that the qualities of smart devices make them the driving force behind the emergence of a new institutional order of IoTP, which in many ways is incongruous with the existing institutional orders (Table 3).

The IoTP's root metaphor

The functioning of conventional products depends directly on human control and manipulation, but smart devices can communicate with each other and humans and adjust to changing conditions. As a result, participants described smart devices by extensively using words and phrases that previously solely characterized human behavior and by referring to the interconnectedness of humans and smart devices as well as their interactivity. Examples include "I can interact and communicate with them" (Sophia, Phillip, Inger, and Ingrid), "they talk to each other" (Isak), "they make their own decisions" (Isak and Frida), "they entertain me or make something for

me" (Tor), "they learn and do their job regularly" (Lukas), "they will get only smarter with time" (Markus), and "I do not trust them" (Aksel, Ella, and Ingrid). This resonates well with previous research findings showing that users can perceive relationships with anthropomorphized smart devices as if the latter were living beings: servants, equal partners, or masters (Schweitzer et al. 2019). In some cases, there is even the anticipation that smart devices will eventually surpass humans in intelligence. As Isak elaborated:

> The best would be if humans just did not interfere. Currently, control is in the hands of dumb people. If everything were similarly programmed, all would react with respect to each other, and it would have been safe then.

Some of the elderly participants were skeptical and cautious about referring to products as "smart." For example, Ingrid confidently declared, "A thing can't be smart; it's just a machine or a robot. Smart are those people who have made it." However, even they resorted to human-like descriptions when thinking about the anthropomorphized elements of smart devices. When asked about Apple's virtual assistant, Ingrid excitedly exclaimed, "Oh, Siri! She is smart! She is quite incredible! She can talk about everything … ," but then added confusedly, "May be, I am speaking against myself now."

This suggests that users increasingly see smart devices as fully fledged participants in the value-creation process. In this sense, this integration process indicates the emergence of the IoTP in the form of *an ecosystem* consisting of both humans and smart devices.

Sources of legitimacy, authority, and identity in the IoTP

Because consumers define smart devices through their association with modern technology, using smart devices becomes a demonstration of adopters' *up-to-datedness* and *technological competence*. Smart devices are strongly associated with something that is "cool", and the use of such products has emerged as an effective method to signal a person's legitimacy. In Markus's words, "The first ones to get smart products are those people who think that technical things are cool and who have money." As Jakob speculated, "I am going to buy a smart jacket when I can afford it. Although technology would not probably last long, I would use it anyway, because it is cool."

However, having the latest smart devices becomes the source of legitimacy not simply because these things are "cool" but because refusing or neglecting to use them deprives a person of participation in the IoTP. Especially in cases where the use of smart devices has taken over as an established practice that completely substitutes non-smart alternatives (e.g. smartphones), adhering to previous practice may undermine legitimacy and authority, leading to stigmatization. As Inger confessed:

> If I had an old Nokia and took it out of my pocket, people would think it was weird. I would be stigmatized. Maybe people might think I don't have money or live completely manually.

Such considerations start to transcend the individual's needs and self-concern, and there is a growing realization that nonparticipation in the IoTP impedes the person's functioning, whereas participation creates network effects. As Kari said,

> […] kids who become familiar with technology early probably have an advantage. I do hear some people say they think it is dangerous for kids to spend too much time on them [tablets], but most of my friends of my age [34] think it's fine, at least in reasonable amounts. So, it's becoming normal and when the schools are using it, it becomes more accepted. I don't want my children to lag behind.

The abilities of smart devices have largely encouraged respect for their creators and *lead users*. The glorification of technological competence is now widely prevalent, with tech moguls like Elon Musk and Mark Zuckerberg becoming global celebrities. Many contemporary films (e.g. "The Social Network" or "Silicon Valley") contain scenes where central characters demonstrate their technological competence on computers or gadgets before awed audiences. The geeky stereotype that was originally associated with eccentric or non-mainstream people is now increasingly depicted with admiration, rather than as someone odd.

Moreover, governmental policies and job markets increasingly stress the importance of technological competence. In Norway, numerous governmental agencies and private sector organizations have adopted digitalization strategies and explicitly communicated their intent to increase the use of smart devices (e.g. smartphones, tablets, smart grids, smart meters, and smart safety devices) in their services (e.g. Indsetviken 2020). Through such informal and formal institutional pressures, possessing or at least demonstrating up-to-datedness and technological competence becomes a crucial means of gaining legitimacy and authority, prompting the isomorphic adoption of smart devices. The growing integration of new technologies into industry practices has created strong demand for technologically capable workers. In many professions, it is taken for granted that employees actively use smart devices.

