

# Trust and Risk in Robot-Services: A Comparative Study of Denmark and Britain

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## **Abstract**

Drawing on Beck's sociology of risk we explore the cultural basis of consumer engagement with robotics and its relevance to service marketing. We conduct a comparative study of robotic services in Denmark and Britain by asking how the future is imagined in the news media to frame the coverage of robots differently in the two sampling contexts. Our discourse analysis shows important contextual variance in the relationship between robots and the future, which impact the articulation of trust and risk in regard to robotic services. In the Danish context, issues of trust and future risks are framed by political and material assemblages within the egalitarian and inclusive welfare state, while in the British context, issues of trust and risks towards the future are framed by political and material assemblages pertaining to hierarchical class society. Since the cultural attitudes surrounding robots differ across contexts, the marketing of services involving robots must address local, cultural questions that frame trust and risk issues. These prompts are especially important when promoting market services involving robots, since trust is central to customer evaluation of service quality and relationship commitment.

**Keywords: Robots, Service, Future**

**Track: Services Marketing**

“Imagine a Dalek enunciating the following words: "buttery", "herby", "oaky". OK, now try: "sauvignon blanc" or "Valpo-licella". You may just have envisaged the future of wine tasting... When it has identified the grape, the robot comments on the taste - for instance stating whether the chardonnay is buttery or the shiraz full-bodied. The machine can perform the same task for food, assessing the saltiness of cheese or distinguishing between bitter and sweet apples. But it is the electro-mechanical sommelier's wine-tasting prowess that has most excited its creators...”  
(The Independent September 6, 2006).

## **Introduction**

A robot is a reprogrammable, multipurpose manipulator for fixed or mobile use and provides a service by operating partially or fully autonomously to the benefit of humans and other equipment (Bekey 2008). Robots inspire new business models and ways of relating to customers through market services (Lovell and Gummesson 2004). The British Guardian has reported on Wakamaru, a robot which serves as a housekeeper or concierge that can take up gate-keeping functions in the local community (The Guardian November 27, 2003), while the Danish media such as Jyllands Posten frequently reports on “welfare robots” that provide services for social inclusion (Jyl.Po.Feb 2nd 2012). These novel services are typically transactional, where the technology generates opportunities for innovative forms of co-creation (Rust and Huang 2014). Studies have, for instance, shown that robots promise to radically transform warfare, government services, food, travel, sex, and household activities (The British Academy 2017). However, robots likewise provoke serious concern about future human flourishing, which makes such robot-based services risky to consumers (The British Academy and The Royal Society 2017). Because robots are not yet pervasive in consumers' daily lives, there is much speculation about what “the future” will look like with regards to service robots. The collective imagination about the future is strongly influenced by popular culture and media discourse. Since consumers cannot draw on first-hand experiences with service robots and often lack the technological knowledge to imagine what a future with robots in it would look like, they rely on other cultural storytellers, such as journalists, to imagine this future for them. The future is, thus, a highly cultured phenomenon (Carr and Cheung 2012; Gell 1992; Rodgers 2010). Not only have ideas about the future evolved radically through history (Koselleck 2013), but, as Fabian (2014, xxxvii) notes, “time, much like language or money, is a carrier of significance through which we define content” and

”time conceptions differ across cultures”. In this project, we explore how services are affected by culturally-driven issues of trust and risk towards a future with robots. We conduct a comparative study (Arnould, Price, and Moisio 2006) of robotic services and are guided by the question: *How is the future imagined in the news media to frame the coverage of robots in Britain and Denmark with regards to trust and risks? We pursue Denmark and Britain as part of a most similar systems approach to comparative research. These are neighbouring, North European countries with welfare states and protestant Christian heritage. While such quasi-experimental logic has seen criticism (Denizen, Norman 1989) it does add rigour to the causality of sociocultural particularity about robots within each case (Andersen, Hansen, and Klemmensen 2010).*

Our study of news media representations of robots shows important contextual variance in the relationship between robots and the future. In the Danish context, issues of trust and future risks are framed by political and material assemblages within the egalitarian and inclusive welfare state. Robots attain utopian potential as a service technology through freeing up time, so people can engage in egalitarian community building efforts. Dystopian risk manifests as the potential for social alienation. In the British context, issues of trust and risks towards the future are framed by political and material assemblages pertaining to class society. Robots thus attain utopian potential as service technology by becoming “butlers,” while dystopian risk manifests as the potential for class enslavement through job loss and subjugation. The cultural variation of trust and risk associated with robots has important managerial implications in cross-cultural service marketing. Since the uses of robots is related to cultural attitudes that differ across contexts, the marketing of services involving robots must address local cultural issues that frame trust and risk issues when promoting the market service. This is because trust is a central to customer evaluation of service quality and relationship commitment towards the service (Sharma and Patterson 1999).

