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ROBOHON

SOCIAL ROBOTICS

MOBILE MEDIA

SYMBIOTIC MEDIA

Social Encounters with Symbiotic Media Technologies

Bianca Westermann

Analyzing the humanoid-shaped smartphone RoBoHoN as a manifestation of a new and different relationship between users and today's media technologies, this paper suggests understanding media devices like the robot-phone as symbiotic media. This approach pays attention to the profound change in how contemporary media technologies reshape our everyday life: mobile media as well as social robotics renegotiate fundamental cultural boundaries (like presence vs. absence and so forth) as both reconfigure how social presence can be experienced. In simulating a social symbiosis RoBoHoN is an example of how contemporary media technologies profoundly question the temporal and spatial order of interaction and communication.

RoBoHoN is a cute little fellow: the smart companion, 20 centimeters in size, looks like a small, pocket-sized toy robot but is actually a smartphone in the guise of a humanoid robot, built by the Japanese manufacturer Sharp in 2015.[1] Though the unusual phone is an eye-catcher it might seem odd for many to hold that big-eyed, humanoid figure to one's ear and make a phone call or even to carry it in one's pocket. Although one could easily argue that RoBoHoN is a gadget that appeals (almost) exclusively to Asian markets, it might still be too early to disregard RoBoHoN just as a funny and cute gadget primarily designed to be a mere marketing gag.

Although the assumptions made above are probably all true, the smartphone-robot holds a deeper potential for insight. Located at the intersection between smartphone and (social) robot it is not only suitable for triggering some bigger questions, but also for pointing out how analyzing these only superficially differentiable technologies as two sides of the same coin allows a new perspective on their contemporary and future impact. Given this line of interest, this paper raises more questions than it will answer, especially as I am most interested in how contemporary and near-future media technologies shape our everyday environment.[2]

The fundamental hypothesis this article pursues is that RoBoHoN is symptomatic of a new, different relationship between user and media technology: it embodies a symbiotic relation at the level of social integration. What is changing with the advent of social robotics and the already common usage of mobile media is the status users can and do ascribe to media. In the recent course of technological progress, the range of features of media technologies has been extended: they offer ever more functions that appear to be more humanlike than machinelike. As a result, our notion of technology as well as of interaction and communication changes. The paper argues that these changes can be understood by analyzing smartphones and social robots as symbiotic media.

Due to this line of inquiry this article is not primarily interested in how RoBoHoN is actually used on an everyday basis. Rather RoBoHoN's sheer

1 RoBoHoN's appearance is in line with the design of Sony's robotic dog Aibo and other more or less known robots that rely on a scheme of childlike characteristics but should not appear too humanlike.

2 As a preliminary definition our *everyday environment* can be differentiated from our *living environment*: while the term everyday environment encompasses the sphere of our daily activities that are as we act available to us, the term living environment describes the threshold of our lifeworld that cannot be negotiated or changed. Thus, such a differentiation allows a more detailed localization of the ongoing changes caused by social robots and mobile media.

existence is read as a symptom of a profound change in how media technologies that shape our everyday life are understood. Central to my analysis of RoBoHoN is a video produced by the manufacturer Sharp to advertise the gadget's potentials.[3] Of course, as a promotional video it highlights and exaggerates the product's amenity due to its marketing purpose.[4] As a consequence the video tells more about the anticipated potentials of RoBoHoN than the gadget may actually provide. It is exactly this surplus of significance that is a symptom of the profound change in our everyday media technologies this article is interested in.

The contemporary (social) impact of mobile media as well as social robots can be described as the ongoing transformations of certain thresholds like presence versus absence, proximity versus distance, reality versus augmented reality, private versus public, as well as online versus offline identities. This list is far from being complete but it exemplifies that the impact these media technologies have does not manifest itself as an annulment of the boundaries in question but as their liquefaction, which demands social renegotiations of these boundaries.