As technological competence becomes a source of authority within modern social systems, it also becomes internalized and intrinsically valued, influencing a person's self-concept. Smart devices and practices that they enable start serving as points of comparison, indicating the growing perception of their equality or even superiority to humans. As Isak vividly expressed, "My smartphone makes me as smart as the internet."

Bases of norms, attention, and strategy in the IoTP

The interconnectedness of participants in the IoTP is a technical requirement, but it has also created normative expectations of every member *having access and being accessible* within the ecosystem. As Knut emphasized, "Having a smartphone is not an option anymore," because his co-workers, family, friends, and even public services expect him to have it within reach all the time, and "without a smartphone," he could not have his job and might "as well live in a forest." The need to have access and be accessible becomes fully explicit in situations when the accessibility is lost (e.g. due to lack of internet connection, technical issues with a device, or a missing device), which can create a dramatic experience:

> Occasionally, on my way to work or elsewhere, I discover that I forgot my phone at home, and then suddenly I feel like I'm hit by a wave of fear or some sort of anxiety: What if there is a ticket control? How will I log in to the bank? Everything is in there, you know. And what if someone reaches out and I don't answer – will they think I'm sluggish or something bad happened to me? I can't stand it, so I go back home and get my phone, even if I already was far away (Svein).

Normative pressures of being "always on" are especially evident among younger generations, who moved beyond constant accessibility into competition on the level of activity in the ecosystem. This level of activity can be reflected in, for example, the frequency of sharing information, the number of followers, the number of smart gadgets, the extent of home smartness, or quantitative indicators on self-tracking devices. The latter has led to the emergence of the cultural movement known as the "quantified self" (Hay 2013; Hill 2011), crystallized in the eponymous community of enthusiasts who share and discuss their self-tracking experiences. Although such experiences are typically framed as tools for knowledge development or self-improvement (Sharon 2017), they constitute an important part of gaining and maintaining *status in the IoTP*. As Berit confessed, "Sometimes, I am not sure whether we do it because we enjoy it or we keep up appearances."

Moreover, *increasing the number of participants and their level of activity* has become the primary means of promoting the IoTP's development. For a firm, this implies a strategic choice to maximize its presence in an ecosystem through firm-controlled devices and/or applications. One prominent example is Amazon "putting" its virtual assistant "Alexa in everything" (Aquino 2021), including wall clocks and microwaves, and seeing opportunities to expand "everywhere" (Weise 2018). For policymakers, the IoTP's development implies an expansion of the IoTP at the city and country scales, for example, in the form of creating smart cities (Huber 2020) or a nationwide rollout of smart devices, such as smart meters (Indsetviken 2020). For users, the IoTP's development entails expanding access to increasingly diverse participants (including non-humans ones), which often happen in a path-dependent manner:

> I really want to connect everything I have into the Internet of Things. I actually don't need something to tell me how many eggs I have, but it can be useful when you are in a shop and don't know whether you have them. And it kind of makes sense to connect as many things as possible if you've already started doing it. It becomes more and more normal. I mean getting used to having smart things makes me feel I must have them. But it is important that things can work with each other. I do not buy a smart gadget if I can't connect it to what I already have. Often, I end up with buying a technically worse gadget, just because it is the one I can get connected. (Markus)

Informal control mechanism in the IoTP

Smart devices continuously collect data about users, other smart devices, and environmental conditions. In many cases (e.g. voice assistants and smartphones), the amount and variety of collected data are far greater than what is required for a given task at a given point in time. This constant monitoring of consumer activity – often compared to *surveillance* (Zuboff 2019) – is increasingly used by companies to shape the choice contexts and manipulate consumer behavior, most notably through personalized marketing and *nudging* (Darmody and Zwick 2020). Many of the participants mentioned both their gratitude and irritation at being regularly informed and "pushed" by various notifications from smart devices. Numerous examples include notifications about events, tasks, workouts, shopping, traffic, and potential challenges and complications. Such nudging is increasingly becoming an indispensable component of everyday life. As Inger reflects:

> There is a charm in the old way of doing things without dependence on technological products. But personally, I am getting dependent on them – right now I actively use a pregnancy app that tells me how much I am pregnant, what it means, and what I should do.

