Rerouting to an open future: languaging, participatory technology, and becoming

Call for contributions

Scientific approaches to language are rapidly evolving as practitioners and researchers from many fields delve into the constitutive role of embodied interactions in its emergence. Instead of a primarily symbolic capacity, language is increasingly seen as an activity fluidly grown from ways of enacting (i.e. co-generating and navigating) ties and interactions with other bodies (Di Paolo, Cuffari, and De Jaegher 2018; Cuffari, Di Paolo, and De Jaegher 2015) and richly complex environments (Kiverstein and Rietveld 2021; van Dijk 2018). The complexity of language seems to be not so much the result of individual brain-based computing capacities as an emergence from constant negotiation of the tensions inherent to the dynamics of everyday interactions. Languaging, rather than language, is thus a particular way of engaging with others and the world around us, and pervades all levels of action and perception.

As a form of interaction, languaging develops in and is supported by the environment in which people are embedded, suffused with technical and technological objects and practices. Technology, in other words, affords the milieu in which interactions and languaging occurs. The current pandemic has occasioned first-hand experience of such technological mediation to a significant portion of humanity. Channeling nearly all our interactions through video calls and text messages, be it for work, casual catching up, or keeping close to loved ones, has shown the shortcomings of widespread technological devices, introduced us to the fatigue which develops with permanent screen-based interactions (Bailenson 2021), and reminded us of the importance of fundamental sensorimotor and bodily features of interaction (e.g. Carel, Ratcliffe, and Froese 2020). We have developed a new awareness for being able to hold a hand, hear the breathing of a friend or the laughs in a group without them being noise-cancelled, or enjoy the simple presence and rhythm of a loved one during a silent walk together.

Indeed current technological systems, and particularly personal computers and smartphones, are built for the brain in a vat, thought from the ground up as symbol-manipulating systems. Accumulating enormous software and material complexity, on top of which application layers have been purposefully designed for generating addictive behaviour, such systems not only ignore fundamental features of bodily interaction, but foreclose any possibility for agency or literacy at the level of the milieu that they generate (Fletcher-Watson et al. 2018).

In parts of the technology world, however, a move strikingly parallel to the language → languaging transition is occurring: reconnecting with research ideas lost behind the emergence of the Personal Computer, technologists have started to break the stranglehold of designing devices for the brain in a vat, which effectively restricts our relationship to machines (and through them to other humans) to minute finger movements in front of a small screen filled with symbols (Victor 2014). In stark contrast, some alternative designers are appealing to body and mind in holistic and unified ways, developing rich manual and spatial dynamics to facilitate interactions with people and machines. Contrary to currently prevailing technology which leads users to neglect their material spaces and instead draws them to interact with its own digital

representation of the world on screen, these 'humane' systems are created to work with and enrich the environment they are in, contributing to the wealth and open-ended potential of sense-making opportunities afforded by the material environment. Instead of isolating individuals into bodily inertness, and submitting users to the tyranny of unfathomable inner workings, these alternative systems are designed to support users in navigating interactions with other people and with their own thought processes, as well as enabling genuine literacy as regards the inner workings and modifications of the system itself (Victor et al. 2017; Amelang et al. 2012). The HCI community develops a parallel line articulating the link between technology, embodiment and diversity, looking at how technology can be designed to actually support interactions instead of nudging people towards more isolation (Fletcher-Watson et al. 2018; van Dijk and Hummels 2017; Bennett et al. 2021). But a vital question remains: can interventions in interactive technology work, given the indeterminacy and unfinishedness of linguistic bodies (Birhane 2021; Di Paolo, Cuffari, and De Jaegher 2018)? If the ethical watchwords of enactive approach are 'participation' and 'becoming' (Di Paolo, Cuffari, and De Jaegher 2018; Di Paolo and De Jaegher 2021), can we imagine computing technologies that enhance these goals rather than foreclose them?

Together, languaging and technology form the main substrate through which bodies get to know, explore and enact their world. In many instances, mechanisms, processes and artefacts that constitute the system of our embodied, "enteched" and enlanguaged interactions occur and act together. As such this languaging-technology system equally defines the milieu in which agency and literacy broadly construed develop, and in which the production of humans, humanity and society takes place. Our understanding of both languaging and the role of current and future technology in life and society has therefore much to gain in crossing disciplinary borders to embrace their role as a joint system.

Today, as a matter of course, regular deployments of languaging and technology are dangerous. They generate disconnects from the environment and from material or non-digitized knowledge, and encourage addiction and submission to the external rigidity of current digital systems. We believe it is possible to ideate a different future for the self-production and becoming of people and society, a future in which agency is supported, and where knowing, being and sense-making can be reconnected to our material environment. Perhaps acknowledging and exploring the political and ethical dimensions of our embodied, enteched, and enlanguaged interacting and becoming can serve as early steps that we as academics and practitioners take towards this future.