What unites both mobile media and social robotics is that they reconfigure or renegotiate how social presence as a constitutive element of the world we inhabit can be experienced: this is especially true for the temporal and spatial order of medial interaction and communication. The main hypothesis is that these media technologies cause a specific change in how presence and absence are constructed, as both alter the modes of how social presence is experienced. Smartphones and social robots are both media technologies that create a kind of temporary space, which they obscure at the same time as they simulate some kind of social presence (without the physical presence of another human). This ambivalence of presence versus absence is the main commonality between interacting with social robots and communicating via the means of mobile media. As a result, the differentiation between interaction (in the sense of a mutual reference) and communication (in the sense of a contingent interdependency) becomes more and more blurry.

By taking a closer look at RoBoHoN this contribution aims to show the analytical potentials of understanding these media technologies as

3 RoBoHoN: www.youtube.com/watch?v=HQtIlxe_ZkY (accessed February 3, 2020).

4 In fact, exaggerating the robot's capabilities is a strategy many promotional videos of robots currently follow. Therefore, the question of how these technologies are presented in promotional videos demands further analysis, exploring the fact that there are especially those features exaggerated that—at the same time—cause controversial discussions.

symbiotic media: analyzing the ways in which s/he/it[5] questions our understanding of interacting and communicating, as well as how it questions our notions of being present, offers a new perspective on how the functional potentials of these media technologies stimulate a social symbiosis with their users. It is noteworthy that RoBoHoN's Japanese manufacturer does not present its capacities in terms of a mere presentation of technological design parameters in the above-mentioned promotional video. Instead its range of functions is imagined through its integration into its user's everyday life. It does what every smartphone is able to do: it informs you about incoming calls and messages, it wakes you up, it takes pictures and videos of your loved ones, and it lets you stay in touch with them over a long(er) distance. But RoBoHoN does all this a little differently: RoBoHoN presents its capabilities as a quasi-social response communicated as a spoken dialogue. This difference may appear to be a technological one, but it has effects on the realm of the social. In fact, in some ways RoBoHoN seems to be a step backwards in terms of technological advancement: there is, for example, only a rather small screen located on the back of the figure, which lacks a very high resolution. Of course, this visual feature is counterbalanced by its ability to function as a projector, but still the technological features seem rather average—if not below average—by today's technological standards in smartphones.

What makes RoBoHoN different from conventional smartphones is that the little figure is portrayed as reacting and behaving like a living social being would. The technical centerpiece of this feature is its adaptive voice control, which is combined with voice and face recognition. Even this is no real technical advancement, as smartphone users are to a certain degree used to synthesized voices like Apple's Siri, Microsoft's Cortana, Google's Assistant, and Amazon's Alexa. But while these are still optional interfaces in other smartphones, the voice control is RoBoHoN's default input interface. In comparison to already prevalent virtual assistants the implications of RoBoHoN's embodiment as a human-like figure become obvious: not only is the human-like artificial voice always an invitation to anthropomorphize technology, the rudimentary humanoid body of RoBoHoN further intensifies the resemblance of an encounter with another potential social entity. While this feature is probably exaggerated in the promotional clip, the phone's usage is constantly depicted as a social encounter in the

5 The notion of a robot's gender is an important one. Following the question of who inscribes what kind of (non-)gender into a robot allows to understand open and hidden hierarchies of power. Only for reasons of readability and with awareness of the effects of this decision, this article will refer to RoBoHoN as "it."

video. For example, the promotional video presents the little fellow not only taking pictures of friends and family but shows how the embodied phone asks people to smile and look in its direction—just like a human photographer would. Therefore, RoBoHoN draws attention to the way its politics of embodiment are part of its interface politics.

"Talk to it, make a call, check email. . . the more it gets to know you, the more attached you become to RoBoHoN" (Sharp).[6] When Sharp advertises the robot-phone like this, one can at least speculate that one goal of this technology is to allow a closer connection between a user and their phone. In a similar way the promotional video staged the little gadget as a smart and loyal companion in all aspects of life. According to Sharp, the effect of feeling connected to the technological device is based on its humanoid form as well as in its capability of engaging in dialogues of some sort. Its humanoid form is complemented by a specific range of movements: RoBoHoN cannot just gesticulate in a rudimentary form, but also rise up and go—or even, as also shown in the video—perform a little dance.