The attitude toward such informal control is not unanimously positive. Even those participants who enjoy nudging in some aspects of their lives are unwilling to accept it as a universal standard. In Thomas' words,

> Smart products give me data, they make me conscious … conscious about what is happening to me, about what I am doing, and about what I should be doing. For example, after getting a smartwatch, I have definitely become much more attentive to my weight and health in general. I train more, try to get a better sleep … But I would not want to have a smart toilet for the same reason. It would constantly give me information I'd rather not know. I would go around thinking about my test results. This would make me restless!

Consumers' attitudes toward such nudging largely depend on its effects within social and environmental contexts. For example, participants regard getting shopping lists from a smart fridge as beneficial not only for efficiency reasons but also because it can help reduce food waste and even carbon emissions as a result of driving less (Isak, Alexander). Contextual influence with roots in Western institutional orders may even prompt effects opposite to those intended, such as annoyance, anger, and fear. For example, some participants view nudging as a threat to their freedom (especially freedom of choice) or as a violation of their privacy rights. According to Berit,

> Their omniscience creeps me out sometimes. Once I was texting with my boyfriend on my smartphone, and he mentioned he wanted to buy a piece of sports equipment. Right after we ended our chat, I opened another app, and guess what? I got an ad about that equipment! This is too much, I do not want to be monitored, pushed, taken advantage of in that or any other way. Especially, if it is about something that is not actually relevant to me. (Berit)

The IoTP's economic system

Smart devices have created numerous opportunities for self-service and "do it yourself," substantially reducing the direct reliance on conventional service providers. The latter are increasingly taking the form of platforms facilitating interactions within and between various assemblages of consumers and objects. In these interactions, data play the roles of not only inputs and outputs but also of objects and media of exchange. This makes the functioning of the IoTP dependent on its members' active participation and continuous data sharing. By using smart devices,

consumers not only satisfy their personal needs, but also contribute to the development and maintenance of the IoTP. They do it both directly (e.g. by creating mobile applications, suppling digital content, and peer-to-peer sharing) and indirectly (e.g. by producing behavioral data). Some of the participants had already accepted this new economic paradigm:

> I enjoy private life, but at the same time, I think that data sharing is something we should pay for free internet. Everything you do online is like standing on a scene. The worst that can happen is that my data will be used to make an experience better for me. Well, maybe they can influence me to buy something I do not need. But I was born the same year as the World Wide Web [1989]. I do not see any problems with everything being connected in the network. It does not reduce the value of products, only increases! Now it gives you tons of data to analyze your life, but after a while, it would be possible to let artificial intelligence do it. (Isak)

The commoditization of data and the emergence of data marketplaces suggest the rise of "*data capitalism*" (West 2019). On the one hand, it spurs discussions on the commercial use and misuse of data by tech companies (Zuboff 2019) and data brokers (West 2019). On the other hand, it enables the reframing of consumers as producers of commercially valuable data who should have the right to monetize their own personal data (Bataineh et al. 2020).

The character and extent of value creation within the IoTP is largely determined by its scale and composition. Although the Internet provides world-wide connections and theoretically has the potential to connect all humans and all smart devices into one network, firms follow the tenets of Western institutional orders (particularly of corporations) and strive to maintain control within their own boundaries. As Oskar lamented:

> The problem is that companies try to reinvent the wheel. They create their own ecosystems and do not really use the API possibilities [application programming interface]. So much is just closed solutions. Today, there is no proper solution for connecting absolutely everything in the house and controlling it from an app on any smartphone.

Incongruities between the established logics of market and corporation and the emerging logic of the IoTP also create conundrums for consumers:

> I am very concerned about sharing my data, because I do not trust all these companies standing behind smart products. I do not believe they have good intensions. They think only about profit. What will they do with my data? I would be much more willing to share my data if everything relied on open collaboration. (Svein)

The interplay between consumers' established beliefs and practices and the logic of the IoTP

New smart devices continue to enchant consumers as "cool things," but as a product category, they are becoming increasingly normal, reflecting Belk, Weijo, and Kozinets's (2021) cycle of disenchanted enchantment. For Phillip,

> Things just become more and more useful since they can do so many various tasks! I do not mind data sharing, whether it is through fridges, vacuum cleaners, or cars. Actually, I don't really think about the term "smart products" anymore. They are just natural things now.

As the IoTP gradually emerges as an institutional order, its logic starts to interfere with individual consumers' established beliefs and practices, especially those that require abandonment. This creates ambiguity that challenges those parts of an individual's self-concept (the sense of unique identity; Brewer and Gardner 1996), which stems from established beliefs and practices. In an attempt to resolve this ambiguity and maintain their self's integrity, individuals engage in sensemaking, which includes justifying new elements and re-evaluating the place and roles of established practices (Thornton, Ocasio, and Lounsbury 2012; Schneiberg and Lounsbury 2008).