### **Literature Review**

While technology plays an essential role in consumer society (Kozinets, Patterson, and Ashman 2017), no technology has captured consumer imagination quite like the robot (Ford 2015). However, the potential of robotics – like all technologies – is ambiguous (Orlikowski 1992). Spurring utopias and dystopias, robots constitute a critical case for exploring ideas about societal progress and/or decline through consumption (Rosenberger and Verbeek 2015).

News media are a key site for such definitional battles about positive and negative outcomes of technological innovation that impact consumer meaning-making about trust and risk (Humphreys and Thompson 2014). Beck (1992), for instance, notes that news media play an essential role in structuring and disseminating knowledge about science and technology, and states that “risk society is in this sense also the science, media and information society...here lie the essential sources of the definitional struggles over the scale, degree and urgency of risk” pertaining to technology (p.46). In extension of risk and trust, media coverage of robotics is therefore inherently ‘future-oriented’ and the meaning of robot consumption framed by the imagined “political arrangements of the future” (Beck 1992), just as consumption takes up an instrumental orientation through “speculation about the future” (Campbell 1987).

### **Methods**

Employing methods developed by Humphreys and Thompson (2014) for exploring consumer risk, this project will eventually combine qualitative and quantitative discourse analyses of news articles on robots in major British and Danish daily news outlets to unpack the cultured nature of trust and risk in regard to robots. In this paper we present the qualitative analysis from a pilot study of 276 British newspaper articles and 283 Danish newspaper articles covering the period from 2000 to 2015. We coded the two corpora for trust and risk to demonstrate discursive variation across the two contexts (Richards 2015). Rather than restricting the data collection and analysis based on an etic definition of a ‘robot,’ our grounded approach reveals the emic meaning of robots in the two contexts and shows how contextual circumstances frame potential dangers, payoffs, and uses of robots in market services. The analysis includes all major, Danish, national newspapers: Berlingske Tidende (now Berlingske); B.T.; Ekstra Bladet; Information; Jyllands-Posten; Politiken; and Weekendavisen and major British newspapers: The Daily Telegraph, The Guardian, The Independent, The Financial Times, The Sun, and The Mirror. The two corpuses were coded for trust and risk towards the future respectively.

### **Findings**

#### *Denmark*

In Denmark, a robot is often envisioned as a future ‘little helper’ or as ‘welfare technology’. One newspaper article in Jyllands Posten notes that “Robots are gradually sneaking their way into our lives. Not as strong, stiff-legged things [...] but as little practical helpers” (Jyl.po.

Sept 18<sup>th</sup> 2011), while another holds that, "Over the next decades these little helpers will become an ordinary feature of our homes... The first so-called welfare-robots" (Jyl.Po.Feb 2nd 2012). Robots are envisioned as an active part of welfare society and often run by the state: "in the future they [welfare robots] will be an even more stable constituent of society." (Berl.Tid. April 4<sup>th</sup> 2008). This quote envisions robots changing society gradually rather than causing a revolutionary upheaval. Also, it becomes clear that while robots are currently designed for specific behaviours, they will be able to solve an abundance of different tasks: "Around the turn of the millennium robots began increasingly to be present around people, and during the next decades these little helpers will become an ordinary part of our homes [...]. The first welfare robots will [...] be assigned to solve specific issues, but in time the robots will become more versatile "home helpers"" (Jyl.po. 19th Feb 2012).

Some media discourse suggests that the purpose of robots as welfare technology is exactly to promote inclusion into 'fællesskabet,' i.e. community or 'gemeinschaft'. To explain this, the article describes the 'little helper' as an "equality gadget" and "good old-fashioned example of what welfare technology is. It is the gadget, which means that a person need not sit in the corner and be excluded, but instead can sit in the middle of the community and participate on equal footing with others. This is the challenge for welfare technology" (Information Feb 23<sup>rd</sup>, 2010). Robots as "welfare technology grant us the opportunity to improve the terms of our everyday life. At the same time it may assist in solving some of the societal challenges in the future" (Politiken 14<sup>th</sup> May, 2011). Robots as 'little helpers' hint at a context with a normative ideal toward avoiding vertical societal stratification. The term 'helper,' rather than servant or slave, flattens the social relationship to the technology. Here welfare has to do with emotions, inclusion, and togetherness: "There are many trials and experiments regarding welfare technology [...]. I would rather that we can provide loving and affectionate care by having a robot vacuum cleaner than spending our time hoovering" (Politiken 5th Feb, 2012). Robots thus become a moral calculation about state-citizen relations: "Where do you set the limit on how much welfare the elderly should participate in... We must first and foremost ensure that there is dignity for the elderly and that the elderly feel appreciated and valued" (Politiken 5<sup>th</sup> Feb, 2012). Thus, the welfare technology or 'little helper' becomes a gadget that promotes or assists this existential or qualitative directive towards 'fællesskab' or gemeinschaft in the future.

