

Social Robotic Experience and Media Communication Practices: An Exploration on the Emotional and Ritualized Human-technology-relations

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ABSTRACT

This article approaches the subject of social robots by focusing on the emotional relations people establish with media and information and communication technology (ICTs) in their everyday life. It examines human-technology-relation from a social studies point of view, seeking to raise questions that enable us to make a connection between the research on human relationships and the topic of human-technology relation, especially human-humanoid-relation. In order to explore the human-technology-relations, theoretical ideas of a mediatization of communication and of a ritual interaction order are applied. Ritual theory is particularly used to enable a focus on emotion as a significant dimension in analyzing social technologies. This explorative article refers to empirical findings regarding media communication practices in close relationships. It argues that following the developed approach regarding mediatized and ritualized relational practices, useful insights for a conceptualization of the human-social robot relation can be achieved. The article concludes with remarks regarding the challenge of an empirical approach to human-social robot-relations.

KEY WORDS: social robots, (mobile) media, information and communication technologies (ICTs), mediatization, interpersonal relationships, ritual interaction

HUMANS, TECHNOLOGY AND SOCIAL INTERACTION PROCESSES¹

As technologies and media have become an important and, for some people, even a natural part of everyday life, the questions about the relations humans develop with technology is a topic of increasing significance. Ideas and approaches from several academic disciplines are relevant to this discussion, and efforts to bring those together within an interdisciplinary framework offer a deeper understanding with regard to future developments. This article approaches the subject of emotion and social robots by focusing on the emotional relations that people establish with media and information and communication technology (ICTs) in their everyday life. Nowadays we face a situation where media and technology have become an integral part of the social processes. Furthermore, aspects of a hybridization of the human body and machines became a critical issue discussed in literature such as in Fortunati (2003), Katz (2003), Fortunati, Katz, and Riccini (2003), and Longo (2003). Following on from this earlier literature this paper aims to explore the conceptions of mental processes and the construction of relational action, as well as the production of (inter)subjective meaning and the creation of human-technology relations.

In order to develop this approach, some clarification of essential concepts is needed. Working in a highly diverse and interdisciplinary field and using the theoretical and empirical instruments of social studies, an important differentiation has to be made between human-humanoid interaction and human-machine interaction (Zhao, 2006). While human-machine interaction is referring to the people's usage of technology as instruments, human-humanoid interaction is describing how people interact with technology that is designed to interact with humans in a human like way. Following Zhao (2006), we can consider social robots as robotic technologies that can have a mechanical or digital form, and have been designed to be interactive and autonomous. Humanoid social robots have the pretense of facial expressions, voice or gaze directions to give the appearance of interacting with humans in a humanlike way, and their designers aim to imply emotional aspects within the interaction. Furthermore, there are social robots that are built in order to interact with humans following the norms of human-animal relationships: Robotic pets like Paro (Shibata, Yoshida, & Yamato 1997; Kidd, Taggart, & Turkle 2006) and AIBO (e.g. Melson, Kahn, Beck, & Friedman, 2009) have been researched for some time now and it was shown that people can engage in interaction with those social robots. If one is applying the broad definition of social robots as digital interactive forms, we can include sophisticated information and communication technologies (ICTs) in the analysis: People, for example, interact verbally with their cars or navigation devices and with their smart phones (e.g. the iPhone 4S function SIRI). This is one example of how everyday technology is transcending the borders and connections between humans and technology (Sugiyama & Vincent, 2013) and can be one relevant starting point of further investigation.

These illustrations highlight what the technology developers consider important for the humans who interact with the technology. Being aware of the impact and relevance of the question as to how social robots can interact with humans effectively or be humanlike, this paper takes an approach distinct from that of human-technology relation as a whole. It seeks to raise questions that enable us to make a connection between the research on human relationships and the more recent topic of human-technology relation, and especially human-humanoid relation. While the field of computer science focuses on the development of robots and systems (e.g. Hudlicka et al., 2009), the analytic perspective that a sociological perspective can bring to the discussion merely concentrates on the relation between human and robots-related technology. This perspective does not only include the actual situational context of an interaction episode but also implies increasingly relevant

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aspects of actual relationships established between humans and humanoid technology. Herewith a research perspective, close to an interpretive social studies point of view, will be used to enable a broad focus on the social processes that occur when humans interact with different forms of technology. Therefore the term human-technology relation, and for more concrete cases, human-humanoid relation will be used in the present paper.