According to my data, this sensemaking prompts the internalization of some established practices, that is, their full assimilation into the individual's self-concept (Kelman 2006). Practices that are intrinsically rewarding to a consumer take a more salient position in the consumer's *personal*

self (aspects that differentiate the individual from others). In the context of smart devices, these include practices that create a sense of enjoyment and competence for the consumer (Leung, Paolacci, and Puntoni 2018). As Anne declared:

> I am not a fan of self-driving cars. It is fine if other people want to use it, but not me. I am a car girl who likes to drive. It makes me happy and I don't want to give up something that I enjoy doing.

In turn, practices that assist in social differentiation and comparison become more prominent in the *social self* (aspects that differentiate the individual's ingroup from outgroups), leading to the formation of ingroup bias. In the case of smart devices, this implies practices that require complex decision-making, emotional responses, and empathy, which are qualities viewed as positively differentiating "Us" – humans from "Them" – smart things (or artificial intelligence, robots, machines, etc.) (Belk 2019). This is due to the common belief that people are better equipped to solve problems and control situations in cases of unexpected events and subjective tasks (Castelo, Bos, and Lehmann 2019) and that machines can never become emotionally honest and hence benevolent. Given that emotion as a meaningful material practice is normally an integral part of institutional logics (Friedland 2018), smart devices as emotionless actors provoke discomfort and threaten human identity (Mende et al. 2019). As William admitted:

> I would not have automated the nursing profession or really anything that has to do with taking care of people. I would not like to lie in a hospital bed and only be looked after by machines – even if that were possible. In those cases, you need the human factor. Even in customer service situations, I prefer talking to humans rather than an automated machine. I want that comfort of knowing that there is a human on the other side.

The participants also expressed a much lower tolerance threshold for the failures of smart devices than humans and were distressed by the possibility of transferring the right of moral judgment. For them, it seemed wrong to let things practice life-and-death decision-making, especially when it was difficult or impossible to ensure accountability. This lack of trust in machines in situations with moral ambiguity reflects the general concern about losing human sovereignty over decision making (Kozinets and Gretzel 2021).

Discussion

Much of the research on marketing and consumption has been invariably confined to contexts where inanimate objects formed merely a stage for human activities. Considering them as active partners in relationships with humans has traditionally been made with the reservation that inanimate entities do not have inherent vitality but can be brought to life in the consumer's mind through anthropomorphizing (Aggarwal 2004; Belk and Kniazeva 2018; Fournier 1998; Fournier and Alvarez 2012). Theoretical attempts to assign a true agency to objects – most notably actor-network theory (Latour 1987) – have typically provoked controversies (e.g. Sayes 2014) and ridicule (e.g. Pels 1995).

Nevertheless, the idea of objects playing an active role in shaping consumption has proven viable, as demonstrated by the growing number of marketing and consumer studies building on actor-network theory and Deleuze and Guattari's (1987) assemblage theory to explain the role of the material in transforming individual consumers, their conduct and experiences, and markets (e.g. Bettany and Kerrane 2011; Canniford and Bajde 2016; Carrington and Ozanne 2022; Kozinets, Patterson, and Ashman 2017; Martin and Schouten 2014). In the case of non-smart objects, such explanations often rely on the discussion of the effects caused by the material properties that *are* in an object, regardless of human awareness of them (e.g. Franco, Canniford, and Phipps 2022), which can risk equating the notions of agency and cause (Ribeiro 2016). However, smart devices equipped with machine learning are different from their non-smart counterparts and, as this study shows, not only have a capacity but are also expected to play an active role in the IoTP. Whereas the use of conventional technological artifacts generally implies the delegation of a task (e.g. weaving, computing), the use of smart technology also means the delegation of decision-

making authority, which smart devices exercise by making data-driven choices. For example, asking a virtual assistant to play music that is less specific than a particular composition results in a playlist of the device's choice, which can even lead to some users feeling themselves as being slaves to such devices (Schweitzer et al. 2019). In extreme cases and unexpected situations, smart devices have to determine the course of action by themselves based on real-time data and learning from earlier operations (e.g. autonomous vehicles), which means both making a decision and independently executing it.