This promise of robots to become (almost) social companions has triggered a lot of concern and controversy. The most prominent voice, though definitely not the most sophisticated critique, is probably Sherry Turkle's. She addresses the fear of a technical connectivity replacing "real" social bonding in her book *Alone Together* (2011), in which she diagnoses a similar problem regarding the contemporary usage of mobile media as well as with regard to the upcoming dissemination of social robots.[7] In summary, Turkle worries that mobile media and social robots offer only a placebo, which replaces what she defines as actual social ties with technical networking.[8] She warns us not to confuse the (pseudo-)social interactions simulated in the usage of mobile media and encounters with social robots with "real" interpersonal closeness and connectedness. At the center of Turkle's critique is the machine's ability to respond and to demand certain reactions from their users. In this way, she concludes, social robots simulate a para-social relation and bonding: they offer their user certain responses and reactions but are never able to meet particular needs its user might have.

6 Sharp. RoBoHoN: https://robohon.com/global (accessed February 4, 2020).

7 On a side note, it might be noteworthy that Turkle's critique on smartphone usage and the spreading of robots as social companions can be read to the same extent as a kind of media criticism that says as much (or maybe even more) about its author and her relationship to the contemporary transformation in formative media technologies as about her subject matter.

8 See for example Linz and Willis (2011) for a more balanced analysis on how the relation between communicative and spatial presence is changed through social mobile media.

When analyzing the relationship between humans and robots two concepts are often named as a theoretical background: resorting to Reeves and Nass' media equation (1996) and Horton and Wohl's concept (1956) of parasocial interaction, which was coined in the 1950s as part of research into audiovisual mass media, should provide an explanation as to why we often approach robots in (para-)social terms. Krotz (2007), Gutmann (2011), and Höflich (2015), for example, refer to parasocial interaction, but make only rudimentary attempts to adapt the concept to encounters with social robots. While the term itself holds promising potential for insight and is therefore a suitable starting point for further considerations, a completely new implementation of a theory of "parasocial interaction" to cover encounters with social robots is needed.

A central characteristic of media technologies like RoBoHoN is their openness for certain attributions users might make considering their parasocial status. Of course, social robots are not completely open for arbitrary attributions. Turkle even calls them "relational artifacts" (Turkle 2011, 39), which, according to her, offer a vicious circle: by simplifying the terms of interacting, social robots (as well as communicating via time- and place-stretching mobile media) may be seen as an easy way out of the demanding and often complex social relations of everyday life—which just makes them more attractive. The fear associated with social robots is that we misunderstand the artificial connectedness these machines offer. "For decades computers have asked us to think with them; these days, computers and robots, deemed sociable, affective, and relational, ask us to feel for and with them" (Turkle 2011, 39). Of course, one cannot deny that there is room for pathological misreadings, but it might be a misreading itself to consider this to be the common case. One aspect Turkle ignores is that for quite some time now we have not primarily used computers as calculating machines: instead, the common use of computers now is as media machines.

Though one can argue about whether smartphones and social robots—just like computers—do or do not exhibit qualities of media on their own, they can be understood as media technologies on two levels: first, they can be considered media-conglomerates[9] as they provide media functions we already know, like the functionality of a phone, a camera, or an access point to the internet—but while these gain interdependency in the smartphone,

9 The term conglomerate is here understood as "a number of different things or parts that are put or grouped together to form a whole but remain distinct entities" (s.v., New Oxford American Dictionary, 2010). Good examples are geological formations of soil, which is a mixture of sand, clay, small rocks, and small calcareous fossils.

they do not merge into each other. Second, they can be considered as media technologies on a meta-level as they are manifestations of how cultural needs and technological advantages mutually affect each other. It is these interdependencies that contemporarily change our understanding of interacting and communicating. As a result, analyzing smartphones and social robots as symbiotic media offers two main insights: on the one hand we are able to consider how the notions of humans and machines are shaped and how they influence their capabilities and design respectively. On the other hand, the transfer of agency into the machine is now comprehensible as an expression of certain needs our society has, instead of an empowerment of the machine. What makes RoBoHoN especially interesting in this regard is that the smartphone-robot can be understood as a hybrid between the two concepts—mobile media and social robots. Regardless of whether one shares Turkle's critique or not, the proposed approach puts much more weight onto the question of how and at what level social relations and emotional attachments between users and media technologies are fostered by anthropomorphic devices like RoBoHoN.