As one might expect, research on social robots has no particular bearing on ideas explored in science fiction. Indeed, the questions raised by studies in different academic fields are very much related to technological, economic and social phenomena that are actually occurring or are expected to occur in the near future. Nevertheless, being especially interested in the social aspects regarding the arrival of social robots in people's daily lives, as well as the impact of increasing robotic experiences, a consideration of some of the more sophisticated fiction might be useful as an inspiration and impetus for academic research. Accordingly I would like to reflect here on the work of the distinguished filmmaker and writer Stanley Kubrick. For years, his work has been influential and progressive asking fundamental questions about human existence and nature. The aspect of human-technology-relation is particularly relevant in his film *2001: A Space Odyssey* from 1968. This movie describes the human evolution in an experimental and nearly philosophical way and highlights the moment when prehistoric men come to be able to extend their actions by means of objects that are becoming instrumental. A famous scene in the film shows how a sapient uses a bone as a weapon for the first time and triumphs on this achievement. The film links this sequence to the future spaceman-Odysseus "Bowman" (in the imagined year 2001) and his interaction with the humanoid voice of the computer "HAL." As the story progresses, the question arises as to the extent to which the human and the computer differ regarding their emotion and cognition, and furthermore, whether we can actually address technology as pure instruments. With this film, Kubrick has articulated questions of the role that technology plays in a process of human evolution as well as the role it plays as an important driver of human society to a broad audience. Since *2001: A Space Odyssey*, Kubrick pursued his work on the topic of artificial intelligence as well as the question of how robots themselves might come close to human existence, especially by gaining the ability to feel emotions. He finally gave his project over to Steven Spielberg who, based on Kubrick's ideas, created the movie *A.I.* that was released in 2001. It is the story of the child robot "David" that is made to love his human adoptive mother "Monica." Realizing that he is not a human but rather in a sub-normal condition, he undergoes his very own Odyssey trying to become a real human child and hence winning the love of his mother back (see also Turkle, 2007).

Kubrick's cinematic discovery highlights one special aspect of the topic: emotion. This aspect will be an important facet of the following analysis. Beyond cognitive abilities, research in various disciplines generally agree (e.g. from the perspective of robot development and research: Hudlicka et al., 2009) that emotions are a key element of the research on artificial intelligence, robots and social technologies. The present paper develops a perspective using theoretical ideas drawn from interpretive sociology, psychology as well as media and communication studies taking several steps. Firstly, it reviews the state of research on mobile communication, relational presence and mediatized interaction. Secondly, it applies the ideas of a mediatization of human relationships to human-technology relations. It then introduces ritual theory as an approach to social technologies and emotion showing how empirical findings regarding media communication practices in close relationships are connected to those theoretical conceptualizations. Finally concluding remarks regarding the challenge of an empirical approach to ritual interaction practices in human-social robot-relations are discussed.

MOBILE COMMUNICATION, RELATIONAL PRESENCE AND MEDIATIZED INTERACTION

Research on mobile communication has profoundly contributed to a new understanding of communication mediated by technology in the ways we communicate, think and feel about other humans, technology, and ourselves. ICTs have become a natural part of our everyday lives and a means of expressing identity and emotions (Katz, 2003). The advent of mobile communication technologies has brought new qualities of people connecting and feeling connected with each other. Licoppe (2004) described a notion of connected presence, as mobile communication technologies enabling an ongoing contact with others. At the same time Kenneth Gergen's concept of absent presence (2002) (see also Fortunati, 2001) highlights the sharing of people's attention between their present physical communication space and a virtual communication space elsewhere. Research on mobile communication has opened the door to sophisticated questions of changing individual human's interactions with each other, and, by extension, changing human interaction with technology and their relation to technology.