Differences between actual choices that humans and smart devices make are already not apparent in many contexts, as demonstrated by multiple reports of algorithm biases (e.g. Dastin 2018; Evans and Mathews 2019; Makortoff 2022) that typically attract public attention and criticism to programmers and developers' alleged mistakes in coding. However, the algorithms are typically not coded as biased. They *become* biased because they learn to make the same choices as those biased people who produced the data (Pearl 2019). The same algorithms would start making different choices if they were trained on different datasets, which enables speculation about smart objects' interpretations of real-world data, cultural embeddedness, or even experiences (Hoffman and Novak 2018).

However, within research on the broader institutional environment and institutional change, physical objects and the material in general are still typically seen as passive carriers of those symbolic constructions that have produced them or that have been intentionally assigned to them (Gosain 2004; Jones and Massa 2013; Scott 2014). This study provides empirical evidence and theoretical elaboration of the material's potentiality to create elements of an alternative logic that are neither intentionally inbuilt nor immediately perceptible as such, nor initially contradictory. In the case of the IoTP, symbolic constructions do not result from interpreting material practices freely but arise from the affordances and constraints that the properties of the material impose. Importantly, these properties have been compatible with established institutional logics, at least in the beginning. For example, Weiser's (1991) visions of ubiquitous computing – arguably the first description of smart environments – despite being accurate in many technical aspects, still do not cross the boundaries of Western institutional orders. For him, "ubiquitous computing will produce nothing fundamentally new"; ubiquitous computers will simply "reside in the human world" and make "everything faster and easier to do, with less strain and fewer mental gymnastics" (104). Such an articulation of smart technologies as the supreme goods for economic growth is essentially rooted in the *Work Machine* ideology of the established ideological field of technology (Kozinets 2008). Moreover, smart technology resonates well with this field's three other elements, namely, the *Techspressive* ideology (e.g. through its promises of smart home entertainment), the *Techtopian* ideology (e.g. through its promises of smart urban communities), and the *Green Luddite* ideology (e.g. through its promises of smart production systems addressing sustainability concerns).

Although I indeed find that the adoption and diffusion of smart devices at the dawn of their existence were in line with the established institutional logics (the affordance of delegating chores), my findings further suggest that smart devices are increasingly becoming more than just tools that work quietly in the background, available to aid in problem solving like a piece of paper on a table. Instead, the specific material characteristics of smart technology (including network capability, adaptiveness, autonomy, and ability to cooperate) and the associated affordance of creating the Internet of everything have prompted an ecosystem that is in many aspects incongruent with the established beliefs and practices. Moreover, unlike other types of material leading to the emergence of new variants of the market logic (e.g. Martin and Schouten 2014), smart technology has prompted a new logic altogether. In contrast to Thornton, Ocasio, and Lounsbury's (2012) institutional orders, the IoTP lacks the interpersonal and particularistic characteristics associated with family and community; bureaucratic domination and politics associated with state; sacredness, and worship of the supernatural associated with religion; private ownership and freedom of choice associated with market; hierarchy associated with corporation; and specialization associated with

profession. The constant impersonal interconnectedness without specialization sets the IoTP apart from earlier technological advancements that typically pertained to specific product categories or areas and focused on maximizing individual performance. In the IoTP, the value of a participant is defined not by the superiority of individual performance but by its *role in overall ecosystem functioning*. The network-based nature of smart devices and their ability to learn and improve over time prompt the need to make adoption decisions based on the *future* performance of an ecosystem *as a whole*. As a result, the ideological field of technology (Kozinets 2008) is changing under the influence of the logic of IoTP. The ongoing transition of smart devices into full-fledged IoTP participants, coupled with the development of post humanist and biocentric views, is shifting the Techtopian ideology with its human societal focus toward *Symbiotic* ideology, which is reflected in the ideas of smart cities and urban ecosystems promoting symbiotic relationships between human and nonhuman beings (Ramirez Lopez and Grijalba Castro 2021) based on smart technology-assisted multispecies interaction (Fell et al. 2020). The Work Machine ideology is correspondingly transitioning into the *Sustainability Engine* ideology that emphasizes smart technology's potential to enable sustainable manufacturing, facilitate resource and asset sharing, and reduce consumption, pollution, and waste (Kusiak 2018). As a result of this readdressing of environmental concerns, the Green Luddite ideology is shifting toward the *Analogue Luddite* ideology, which encourages the use of analogue technological objects to escape the IoTP (Humayun and Belk 2020). Finally, the Techpressive ideology, with its focus on pleasure, is transforming into the *Human Augmentation* ideology that articulates the use of smart devices to enhance the physical and mental capabilities of humans (Raisamo et al. 2019).

