

The body gets the notion

performative design practice for human computer integration to encourage innovation in the domains of health and well-being

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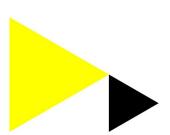
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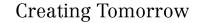


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1 Abstract

This PhD-project delivers a design methodology that studies how cyber-physical systems can integrate with the human body to improve the quality of life for people with progressive and permanent disabilities. In this project, the perspectives of the 'deviant body' (Murray, 2007) and the 'disabled body' (Goodley, 2017) are seen as bodies of knowledge that can question, collapse, or even eliminate traditional perspectives on what it means to be 'human' in hybrid realities. In recent debates on human-computer integration (HInt) (Farooq & Grudin, 2017; Mueller et al., 2020, 2021; Danry, V.et al., 2021; Semertzidis et al., 2022; Barbosa et al., 2023), possible scenarios for hybrid futures suggest that the body interacts with computing systems that can sense, interpret, and automatically act to body-based and contextual signals (Andres et al., 2023), thereby potentially altering human characteristics and abilities in a fundamental manner. These alterations, which can range from the physical to the spiritual (Dieffenbacher, 2022), have the potential to drift the 'lived body' (MerleauPonty, 2002) leading to all sorts of discomfort in the phenomenology of organ and tissue (Bhatt and Kothari, 2022; Shildrick, 2022), as a result of what is not sensed or expressed in the cells of the human body (Shapiro, 2012). The web of asymmetrical relationships that emerges from incorporating 'nonself matter' in, on and with the human body is not seen as just contact zones with the human body but is seen as border crossings where bodies of knowledge inflect and disturb one another in what we can understand as high productive ways for learning (Shildrick, 1997, 2009; Shildrick & Söffner, 2017). This PhD-project studies the bodily aspects of 'becoming-in-the-world' (Shildrick, 2009) through performative design practices in human-computer integration, to understand how the 'dispositifs' (Deleuze, 1992; Marenko & Brassett, 2015), such as knowledge, techniques, practices, tools, and methods contribute to the potential alteration of human abilities and characteristics as a result of integrating with computing systems. Bodily integrated systems are



explored through its (1) 'matter', by approaching embodiment as anatomy, physiology, skill, experience (Loke & Robertson, 2011), and through its (2) 'mattering' (Mitchell et al., 2019), by means of the unstable, complex and indeterminate psycho-physiological 'repertoire of play' (Easterling, 2012). The takeaway message is that to advance our understanding of human-computer integration, we must prioritize alternative and pluralistic approaches to develop a more expansive foundation for design practices that encourage innovation in the domains of health and well-being.

1.1 Main Research Question

How can a design methodology employ a bodily design perspective in human-computer integration, specifically in the application domain of health & well-being?

1.2 Sub research questions

- RQ1: What does a bodily design perspective behold for human-computer integration?
- RQ2: How can performative play and cyber-physical artefacts be used to study the web of asymmetrical human-computer relationships in bodily integrated systems?
- RQ3: What design strategies and tactics does the design process of bodily integrated systems need?
- RQ4: What does a design methodology look like for interdisciplinary design teams that
 explore, design, and develop bodily integrated systems in the application domain of health
 and well-being?

References

Andres, J., Semertzidis, N., Li, Z., Wang, Y., and Mueller, F. (2023). Integrated Exertion—Understanding the Design of Human—Computer Integration in an Exertion Context. *ACM Transactions on Computer-Human Interaction*. 29, 6, Article 55 (jan 2023), 28 pages. https://doi.org/10.1145/3528352

Barbosa, G. a. R., Da Silva Fernandes, U., Santos, N. S., & Prates, R. O. (2023). Human-Computer Integration as an Extension of Interaction: Understanding Its State-of-the-Art and the Next Challenges. *International Journal of Human-computer Interaction*, 1–20. https://doi.org/10.1080/10447318.2023.2177797

Bhatt, N., & Paras Kothari, T. (2022). Determinants of Technostress: A Systematic Literature Review. *European Journal of Business Science and Technology*, 8(2), 159-171. doi: 10.11118/ejobsat.2022. 007 Easterling, K. (2012). We Will Be Making Active Form. *Architectural Design* 82, 5 (2012), 58–63.

https://doi.org/10.1002/ad.1461

Danry, V., Pataranutaporn, P., Haar Horowitz, A., Strohmeier, P., Andres, J., Patibanda, R., Li, Z., Nakamura, T., Nishida, J., Lopes, P., León, F., Won, A. S., Svanæs, D., Mueller, F. F., Maes, P., Leigh, S. W., &
 Semertzidis, N. (2021). Do Cyborgs dream of Electric Limbs? Experiential Factors in Human-Computer Integration Design and Evaluation. Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems, 1–6. https://doi.org/10.1145/3411763.3441355

Deleuze, G. (1992). What is a dispositif. Michel Foucault: Philosopher, 159, 168.