In the promotional video, three situations can be differentiated where a relationship between a user and RoBoHoN is created: first, the interaction with the smartphone-robot itself, e.g., when it acts as an alarm clock, or when it shows one how to plate a meal nicely. Secondly, communicating through RoBoHoN by means of a smart assistant: for example, if it reads out loud messages from friends or is used as a phone. Thirdly, RoBoHoN as a social companion itself, e.g., when it dances at a party or takes photos as memorabilia. To the extent that relating to RoBoHoN as a companion constitutes a form of interaction this third situation can be considered as a variation of the first one. In sum two modes of usage can be differentiated that are each based on a certain relationship between user and device: *interacting with* the smartphone-robot and *communicating through* the robot-smartphone.

At this point, RoBoHoN's gestalt becomes the differentiating moment as our contemporary usage of common smartphones can also be described in terms of interacting with and communicating through them. The moment of interaction especially illustrates the difference RoBoHoN's humanoid appearance makes. Considering RoBoHoN as a symbiotic medium clarifies that its humanoidness is much more than a gimmick but the realization of certain cultural desires: given the hybrid status of RoBoHoN, the question arises of what kind of potential for attributions is based in the interface design of the humanoid gadget. As this smartphone appears in the gestalt of a humanoid robot, a brief digression into the cultural conception

of robots as well as the interface design of social robots seems promising. In summary robots were—in fiction as well as in reality—created as working machines to substitute human labor power in order to accomplish unpleasant, difficult, or (for a human) even impossible work. In their reference to the human robots are a technically distorted mirror image of man. For example (classic) industrial robots appear to be superior and inferior at the same time: they are, on the one hand, physically stronger and have much more stamina than a human, on the other they lack sensibility and intelligence. In terms of their cultural conception, robots are a very specific transformation of the human body.

The fundamental feature marking the turning point between robotics and social robotics[10] is the overcoming of a clear separation between human and robotic areas of action.[11] While for a long time industrial robots have worked in the distance, that is, safely contained in factory buildings—where their working areas were separated and protected by sensors that immediately shut down any action if any human had entered that security zone—social robots share our environment with us: they reside in our living rooms and become part of our work life. Although we are only on the brink of the era of social robotics, it has already become obvious that key features of these machines are their assumed autonomy and their techno-social potential for a certain degree of decision-making that prompts us to question their accountability—for social robots not only share our sphere of activity, but are programmed to perform human tasks. Therefore, social robots can no longer be considered tools, but rather artificial companions.

However, there is a crucial catch: in the face of all the technologically implemented responsiveness, it is up to the human counterpart to maintain the interaction. Interfaces for social robots are thus carefully designed to encourage humans to continue their interaction even in moments of disruption. An anthropomorphic shape and interface play an important, albeit ambivalent, role for the intuitive use of social robots. On the one hand, their shape aims to evoke an adequate analogy allowing the user to rely on patterns familiar from known interpersonal interaction and communication. At the same time, it becomes obvious that an intuitive

10 It is noteworthy that roboticists (see for example, Breazeal 2002 and 2003b, and Fong, Nourbakhsh, and Dautenhahn 2003) starting to pronounce robots as social resembles social media being called "social"' in terms of the need to emphasize the social over other factors.

11 The consequences of this shift are mirrored by the increasing juridical (e.g., Hilgendorf 2015 and Salvini 2015) and ethical discussions (e.g., Capurro and Nageborn 2009, Lin et al. 2012, Anderson and Anderson 2011, or Riek and Howard 2014).

voice control as well as a corporeal form, which serve to hide the technicality, allow for misinterpretation. On the other hand, the similarity cannot undermine any distinguishability between human and machine. Masahiro Mori's controversial theory of the "uncanny valley" described the danger posed by a simultaneous reference to the artificial and the natural. In his thesis published in 1970, the Japanese roboticist transfers his observations on hand prostheses onto the shape of robots: while a prosthesis is visually indistinguishable from a biological hand, touching it reveals its artificiality immediately. This contradiction triggers an instant dismay. Hence, Mori concludes that there is no linear relationship between familiarity and humanlikeness, but a so-called uncanny valley that marks an area of ambivalent perception when there are references to the (living) human body as well as to the (inanimate) mechanics of the machine. Mori further concludes that movement strengthens this effect. The theory of the uncanny valley focuses on the perception of gestalt, in the sense of an outer, possibly moving, form.