Social robots can be conceived of as a conceptualization transcending the borders and connections between humans and technology as Sugiyama and Vincent have developed in the introduction of this issue (Sugiyama & Vincent, 2013). Taking a look at the state of research, one can start to work on this topic using diverse approaches. Mobile media has especially been the focus of many inspiring studies on everyday communication changes in the last few years. Recent development, not only on the technological and economic side, brings further changes to media communication practices. The distinctions between mobile and computer-mediated, and also between mobile and what has been traditionally labeled as "mass communication," have become blurred. Those developments after all promote sustainable empirical research, and allow us to develop theoretical concepts that cover communication/social practices with technologies more deeply.

Today we are facing enormous processes of change in relation to digitalization and world-wide diffusion of media and ICTs. Furthermore we can speak of a new dimension of connection because we do not isolate technologies any more, but rather, consider them as a part of an integrative communication network. According to Krotz (2007), there are three kinds of communication processes that can be schematically differentiated: mediatized interpersonal communication, interactive communication (between human and intelligent technology), and production and reception of standardized, generally addressed communication (p. 17). The concept of mediatization of communication processes is particularly pertinent here (Krotz, 2009; Lundby, 2009). This process of mediatization can be conceptualized as a background of changing media including the level of relationships and identities. Mediatization has to be focused in relation to other meta-processes like individualization, mobilization or globalization. A perspective on mediatization demands aspects of societal change to be included in an analysis of human interaction with media and technology so as to understand those relations entirely. Mediatization considers human-social robot interaction as interactive communication and even focuses on the expansion of interaction opportunities. The question that accompanies this assumption is what kind of transformation combines with the increase of mediatization in comparison to basic forms of direct communication. This concept can be helpful not only to understand forms of human-social robot relation but also to bridge the sociological and communications research that has been accumulated in the emerging field of human-humanoid interaction.

THE MEDIATIZATION OF HUMAN RELATIONSHIPS AND HUMAN-TECHNOLOGY RELATIONS

As we observe a shrinking distance between ICTs and the human body, how machines imitate and simulate human beings cognitively and affectively (Fortunati & Vincent, 2009) needs to be discussed. An essential step to examine the affective side of human-technology interaction is to consider a perspective on social relationships assuming that the principles people practice with other humans are connected to the interaction practices with technology and machines. Reeves and Nass's (1998) media equation thesis that gained much attention in the late 1990s takes this perspective, postulating that people treat technology like they treat other humans. The approach here is different in that human interaction is conceptualized as much more complex (Duck & McMahan, 2009). Human interactions, especially relational practices, are processes of meaning construction and of creating symbolic (inter)subjectivity.

It has been argued that there is an important connection between the evolution of ICTs and the practices of social relations. We live in an age with enormous processes of change and interconnection of technology and human interaction. Considering face-to-face-communication as a prototype of all human social interaction (Berger & Luckmann, 2004), a particular focus should be directed toward social practices, and therefore, toward human relationships. Human communication is regarded as symbolic action and, referring to the seminal work of George Herbert Mead (1967), is the basis of ongoing processes of role taking and construction of identity via seeing oneself through the eyes of significant others. The development and maintenance of relationships is connected with interpersonal communication. With mediated interpersonal communication, there is the necessity to negotiate media and technology rules and arrangements (Höflich, 1996, 2003; Schlote & Linke, 2010). The question raised here is whether these rules, bargained in interpersonal communication between humans, also apply to anticipated situations when people interact with technology and social robots. In answering the question, it is important to differentiate between general norms of communicative action and idiosyncratic rules. While general norms and rules are established in a cultural context and apply to every member of a society, idiosyncratic rules are negotiated in specific interaction and communication situations as well as in the specific context of a relationship. This means, furthermore, that those rules might only apply to a concrete communication partner in a specific situational context. Those kinds of rules are much more flexible because they develop according to the evolution of a relational bonding. They are relation specific negotiation. From here we can ask if one can apply this thought to an idea of idiosyncratic rules established in a human-social robot relation and have a research agenda to answer this question. For example, to what extent do people establish specific rules and habits in their interaction with social technologies, such as their smart phone or a robotic pet? What subjective meaning has the ongoing interaction that follows these specific rules or course of action? How do they respond to the (more or less) autonomous interaction modes that social technologies and social robots follow and to what extent do they accept them to be specific for their own personal interaction with the technology?