Existing research on large-scale technological and societal changes tends to rely on theoretical contrasts between continuous changes and discontinuities, between technology and culture, as well as between intentional and evolutionary forces (Elster 1983; Foster 1973; Freeman and Louçã 2001; Thornton, Ocasio, and Lounsbury 2012). Especially in organizational studies, the introduction of a new, usually external, technology is a well-defined and commonly shared event that disrupts established organizational paradigms and practices (e.g. Jensen, Kjærgaard, and Svejvig 2009; Bunduchi et al. 2015). As this study indicates, such theoretical and empirical contrasts may mask the mundane origins of some types of change, even more mundane than the institutional work of less powerful resourceful actors described by Ghaffari, Jafari, and Sandikci (2019). According to my results, the transformation of an institutional logic and the establishment of a new institutional order may start with the gradual substitution of the material and the related symbolic with everyday objects and practices that are, in fact, consistent with the established institutional logic but also bear some novel elements. This change becomes pronounced only when the novel elements achieve a critical mass that starts to challenge the established logic. In this sense, I demonstrate *the banality of institutional order emergence* (paraphrasing Hannah Arendt), which contributes to the growing understanding of practice-driven institutional change (Smets, Morris, and Greenwood 2012).

My results also shed new light on tensions between established and emerging institutional logics. It is typical to view such tensions as happening *between* actors who typically resolve them through contestation, negotiation, and the exercise of power (Schneiberg and Lounsbury 2008; Besharov and Smith 2014). Such processes also characterize the emergence of the logic of the IoTP. For example, its contestation with market and corporate logics results in its root metaphor instantiating in firms' attempts to create their own ecosystems, often with close boundaries. However, I demonstrate that the tension between the established and emerging institutional logics also arises *within* actors who may find the increasing interconnectedness of things and humans and the gradual disappearance of practices they value (the constraint of hindering internalized practices) threatening to their personal self (the constraint of diminishing the self-concept). For some actors, this leads to the strengthened internalization of the established institutional logic elements, which further become subject to protection and often constitute an apple of discord in the institutionalization process. This mechanism may probably explain the resurgence of analogue consumption (Humayun and Belk 2020).

Moreover, smart technology development fuels the anthropomorphism of everyday objects, leading to actors questioning the scope of their social self (the constraint of diminishing the self-concept). Instead of comparing smart products to their non-smart counterparts (Rijsdijk, Hultink, and Diamantopoulos 2007; Rijsdijk and Hultink 2009), users increasingly compare them to humans and evaluate the practices that smart products enable versus the practices that humans perform. This is evident in the debate on smart devices' gendered characteristics (e.g. Woods 2018) and, even more, in the discussions of their steadily increasing proficiency. Computers have long since become exceptionally good in operations and tasks that are expected from a fully rational human, such as solving mathematical problems, storing, and processing large amounts of data, and dispassionate evaluation (Payne, Bettman, and Johnson 1993). Equipped with heuristics, humans have remained superior in tasks involving visual perception, categorization, pattern matching, creativity, and abstract thinking. However, recent advances in artificial intelligence have begun to challenge these last remaining bastions of human idiosyncrasies. As early as in 2015, Baidu's Minwa supercomputer outperformed humans in image recognition (Hern 2015). Realizing the growing potential of smart technologies, people find themselves in a competitive situation where they start re-evaluating what it means to be human and why humans are still better than machines.

The rise of social categorization and group identification (*Us—humans vs. Them—smart things*) calls for special attention and may explain some collective reactions to smart devices. Social categorization tends to be associated with distrust, devaluation, unfair treatment and discrimination, opposition, and violence (e.g. Tajfel 1982). In turn, group identification can make people more prone to conformity, cognitive distortions, stronger norm adherence, group polarization, and shunning deviant group members (Baron 2005). Experimental evidence indicates that similar processes may happen in human–machine interaction as well: Humans tend to break promises made to computers (Kiesler, Sproull, and Waters 1996), stop otherwise successful cooperation (Ishowo-Oloko, Bonnefon, and Soroye 2019), and buy less (Luo et al. 2019) when they learn that the cooperating partner was a machine. Social categorization and group identification can also prompt intergroup competition and lead to intergroup hostility (e.g. Cohen, Montoya, and Insko 2006; Benard and Doan 2011). In fact, instances of hostility toward smart objects are already a regular subject of media reports (e.g. Hern 2018; Bernal and Hoggins 2019). Generally, it seems that in the age of total smartness, a human uprising is more likely than a robot uprising.

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