For this special issue , "Rerouting to an open future: languaging, participatory technology, and becoming," we invite contributions that consider the technological frame for embodied languaging and interactional becoming. Contributions are expected to engage in interdisciplinary discourse, to reflect the aims and scope of the Language Sciences journal, and to dialogue with one of the following questions:

- What paths does currently prevailing technology lay down, especially where languaging is concerned? To what extent are these paths coercive or overdetermined?
- How do new models or theories of languaging hold relevance for alternatives in interactive systems design, programming language design, machine learning and

deep learning?

- How can participatory sense-making theory or extensions inform, inspire, or be used in HCI and HRI?
- What are guiding principles for or paradigmatic examples of designing for linguistic bodies, in their differences?
- What are the technical, ethical and political challenges in designing systems based on sense-making theory?
- Is it possible for autonomous digital systems or algorithm-led artificial intelligence such as language-generating algorithms to hold space for unpredictability and indeterminacy, that is for the open-endedness of becoming?
- What particular problems or conceptual interventions would further a mutually enhancing dialogue between engaged/critical/feminist/indigenous/decolonial epistemology and enactive inquiries into language, interaction, and technology?
- What particular problems or conceptual interventions would further a mutually enhancing dialogue between varieties of embodied, ecological, and distributed approaches to language, enactive inquiries into interaction and technology, and technological projects inspired by enactivism?
- What questions, concepts or projects regarding the languaging-technology system would further our understanding of its role in the becoming of people and society, and the development of agency in this context? Can such approaches help develop a future vision supportive of becoming?

References

Amelang, Dan, Alan Borning, Bert Freudenberg, Ted Kaehler, Alan Kay, Aran Lunzer, Yoshiki Ohshima, et al. 2012. “STEPS Toward the Reinvention of Programming.” Final Report Submitted to the National Science Foundation (NSF).

Bailenson, Jeremy N. 2021. “Nonverbal Overload: A Theoretical Argument for the Causes of Zoom Fatigue.” *Technology, Mind, and Behavior* 2 (1). https://doi.org/10.1037/tmb0000030.

Bennett, Dan, Alan Dix, Parisa Eslambolchilar, Feng Feng, Tom Froese, Vassilis Kostakos, Sebastien Lerique, and Niels van Berkel. 2021. “Emergent Interaction: Complexity, Dynamics, and Enaction in HCI.” In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*, 1–7. 119. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3411763.3441321.

Birhane, Abeba. 2021. “Algorithmic Injustice: A Relational Ethics Approach.” *Patterns* 2 (2): 100205. https://doi.org/10.1016/j.patter.2021.100205.

Carel, Havi, Matthew Ratcliffe, and Tom Froese. 2020. “Reflecting on Experiences of Social Distancing.” *The Lancet* 396 (10244): 87–88. https://doi.org/10.1016/S0140-6736(20)31485-9.

Cuffari, Elena Clare, Ezequiel Di Paolo, and Hanne De Jaegher. 2015. “From Participatory Sense-Making to Language: There and Back Again.” *Phenomenology and the Cognitive Sciences* 14 (4): 1089–1125. https://doi.org/10.1007/s11097-014-9404-9.

Di Paolo, Ezequiel A, Elena Clare Cuffari, and Hanne De Jaegher. 2018. *Linguistic Bodies: The Continuity between Life and Language*. Cambridge, MA, USA: MIT Press. https://mitpress.mit.edu/books/linguistic-bodies.

Di Paolo, Ezequiel A., and Hanne De Jaegher. 2021. “Enactive Ethics: Difference Becoming Participation.” *Topoi*, October. https://doi.org/10.1007/s11245-021-09766-x.

Dijk, Jelle van. 2018. “Designing for Embodied Being-in-the-World: A Critical Analysis of the Concept of Embodiment in the Design of Hybrids.” *Multimodal Technologies and Interaction* 2 (1): 7. https://doi.org/10.3390/mti2010007.

Dijk, Jelle van, and Caroline Hummels. 2017. “Designing for Embodied Being-in-the-World: Two Cases, Seven Principles and One Framework.” In *Proceedings of the Eleventh International Conference on Tangible, Embedded, and Embodied Interaction*, 47–56. TEI ’17. Yokohama, Japan: Association for Computing Machinery. https://doi.org/10.1145/3024969.3025007.

Fletcher-Watson, Sue, Hanne De Jaegher, Jelle van Dijk, Christopher Frauenberger, Maurice Magnée, and Juan Ye. 2018. “Diversity Computing.” *Interactions* 25 (5): 28–33. https://doi.org/10.1145/3243461.

Kiverstein, Julian, and Erik Rietveld. 2021. “Scaling-up Skilled Intentionality to Linguistic Thought.” *Synthese* 198 (S1): 175–94. https://doi.org/10.1007/s11229-020-02540-3.

Victor, Bret. 2014. *The Humane Representation of Thought*. https://vimeo.com/115154289.

Victor, Bret, Paula Te, Josh Horowitz, Luke Iannini, Toby Schachman, and Virginia McArthur. 2017. “Dynamicland.” 2017. https://dynamicland.org/.