Close relationships between humans can be described as exclusive and engaging connections between people (Lenz, 2006). They can be characterized in regard to specific dynamics and developmental stages (Duck, 1990) and also in connection to media communication patterns (Höflich & Linke, 2011). Thinking of relationships as communicative and mental processes, the communication between humans is integrated into their daily routines and grind, and is part of complex negotiation processes that are part of creating a shared everyday life. In doing so, people establish a mutual reference system regarding their everyday and long-term communicative action. The question arising from here is how these categories and concepts can be applied to human-technology interaction, and furthermore, if those ideas can be fruitful to explain new practices. This

question is actually not new at all, as we do know that people's life worlds are steeped in media and technology. This process has been conceptualized with the idea of a domestication of ICTs in people's everyday lives (Silverstone & Haddon, 1996), and research in this tradition has shown how media technologies are appropriated in the course of shaping everyday practices.

Another important theoretical assumption is that the mental and communicative processes in close relationships are significant for the interpersonal construction of identity and reality (Berger & Kellner, 1964). Human relationships are thus constantly changing and evolving through communication, and are connected to the social order of interaction by an updating process of communicative structure (Goffman, 1989). Berger and Kellner (1965) emphasized the impact of everyday conversation between partners in their classical work on the construction of identity in marriage. They argue that the mutual buildup of a couple's identity constitutes the state of *nomos*. *Nomos* can be understood as an arrangement in which the individual feels safe and at home in the world. Duck and Pittman (1994) have enhanced these ideas and shown that partners do mentally create their relationship based on their inter-subjective constructions of meaning. Relational interaction depends on the representation the persons have of the relationship and is oriented beyond single situations. Therefore, relationships have to be understood regarding the dyad, and the important focus is the relational level rather than the individual level (Duck, 1990). This implies that a theoretical as well as empirical research attention has to focus not only on the individual but also the mental construction of the relationship by each of them. Furthermore, beyond this individual level, the processes of inter-subjective construction that are related to the communication between the partners need to be considered. Technology, more precisely, media and communication technology, is becoming a more and more natural part of people's everyday life and communication. They might also be a part of processes of relational construction. Promoting this idea further, we need to elaborate how technologies are conceptualized as social robots, and have to ask the question of what this development means for human's relational practices and construction of identities.

As communication is a part of the processes of construction, or to put it in another way, the processes of mental creation, we not only need to pay attention to the relevance of media and ICTs for these processes but also ask if these practices are becoming essential for the ways people interact with social technologies because media and ICTs are fundamental for human relations and society. It has been demonstrated that mobile media communication practices can be analyzed as an element of the state of *nomos* and is connected to the ideas of Berger and Kellner (1964). This conceptualization enables one to think of mobile communication as ritual action that grants the potential of social cohesion and to foster relationships to the mobile phone (Ling, 2008). The following section builds on this point, and furthermore, asks if these principles can be useful not only to explain new ways of social coherence but also to understand new forms of social relations between humans and technology.

RITUAL THEORY AS AN APPROACH TO SOCIAL TECHNOLOGIES AND EMOTION

In order to explore the topic, ideas of social constructivism and the ritual interaction order serve as an important theoretical base. Following the idea of creating mental representations of relationships (Duck & Pittman, 1994) and the mutual buildup of relationship identity (Berger & Kellner, 1965), we have to consider the impact that an ordinary conversation has on people's everyday life. Relational partner's constructions of meaning are a part of their mental creation of the relationship. Those conversations are also enacted and mediated, and therefore, this theoretical idea has to be further explored to see whether there are changing moments of the "old" social practices. Rituals play an important role in relationships as forms of face-to-face communication (e.g. Brues &

Pearson, 2002) as well as in forms of mediated communication (adaptation for mobile communication: Ling, 2008). According to Albert Bergesen (1999), we can differentiate among three levels of human rituals: the macro-level connecting to the Durkheimian ceremonies, the meso-level of interaction as described by Goffman (1989), and the micro-level of language codes that is inherently a part of the higher levels. The three levels of rituals are interconnected and people do enable another relation by taking part in rituals through their daily routines and even through their lives. This bonding at the different levels over time is called ritual interaction chains (Collins, 2004). Ritual theory inherently includes the idea that social principles become meaningful beyond human interaction, especially as symbols of the social ritual order are created to stand for its social implications and are recognized by the individual.