Although the uncanny valley has caused controversial discussions, contemporary robot designs use either a very rudimentary, reduced analogy to the human or try to maximize the anthropomorphization. While RoBoHoN is an example of the former, the latter is best exemplified by the works of David Hanson (see Hanson Robotics[12]) or Hiroshi Ishiguro (see Ishiguro Labs[13]), who do not shy away from attempts at copying living persons. Roboticist Brian Duffy favors the practical aspects of an anthropomorphic design:

> The role of anthropomorphism in robotics in general should not be to build a synthetic human. Two motivations for employing anthropomorphism are firstly the design of a system that has to function in our physical and social space (i.e. using our tools, driving our cars, climbing stairs) and secondly, to take advantage of it as a mechanism through which social interaction with people can be facilitated. It constitutes the basic integration/employment of "humanness" in a system from its behaviours, to domains of expertise and competence, to its social environment in addition to its form (2003, 181).

Duffy considers anthropomorphization as a metaphor, which makes the social robot itself an interface between man and technology (Duffy 2003, 178). As a result, a balance between the expectations of the user and the

12 Hanson Robotics: www.hansonrobotics.com (accessed February 4, 2020).

13 ATR: Hiroshi Ishiguro Laboratories: www.geminoid.jp/en/index.html (accessed February 4, 2020).

actual skills of the machine are crucial to Duffy in regard to creating a "good" interface (Duffy 2003).

RoBoHoN's small humanoid shape, which references the scheme of childlike characteristics, and its intuitive, adaptive voice control/conversational interface are based on these principles: within the interaction between RoBoHoN and its user the interface design seems to follow Duffy's claim and strike a balance between what a user can expect and what RoBoHoN is capable of. In this regard, my decision to address RoBoHoN as "it" might be more or less unconsciously influenced by this design.[14] In assuming RoBoHoN is a more or less genderless "it" I curtail its capabilities to those of a domestic animal. But still, the potential to ascribe attributes to the machine allows for an intimate, parasocial relationship I am building even in the way I write about an artifact I only know about in theory.

The fact that the special feature of this relationship is that it does not depend on social relations but on the efforts of the human user could be understood in terms of a reduced double contingency. In systems theory, the notion of double contingency describes the knowledge of the fundamental openness with which two communicating parties meet. Both partners are aware that both their own and the interactions of the other are contingent. In an encounter with a social robot one is potentially aware of the robot's programming, which does not allow for contingency but a given, rather restricted set of options to act on. Not to mention that no robot has an actual awareness of this process, which would allow it to take note of the contingency of its counterpart. That users engage in this structure does not necessarily mean that they do this without any appropriate media competence and confuse this relationship with an interpersonal relationship. More often, the appeal of intuitive usability and efficiency lies in them being seen as attractive interface characteristics that trigger something similar to a "willing suspension of disbelief" (Coleridge 1817).

Considering RoBoHoN, the pressing question is whether its gestalt is the only difference between a smartphone and a social robot. At least Duffy's classification of social robots as interfaces between technology and human seems to confirm this assumption: "It has often been said that the ultimate goal of the human-computer interface should be to 'disappear' the

14 The fact that one either consciously embraces the anthropomorphization of humanlike media technologies or consciously denies it exemplifies the humanlikeness' impact. Though neither approach misconceives the technicality of media technologies, a humanlike gestalt seems to provoke a positioning of the user regardless of whether they are willing to engage on terms of sociality or technicality.

interface. Social robotics is an alternate approach to ubiquitous computing" (Duffy 2003, 184).

In the beginning I pointed out that the functionality offered by RoBoHoN differs only in small, but nevertheless important, details from those of today's smartphones. Assuming that its humanoid gestalt rather than RoBoHoN's capacities as featured in its promotional video mark the questioned difference between considering it a smartphone or a social robot, two questions may help us understand the role of the device's gestalt: the first one is whether, and to what degree, a user can ascribe agency to the device, while the second is whether, and to what degree, the device has the potential to provoke an impression of a (rudimentary) subjectivation in the user. It is important to note that these questions are in no way to be understood as ontological ones, but ask for (and only for) potential ascriptions an individual user may (or may not) make.

