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# SIGNALING STIGMA. HOW SUPPORT TECHNOLOGY INDUCES BODILY INEQUALITIES IN INTERACTION

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## ABSTRACT

This paper contends that support technologies and their relevant artifacts recast bodily relations and thereby produce differing bodies in situations. In this vein, it sketches three main forms of physical human-machine relations (substitution, augmentation, support) and then introduces the concept of signaling stigma that allows to observe the situated management of new technological markers of difference. It concludes with suggestions for further research building on this approach to uncover the interactional foundations for what might grow into manifest inequalities—beyond the still important issues of personal data rights and access to technology.

## KEYWORDS

Support Technology; Physical Support; Human-Machine Interaction; Stigma Management

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# 1 INTRODUCTION

Public discussions and research about "digital" inequality are preoccupied with problems of quantified selves, culturally biased algorithms, or access to digital contents and infrastructure. In the meantime, technical support devices (from detached robots to intimate implants) proliferate and affect our lives in various forms. This paper contends that support technologies and their relevant artifacts recast bodily relations thereby producing differing bodies in situations. It starts by outlining three types of relations between support devices and human bodies and then introduces the concept of *signaling stigma* as a form of describing and researching relevant situations. Further inquiry regarding interactional cues of potential inequalities is sketched in the conclusion.

# 2 SUPPORTING THE BODY

Turning to devices designed to support everyday activities emphasizes the bio-physical dimension of digitization. This concerns human bodies in particular. It is obvious that many gadgets have come closer to our bodies. This is not only true for wearables, implants, or "smart" assistive devices built into cars and homes but also for robots that have become "collaborative" in factories or clean the floor in our flats.

This approaching to the human body is due to the continual miniaturization of technology (Featherstone 1999; Mills 2011) in combination with increasing computing power, connectivity, and sensor performance. Computing is not only ubiquitous and tangible, it has now even become "intimate" (Lupton 2015). Robots of all kinds are now imagined and built as companions (Biundo et al. 2016). The idea of support technology is both an immediate offspring and a driver of these transformations.

Close bodily relationships between humans and machines are mainly considered and designed in three ways: as substitution, augmentation, and support (Viseu 2003; Markoff 2015; Karafillidis and Weidner 2018). *Substitution* corresponds to the idea of automation which defines a specific form of relation rather than its absence (Seyfert 2018). Here, issues of technical feasibility are of primary concern and the body is mostly conceived as an integrated whole. The idea of human *augmentation* construes relations from the perspective of a somewhat deficient human being in need of enhancement. To this end, the body is decomposed into different (mostly cognitive) functionalities that can be subject to augmentation. The body's informational capabilities for knowledge acquisition and sensory perception become pivotal.

Considering human-machine relations as *support* additionally focuses on the motor capacities of bodies and on the interaction itself. Decomposition is now extended and encompasses biophysical aspects (e.g. gripping, walking, lifting) and social situations. Both are broken down into different micro-activities and recombined—interfaced—for realizing support.

Since the idea of support proliferated, engineers started to take social situations and their materiality into account from the outset. To be sure, in most cases their image of the "social" remains simple (Bischof 2017). Yet there is a growing sense that bodies, artifacts, and situations form an integrated assemblage. In conclusion, support devices entail a shift from human-machine interaction to human-machine *integration* and bring forth sensorimotor hybrids that will also generate new perceivable markers of difference.

# 3 SIGNALING STIGMA

Currently, the most salient and widespread support devices in closest distance to human bodies are smart phones, smart watches/trackers, prostheses, and maybe hearing aids. But the development of smart clothes and various exoskeletal structures for work (industrial assembly, health care), rehabilitation, and everyday activities (e.g. grippers, gaming) has advanced considerably. Such artifacts decorate and permeate our bodies in more or less perceptible ways to

support activities in alignment with situational affordances (i.e. other people as well as objects). As soon as the integration of *physical* support devices comes to be seen as the normal state of affairs, they start to serve as prominent markers of potential inequality. That is, there are not only detrimental inequalities concerning social inclusion (Warschauer 2003; Park 2014) but also new deliberate markers of corporeal difference that bear the potential, though not the necessity, to grow into social inequalities. I contend that they will take on the form of *signaling stigma*.

My own field observations in plane assembly and nursing homes might illustrate the direction of this idea. The visibility of devices worn to support the body (here: soft and hard exoskeletons) evokes equivocal interactional responses. On the one hand there is a clear refusal or reluctance to wear it, causing discomfort either for wearers or other situated participants (or both). On the other hand, there is a sense of distinctiveness. Nursing staff reported general interest, but also concern ("are you ill?") and spiteful remarks by residents as well as colleagues. In the industrial setting people felt "cool" wearing futuristic gear for work and displayed their hybridity but were mocked, too.

To examine such situations in which bodies are recast due to support technology I propose to construe them as stigma (Goffman 1963). Originally, the term referred to bodily signs that were intentionally cut or burnt into the body to signal people to be avoided. However, Goffman has shown that stigma is a relational concept, that is, what is treated as stigma is contingent on context and timing. Hence, every*body* is concerned with stigma management in one way or another.

Conspicuous body-worn gadgetry decreases attempts to control information regarding the "discreditable" supported body and *encourages to display the technological stigma*: designing the hearing aid, making the prosthesis look cool and fashion-like, wearing the soft exoskeleton above the clothing even though it could be hidden beneath. These are forms of an inverted stigma management, as it were: deliberate new—and in contrast to body modifications adaptable—ways of signaling bodily differences.

It could be argued that e.g. smart phones cannot qualify as stigma because they are widely used and accepted. Yet even this assessment is dependent on relational context. It also makes a methodological difference: alienating the obvious helps to discover the micro-logics of sociotechnical processes. However, the main argument refers to gadgets for *physical* support.

# 4 CONCLUSION

Whether a signaling of artifactual stigmata will grow into manifest inequalities by social closure or control in peer groups and families is a crucial question for further inquiry. Research could start with ethnographies and interviews in contexts where bodily support is currently most salient (e.g. exoskeletons and prostheses).

Technical support is also going to alter expectations and demands with respect to the capacities of human bodies and possible compensations of disabilities. In general, organizations might pick up on such expectations to set new standards that reinforce the production of differing (and differentially exploitable) bodies. Governments and insurance companies are certainly interested in relevant bodily data thus generated.

Discussing inequality from this angle is of great importance for technology development. The challenge is to build support technologies that are affordable and attentive to the political issues of control and inequality. Engineers and other developers involved in such processes, must be aware of these connections—not only for ethical, "social", and legal reasons but also for the very success of the project and the invented technology. Also, acceptability and control cannot be confined to psychological factors. It is rather worthwhile to analyze processes of signaling stigma in situated interactions.

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