This principle can be applied to social robots and complex ICTs. Emotion is described as a basic ingredient of a ritual, which can be thought of as a “mechanism of mutually focused emotion and attention producing a momentarily shared reality, which thereby generates solidarity and symbols of group membership” (Collins, 2004, p. 7). Those mechanisms might be working beyond the age-old situation between co-present humans, not only in mediated settings but also in relations beyond human interpersonal settings. A ritual theory approach enables an integrative understanding of the diverse findings, questions and also problems regarding the research object of media communication practices. Following this approach, my argument here it that, we can further gain useful insight by adapting the conceptualization of ritual action to the human-social robot interaction. For example we can ask what subjective meaning and emotional bonding are created by people engaging in ritualistic interactions with their SIRI function of their iPhones or analyze people’s build-up of specific and maybe idiosyncratic ritualistic interactions with their car navigation system in their everyday life. Regarding robotic pets, past research (e.g. Kidd, Taggart, & Turkle, 2006; Melson, Kahn, Beck, & Friedman, 2009) suggests that human-robotic pet relations potentially involve affective and socializing functions especially when robotic pets are interaction partners in human groups. Miklósi and Gácsi (2012) even argue that conceptual emphasis of research and design of social robots should be on the interspecific interaction between humans and social robots as social companions.

Rituals can be understood as social processes that include symbolic, performative, active and emotional moments. As already mentioned, they can be systematically differentiated by means of three levels. A connection across the three levels forms an ongoing repetition and enhancement of the ritual actions, and develops ritual interaction chains where a ritual order is grounded in everyday life (Bergesen, 1999; Collins, 2004). From this idea, we can formulate research questions highlighting the connection of people’s media communication practices and their social experiences with technology, especially with (humanoid) robots. A hypothesis that can be formulated from here is that there is a complex interrelation among human media communication, robotic experience and ritual interaction practices.

Findings of empirical studies regarding close relationships and dynamic media ensembles have illustrated mental anticipation practices in close relationships that follow the mental mapping of time, space as well as the mobility and physical presence of relational partners with regard to their communicative media use in everyday life. Additionally there is an active negotiation of these aspects as part of communicative repertoires (Linke, 2010, 2011). These ritualized practices can be interpreted as an intensification of the mental representation of relational bonding and a connection between the identity construction processes and the mediatization processes of communicative action. The findings reveal that the mental creation of intimate relationships is transformed by the everyday media communication and interaction with technology. ICTs might increase social attachment between relational partners and strengthen relationships beyond actual communication. Relational practices are changing and evolving through our usage of technology. Technology is

increasingly becoming a part of our human relations. This development has to be closely analyzed regarding our relation to technology itself, and such an analysis can be very useful especially in regard to an understanding of human-social robot interaction. Hereby what is critical is not only the process of shaping everyday life communication practices with ICTs and social robots (a perspective according to domestication theory), but even more importantly, what this means for people as social human being in a ritual order. A ritual theory perspective integrates the analyses of different scales of social processes, and is therefore providing a fruitful framework to study human-social technology interaction and relation.

The communicative repertoires in close human relationships include sophisticated media communication practices, which have been established according to the everyday life requirements of the related persons. Empirical research reveals that partners in close relationships have different possibilities of contacting each other during the course of the day, even if they are in different places and engaged in different situations (Linke, 2010, 2011). These constellations create more actual contacts between the partners. Furthermore, it also became clear that there is an increasing mental representation leading to this potential of initiating communication. Hereby a ritual dimension of the mental representation and the potentially on-going communicative action is displayed. People performatively and meaningfully enact ritual elements on a linguistic level (at a micro-level of codes) and include them into interaction rituals (at a meso-level) as well as in ceremonial rituals (at a macro-level) as an embedding of mediatized communicative contact in partners' everyday life. Ritual action can be differentiated from habitualized action, as the mediatized contacts have a subjective meaning for the relational partners and include an emotional component. This emotional ingredient is again the important aspect that is connected to social robot-human interaction. Hence, the ideas of ritual theory would appear to be useful especially with focus on emotional impact.

