Robot Relationships within Communal/Exchange Service Contexts: <u>A Working Paper</u>

Short Abstract:
Emergent technologies are rapidly transforming the nature of services and service experiences. One particular area predicted to have a significant impact on these is the integration of robots into service systems. However, extant literature on service provider-user encounters and their consequential relationships implicitly assumes that the key social agents involved are primarily human. This proposed research will address this gap by investigating the extent to which robot anthropomorphization/animacy influences user perceptions of competence/professionalism and/or social cognition. It considers the impact of these on provider-user relational trust within contrasting service contexts. Specifically, using an innovative methodological approach, it will examine the extent to which 'communal' and 'exchange' contexts are influential on relational development intention and the type of relationship sought by service users.

Key words: Robots, Service Systems, Anthropomorphization

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Introduction and Research Aim
Evolving technologies are rapidly transforming the nature of services, service customer experiences and potentially, the essence of relationships between customer and service provider (e.g. van Doorn, Mende, Noble, Hulland, Ostrom, Grewal and Petersen, 2017). One area of technological advancement that service researchers predict will have a significant impact is the 'melding' of robots into service delivery processes (Galeon & Reedy 2017). The global market for robots operating within consumer and office applications is estimated to reach US$1.5 billion by 2019 (Business Insider, 2015). However, within service provider-customer encounters, extant literature implicitly assumes that the key social agents involved are still primarily human (e.g. Bitner, 1990). Consequently, this research intends to address this gap by empirically investigating customer-robot relationships within service contexts.

Robots as Service Providers
Robots are autonomous devices, imbued with artificial intelligence (machine learning algorithms). Whilst the potential and reality of industrial robots to replace humans within manufacturing contexts is being realised, such replacement is increasingly occurring within a more diverse range of contexts including progressively more complex service provision (e.g., Ford 2017)**.** These technologies render new types of service experiences to customers and potentially change the nature of interaction between customers and organisations through ongoing service encounters. Current prototype applications of robotic technology already encompass robot waiters in restaurants and robot caregivers for the elderly. Whilst some robots, enabled by the Internet of Things, are both ubiquitously and inconspicuously operating within their environment, others are made visible through novel interfaces and touchpoints (Pigini et al, 2012). Increasingly, some categories of robot are providing both cognitive and affective support (di Lieto *et al* 2017) exhibiting the capacity to provide emotional agency for human consumers (e.g., Boden 2017). Such technology includes robots that reflect both anthropomorphic reasoning and anthropomorphic appearance based on human psychophysiological traits (Belk forthcoming). What makes such applications particularly pertinent to service providers is the increasingly human-like ways in which these devices are able to systematically and effectively engage with customers. Indeed, there is evidence to suggest some have the ability to evoke social cognition whilst simultaneously making a customer '*feel the presence of another social entity*' (e.g. Biocca, Harms & Burgoon, 2003). This then raises interesting questions as to when and to what extent this is appropriate in service provision.

Robot Anthropmorphization, Animacy and Service Provision
Anthropomorphization is the humanization of anything non-human by attributing it with human traits such as emotions, behaviours, features and characteristics. From a marketing perspective, visualization techniques encompassing anthropormophization have long been used to humanizie products and packaging so as to evoke affective responses and build relationships (e.g. de Visser, Monfort, McKendrick, Smith, McKnight, Krueger & Parasuraman, 2016). Latterly however, research suggests anthromorphic features may also be perceived as sociable (e.g. Li, Rau and Li, 2010). Whilst the extant services literature has recognised the ways in which service providers are perceived as demonstrating emotion, empathy and human-level understanding has the potential to evoke positive affect and user feelings of attachment (e.g. Sierra & McQuitty, 2005), the notion of infusing automated social presence into service encounters to evoke the perception of a conspecific presence is gaining increasing attention (Goudey & Bonnin 2016). However, within some service

contexts, user-perceived provider competence may be a higher priority than social interaction and indeed, social presence. Research suggests a robot's animacy but not necessarily its anthropomorphization will influence user-perceived levels of intelligence and/or competence. Animacy refers to the notion of being 'lifelike' particularly in relation to 'movement and intentional behaviour' (Bartneck et al, 2010). This then raises interesting questions as to the nature and extent that robots should be imbued with anthropomorphic and/or animacy attributes given the nature of particular services, user expectations, prioritisation of service provider attributes and the consequential propensity of customers to form user-provider relationships within a range of contexts.

The Role of Relational Context
Customer service relationships involving robots potentially represent a unique and distinct phenomenon. Consequently, current service and relational marketing theory does not adequately capture the essence of such potential relationships and how these may vary relative to service context. Current literature suggests that within many service contexts, 'communal' and 'exchange' relationships are influential not only on relational development intention but also the type of relationship sought (Clark and Mills, 2011). Within a communal relational context, people anticipate partners will have a '*genuine concern for their welfare… be kind and responsive…not be motivated primarily by reciprocation and profit maximisation*' (p.49). In contrast, exchange relationships imply a quid pro quo often accompanied by a '*request for prompt repayment for received benefits*' (Clark and Mills, 2011) and a focus on professional competence (Sandberg, 2000).

Taking this into consideration, the aim of this research is:
> *To investigate the extent to which communal versus exchange context and robot anthropomorphization/animacy influence the nature and dimensions of customer relational trust.*

Proposed Methodology
For potential respondents to visualize service systems employing robotics that do not currently exist is challenging. To address this, a three-stage approach is proposed: first, scoping potential applications of robotics within communal and exchange relational contexts; second, developing and testing scenarios based on these and third, conducting a quantitative survey.

The first stage will involve identifying and evaluating a breadth of current and emergent robotic technologies and classifying these by potential use within communal and exchange service contexts. Storyboards and scripts that depict scenarios of robotic technologies will be developed. An experienced film producer/director will be briefed to translate the storyboards and scripts into short films using machinima filmmaking techniques to animate visuals. Machinima (machine-cinema) is a relatively low cost creative medium that uses 3D computer game graphics such as Second Life® to make high definition animated films. A voiceover describing the characterizations, scenes and actions will be used to add depth. There will be two identical versions of each film within each context except that one film version will have been manipulated to portray robots with higher levels of anthropomorphization/animacy. The resulting filmed scenarios will be used as a projective tool for use in subsequent phases of the research. The results of the qualitative research will inform the development of a conceptual model which we will then test using an on-line quantitative survey encompassing an experimental two by two approach.

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