The danger of robotics lays in the risk of alienation in society: "You cannot leave an elderly person in a corner and wait. You must have a full life, and human intimacy is an essential part of that" (Politiken 5<sup>th</sup> Feb 2012). As one article notes with horror: "Grandma's

best friend is a robot...it is practical...but when we cross a certain limit, then it is not ok anymore. We don't want antisocial people who only connect emotionally with a lifeless object" (Pol. Nov 15th 2001). One article notes that: "Robots and other helping devices may potentially replace some of the hands (sic) ...that Denmark will need in the future." (Information 23 sept 2010). 'Hands' are not just a metaphor for the amount of labour available in society, i.e. a quantitative notion, but also regards the quality of the labour performed: "There will always be a need for humans that do what humans are good at, namely caring and emotional connections ....Some tasks can be done better [by robots] and are less prone to error than when people do them. Other tasks can be done more cheaply by robots [who have cold hands,] so the warm hands can be used for caring..." (Ber. Tid. 5th July 2010), or as another article notes: "Hands hold hands and robots clean" (Pol. May 14, 2011). Often robots will be articulated as promoting loneliness and isolation, which are anathema to Danish conceptions of social coherence and the good life, even to the possibility of being a person. Here robots prevent or get in the way of communal participation, wherefore future robot hands are often articulated in negative ways: "...a robot with diode eyes and claw hands would look after us." (Jyl.Po. 26th oct 2012). Against this, defenders of the technology will go to extreme lengths to disarm this discourse by reframing the robot's frigid digits: "It is strange to question whether the new technologies can save us when we need warm hands in the future. Personally, I would rather, when I get old, have an electrically heated robot-hand wipe my behind than another person." (JP Aarhus 19<sup>th</sup> April 2012). We can, for instance, read that: "When the health sector can't find enough "hands", then why not let robots ... help ...[W]e merely have to get used to the technology in a new and clever way so that it creates welfare...this is about creating trust and confidence in each other...it must grow bottom-up, so that those involved are able to create a collective consciousness that it is to their advantage, and solidarity in introducing technological solutions." (Pol. May 14, 2011).

### *Britain*

Robots in the British media are promoted through a utopian narrative of technology-as-liberation from class society. This draws on nostalgia about privileged, upper-class living of the past and liberation from mindless, repetitive, manual labour in industrial society: "There was a burst of optimism in Britain in the 19th century - among some thinkers, at least - about the future liberating effect of machinery on humankind. ... Now the quiet, behind-the-scenes growth of robot labour offers hope that the optimism might, after all, have been valid." (The

Guardian August 28, 2000). Another article also invokes the past to describe the utopian prospects of the future by asking: “Will the coming revolution make work optional, giving us rich lives filled with leisure, even “creating Athens without the slaves”, as the former Conservative cabinet minister Peter Walker put it...?” (The Guardian, November 10, 2007). Note, unlike Denmark, the connection between robots and abrupt, drastic societal upheaval through the word ‘revolution’. This also applies to the future potential of robots: “Those prophets ... who predicted the homes of the future would find much to be disappointed by in the average house today. We still dress ourselves, cook our own meals and vacuum our own dusty floors. Where are the robot servants we were promised?” (The Daily Telegraph June 11, 2011). The British data articulates robots through the prism of a starkly hierarchic, dyadic class society. Thus, the society of the future: “would be a world of robot butlers.” (The Independent, February 4, 2009). If everybody has a robot butler, nobody will be lower class. The narrative of the robot as a future slave or submissive servant is given every kind of expression imaginable. One article expresses the desire to have a grovelling, submissive servant by suggesting “... a robot butler [that] comes to greet its master or mistress with cheery inquiries about their day at the office before announcing what has been happening at home.” (The Daily Telegraph April 12, 2008). Another article notes that: “In many ways, these systems do exactly the same jobs as used to be performed by domestic staff [...] Mind you, just as with real-life maids and butlers, it's important to establish at the outset who's the servant and who's the master” (The Daily Telegraph June 11, 2011). The imagination of robot futures not only draws on ideas about past upper-class living through the image of the butler, but every kind of service personnel available to the aristocracy and the wealthy. Domestic help therefore also includes robots as posh assistants. The ‘concierge’ is often mentioned: “... anyone hoping to hand over the cleaning to a mechanical servant is likely to be disappointed: the domestic robots that will appear shortly are information assistants... Wakamaru also acts as a housekeeper or concierge...” (The Guardian November 27, 2003). Again, the upper-class image of formal wear and white velvet gloves comes to mind. Another instance is the notion of the personal chef that you command, and which serves you in performing tedious everyday chores such as cooking: “She orders dinner from the kitchen chefbot - sushi today, using a recipe from a Japanese website...” (The Guardian, January 5, 2007).