Still, it is important to regard a perspective of multiple dialectics (Höflich & Linke, 2011), which considers the potential as well as the risks of media, which have been applied to achieve an analysis of robotic technology, and are sensitive to transformations of relational communication on different levels. In addition, it is essential to mention the possibility of social rituals failing. In the case of ritual practices between people with the usage of technology or rituals that humans establish in relation with social technology, there are possibilities of rituals failing, which results in them being empty in meaning and turning out as anti-rituals. Empty rituals can be understood as the rituals that were formerly working because they were once connected and functionally regarded as the relational construction of (inter)personal meaning, but gradually have become subjectively meaningless, unimportant or even annoying. An example could be a ritualized good-evening interaction, which was once experienced with emotional well-being by the person(s) but has lost relevance to (at least) one relational partner. Anti-rituals are social phenomena that perfectly fit with the above definition but do not serve social purposes because of rather negative interaction outcomes. An example might be events of flaming and discrimination that can manifest in a ritual way. This aspect can be noted as the dark side of the ritual interaction order and should be considered when applying the ideas of ritual theory for the analysis of human-social robot relation. This dimension might even be useful to gather a broad conception including light and dark shades, as well as benefits and problems regarding the social and societal impact of social robot experiences.

CHALLENGE OF AN EMPIRICAL APPROACH TO RITUAL INTERACTION PRACTICES IN HUMAN-SOCIAL ROBOT RELATIONS

The concept of absent present introduced by Kenneth Gergen (2002) has shown that mobile communication enables people to maintain virtually continuous contact and can be connected to the previously introduced findings and ideas. The on-going communication with relational partners as

well as the potential to contact them is making relationships immanently present. Developing this aspect further, one can ask if those practices work not only in relation to other humans including the relationally close ones but also in relation to technology and social robots considering what Turkle (2007) suggests about the relational artifacts. Exploring the ritual dimension of this mental representation practice, it is beneficial to consider Ling's (2008) thesis on how the ritualization of perpetual (mobile) media communication strengthens processes of social cohesion. Hereby, from my point of view, another central question arises that has to be addressed and discussed in the near future: How can we empirically approach these complex social phenomena regarding human-social robots relations? If we are interested in a deep understanding of technology and especially social robotic experiences in people's life, we have to develop integrative empirical research. The existing research on media and communication technologies in personal relationships is leading to some important consequences for empirical research regarding social robots, particularly the connection between humans and ICTs. The focus of an analysis should not be only on artificially isolated usage of technology. It is essential to cover the complex interplay between mental processes, as the sum of emotional and cognitive processes, and communication practices as a whole. Rather than focusing only on selected ICTs it is preferable to consider a broader ensemble of media and technologies. In this way it might be possible to achieve greater openness in the analysis of how this more complex relationship between everyday communication practices and technologies is shaping and shaped by people's everyday lives in the first place.

The concept of mediatization, and furthermore, ritual interaction theory have been applied here as fruitful approaches to enable research on human-social robot relations. This approach offers a broad understanding of interaction processes and the possibilities to focus on the relational rather than the individual level. Drawing on the concept and theory further empirical work would be beneficial, particularly ethnographic research designs focusing on innovative groups of people such as children and young people (Turkle, 2007). Such an approach facilitates a process of obtaining an insight into their thoughts on ICTs and their usage patterns as well as on their routinized and ritualized practices including ICTs and social robot technologies. At the same time, we should consider that research must not reproduce phenomena of social inequalities regarding the access, participation and competencies with ICTs, and furthermore, with social robotic technologies. This further supposes that theoretical and empirical approaches that are sensitive to culture and socio-structure have to be developed.

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