If the attribution of agency and subjectivation are—against our better knowledge—possible primarily because of RoBoHoN's anthropomorphic design, then in terms of being a symbiotic medium its interface politics can be understood as a mode of excorporation. That means RoBoHoN's gestalt looks this way not only to increase user-friendliness but can even be considered an expression of the cultural need to negotiate the capabilities technology offers us today. As mentioned above, smartphones and social robots seem to offer a range of functionalities that easily evoke the potential to irritate: the fact that RoBoHoN takes pictures for us holds only little potential to irritate, but the way the promotional video presents its capability to address individuals and ask them to smile just like a human photographer would do has a lot of potential to provoke irritations.

This is one example in which contemporary media technologies hold a technologically implemented, functional potential that seems to exceed what could be grasped in the realm of technology as we have become used to it. The functional capacities not only to take a picture but to take a picture as a social encounter may be experienced as a supposed extension of the limits of the technical, and therefore allow these technologies to appear to be more humanlike than machinelike. In other words: with contemporary and near-future generations, these technologies seem to hold more and more agency themselves.

From the point of view of symbiotic media, the difference between smartphones and social robots is one of embodiment. That is, smartphones and social robots can be seen as two contradictory but nevertheless complementary strategies to culturally negotiate their capabilities:

smartphones follow the strategy of incorporation, while social robots follow the strategy of excorporation. In contemporary analysis and discussions it becomes more and more normal to accept that smartphones are a media technology that is incorporated into our body through its usage (see for example Kaerlein 2012 and 2013).

As stated before, smartphones are media conglomerates, which constantly provide not only auditory, visual, and audiovisual recording and transmission facilities but find their genuine quality in short-circuiting aesthetics and social practices. In that, smartphones are more than a functional extension of the body that allows constant access to data and promises constant contact; they are a bodily extension that defines (and provides) aesthetic experiences (such as the visual communication on image-based platforms like Instagram or Snapchat). Phenomena of compression and acceleration are the results of this short circuit. The spread of phatic communication (cf. Malinowski 1923) indicates a regression of aspects regarding content in favor of spatial and temporal relationality. This is why smartphones can be seen as an extension of our living environment.

The interface design of contemporary smartphones, which are to be controlled by gestures, pressure intensity and intuitive language, binds their capabilities directly to the user's body. As such, they are extensions of her/his range of potential actions. Understanding smartphones as cyborg-technologies allows us to fully grasp the potential of change these media technologies carry. The hybrid nature of cyborgs overcomes the conceptual incompatibility between humans and technology. This generates new options for action on the one hand, but on the other hand it also constitutes a defining ambivalence: a cyborg is a living body and lifeless technology and thus cannot be reduced to either one alone. After all, the aim to expand the potential to act and engage with the world is at the center of the cyborg as Manfred E. Clynes and Nathan S. Kline have put it: "Cyborg – Frees Man to Explore" (Clynes and Kline 1995, 30). This is exactly what smartphones do: offering us new options and possibilities to act and expand our living environment. Understanding smartphones as cyborg-technologies shifts the focus of attention exactly to this transformation of the ways in which we can act with and through these technologies, and how this influences the above-mentioned transformation of certain boundaries.

The way in which social robots are conceptualized as social counterparts can be seen as a complementary strategy to culturally negotiate the new range of functionalities these media technologies offer. When we habitually incorporate smartphones into our body, we incorporate their functionality;

when we encounter robots as social counterparts, we make room for their technological agency. Both strategies are ways to culturally negotiate the fact that our media technologies undergo a profound change that questions our notion of technology as well as our understanding of interaction and communication. That is why analyzing them as symbiotic media is a valuable perspective on this development in order to highlight their sociomaterial effects: robots can then be described as *socio-symbiotic*, as they require and generate a social relationship, while smartphones could be grasped as *soma-symbiotic*, as they generate a situational and temporary incorporation into the body. The fact that encountering social robots as social companions seems to be far more attractive than understanding smartphones as cyborg-technologies indicates that the former appears to be a much more powerful way to grasp this development.

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