The potential for a mechanical revolution or uprising creates a sense of class-based claustrophobia: “Unseen, digital and electronic, these robots are beginning to operate quietly and reliably behind walls, beneath floorboards and under the very foundations of our homes. What's more, these invisible maids and butlers don't just do the normal household chores.

They are domestic engineers, who will help control exactly how much fuel your house consumes, in which rooms and at what times of day.” (The Daily Telegraph June 11, 2011). Unlike welfare robots who help in Denmark, British robots are articulated in a vertical master-slave relationship. The human upper-classes thus come to feel the suffocating revolutionary pressure of the robot underclasses. Robots may take away all the privileges at hand now, placing human beings as a lower class or even as slaves. It is important to note that robots-as-butlers is one out of two basic categories of robotics in the British data. As one article observes about the emic categories of robots: “There are already enough of them to be divided into industrial robots - which stay in one place and move their arms about a lot - and service robots, which trundle around on wheels but don't have any arms, and are used for vacuum cleaning, watching for burglars, or mowing lawns” (The Guardian August 28, 2000). But what does this mean in a service economy?

One imagination of robot technology in the future could be human subjugation: “The robots are not so much coming; they have arrived. But instead of dominating humanity with superior logic and strength, they threaten to create an underclass of people ....” (The Independent December 19, 2008). The danger of being goaded by technology into serfdom generates a huge potential for social conflict and confrontation: “We hear a lot of people talk about the question of "have" and "have not" and it's certainly a real problem. Rich people can afford technology and poor people can't” (The Independent February 14, 2000). So, on this account, the very possession of the technology becomes a source of conflict. Perhaps, as is the case with real domestic help, only a certain section of the population can afford the butler-robot. Later it will become clear that this relates to the inherent competition from industry robots, which may even put working people in the dole line. More importantly yet is the perceived inevitability of this process: “Eventually a stage may be reached at which the decisions necessary to keep the system running will be so complex that human beings will be incapable of making them intelligently. At that stage the machines will be in effective control. People won't be able to just turn the machines off, because they will be so dependent on them that turning them off would amount to suicide.” (The Independent March 15, 2000). Technology thus inscribes itself into a material historical necessity inevitably marching toward a future cataclysm.

### **Discussion**

Our findings show how the imagination of the future plays a prominent role in presenting issues of risk and trust when using robots for cutting edge services. In media representations,

robots can be seen as “unfolding in time” (Giddens 1979), and therefore belong to the “temporal aspects of the constitution of social systems” (Giddens 1979). However, the meaning of robots and their impact on issues such as trust and risk draw in material and political assemblages about the future. In Denmark the infrastructures of the welfare state frame notions of equality and provide a discourse through which to imagine the future. In contrast, in Britain, it is the political and material assemblages of class society that provide a discourse through which to imagine the future. As a result, the utopian service robot would look very differently and perform very different functions in Denmark than it would in Britain. In Britain, consumers hope for a robot butler to serve them in a vertical relationship of mastery, while in Denmark, they hope for a helper to free up their time to engage in meaningful community with others in a horizontal relationship of recognition. These different hopes have important implications for the design and marketing of service robots. Being aware of the cultural anxieties about a future society with robots is also important to understand for marketers to avoid making the wrong cultural reference when designing and selling service robots. If the primary engagement of services marketing is the creation of long-term, value-laden relationships with the consumer (Rust and Huang 2014), then cross-cultural dissemination of robotic services must take into account the cultured nature of consumer-robot relations. In extension, consumers will have difficulty in evaluating service quality or even engaging with the robot service even after purchase and consumption leading to service abandonment if cultural framing of robots is not done correctly.

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