Dieffenbacher, F. (2022). The future body as ultimate dress. In Busch von, O., Viau, J., Wilson, E., and Lewis, R. *Silhouettes of the Soul: Meditations on Fashion, Religion, and Subjectivity.* Bloomsbury Visual Arts.

Farooq, U., & Grudin, J. T. (2017). Paradigm shift from human computer interaction to integration. *Conference on Human Factors in Computing Systems - Proceedings Part F127655*, 1360–1363.

https://doi.org/10.1145/3027063.3049285

Goodley, D. (2017). Disability Studies: An Interdisciplinary Introduction. SAGE Publications.

Loke, L. & Robertson, T. (2011). The lived body in design. *Proceedings of the 23rd Australian Computer-Human Interaction Conference on – Oz* CHI '11, 181–184. https://doi.org/10.1145/2071536.2071565

Marenko, B., & Brassett, J. (2015). *Deleuze and Design.* Edinburgh University Press EBooks.

https://doi.org/10.1515/9780748691555

Merleau-Ponty (2002). Phenomenology of Perception. Taylor Francis.

- Mitchell, D.T., Antebi, S., Snyder, S.L. (2019). *The Matter of Disability: Materiality, Biopolitics, Crip Affect*. University of Michigan Press.
- Mueller, F. F., Lopes, P., Andres, J., Byrne, R., Semertzidis, N., Li, Z., Knibbe, J., & Greuter, S. (2021). Towards understanding the design of bodily integration. *International Journal of Human Computer Studies* 152 (8 2021). https://doi.org/10.1016/j.ijhcs.2021.102643
- Mueller, F. F., Lopes, P., Strohmeier, P., Ju, W., Seim, C., Weigel, M., Nanayakkara, S., Obrist, M., Li, Z., Delfa, J., Nishida, J., Gerber, E. M., Svanaes, D., Grudin, J., Greuter, S., Kunze, K., Erickson, T., Greenspan, S.,
- Inami, M., . . . Maes, P. (2020). Next Steps for Human-Computer Integration. *Conference on Human Factors in Computing Systems Proceedings*. https://doi.org/10.1145/3313831.3376242
- Murray, S. (2007). Corporeal Knowledges and Deviant Bodies: Perceiving the Fat Body. *Social Semiotics*, 17(3), 361–373. https://doi.org/10.1080/10350330701448694
- Shapiro, D., (2012). Your Body Speaks Your Mind: Decoding the Emotional, Psychological and Spiritual Messages That Underlie Illness. Sounds True.
- Shildrick, M. (2022). Visceral Prostheses: Somatechnics and Posthuman Embodiment. Bloomsbury Publishing. Shildrick, M. (2009). Dangerous Discourses of Disability, Subjectivity and Sexuality. Palgrave Macmillan.
- Shildrick, M. (1997). *Leaky Bodies and Boundaries: feminism, postmodernism and (bio)ethics*. Routledge Publishing.
- Shildrick, M., Söffner, J. (2017). Border Crossings: The Technologies of Disability and Desire. *Culture Theory Disability: Encounters between Disability Studies and Cultural Studies*, 2017, pp. 137-170. http://www.jstor.org/stable/j.ctv1xxs3r.12.
- Semertzidis, Nathan Arthur; Fang, Zoe Xiao; Lopes, Pedro; Kunze, Kai; Pangaro, Paul; Mueller, Florian Floyd; Maes, Pattie (2022-04-28). "What We Talk About When We Talk About Human- Computer Integration". *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems.* CHI EA '22. New York, NY, USA: Association for Computing Machinery: 1–4.
- https://doi.org/10.1145%2F3491101.3516509. ISBN 978-1-4503-9156-6.