BOOK REVIEWS

Gill, Satinder P. *Tacit Engagement: Beyond Interaction*. Cham, CH: Springer International Publishing, 2015. Pp. 160 + xvii. ISBN 978-3-319-21619-5. $89.99.

Satinder Gill is a broadly informed scholar who swims easily in and through dozens of disciplines including philosophy, psychology, and the arts. Growing up in England as the daughter of Karamjit S. Gill (founding editor of *AI & Society: Journal of Knowledge, Culture, and Communication)*, she attended AI conferences as a teenager and regularly talked with exciting thinkers from around the world in the family living room. After majoring in aesthetics in college, she started her PhD in computer science but then skipped to experimental psychology. She studied computational linguistics and psycho-linguistics in Japan and Stanford, and returned to the UK in 2003 to an appointment in Music at the University of Cambridge.

During her experiences abroad, she witnessed frequently how cultural differences can lead to misunderstandings. Cooperating with non-English speaking groups sensitized her to non-verbal communication. Now working as associate editor of *AI & Society*, Gill explores *knowledge transfer* between leading artists, engineers, and therapists in personal and technologically mediated interactions.

The challenging aim of T*acit Engagement* is to illuminate the complex field of humans in their interfaces. She seeks to "present the whole picture" about "what is dialogue" (p. v). Hence the book includes a wide range of insights from such fields as the history of philosophy and AI research, science studies and music-psychology, cybernetics, and anthropology. Her inquiries include reflections on the problems of expertise and mediation. Gill's arguments are underpinned with glimpses of her personal experiences, teachings from Taoist philosophy, lessons from traditional Japanese dancing, and images of technologically induced interactive performances. The main thesis of the book is the Polanyian idea that data-driven explicit knowledge is deeply inhuman when disconnected from embodied tacit knowing. She believes the digital age threatens us with losing balance in relation to purpose, ethics, aesthetics, and quality of life—and she suggests what we can do about it.

The first chapter guides us through the modern history of AI research, seen as built on naïve cognitivism and the flawed conception of a disembodied brain. Differentiation between the *transactional* levels of communication (aiming to transfer information to achieve a goal) from

the phatic or *relational* levels (concerned to set up and sustain the communicative situation) helps reveal why and how the interest in *embodiment* and *temporality* started to grow in the field of human-computer interaction. The use of dance and music to increase contact between people and foster empathy makes it obvious the "bandwidth of human sense-making" (11) is our personal, embodied act of knowing. She examines the thought of relevant "philosophers of being," including Husserl, Merleau-Ponty, Buber, Heidegger, Gadamer, and Wittgenstein (20-26). She finds Polanyi's thought to be especially useful. It develops a *mediational* understanding of the structure of knowing and reality, since indwelling is about relying on some things to focus on their joint meaning. Mediation and engagement are thus conceptually part of each other in human interaction, reaching mutuality in their heightened form, involving empathy and an aesthetic quality.

In the second chapter, we follow the birth and rise of the false Cartesian dichotomy underlying all expert systems. Both its roots and its critique are traced back to Socrates and Aristophanes and the division of techné-episteme, later expressed in Leibniz's *characteristica universalis*, Ryle's distinction between knowing *that* and knowing *how*, and the Shannon-Weaver model of communication. Gill argues the Cartesian dichotomy is connected to the ideas of representation, reductionism, and inference (in contrast to Polanyi's *integration*).

Potent critique comes not only from philosophers (like Dewey's learning by doing and Wittgenstein's pragmatic turn), but from real engineers as well. We are introduced to the thought of Howard H. Rosenbrock, who saw already three decades ago that even for machines, "some human intervention will always be needed" because "the expansion of explicit knowledge leads to a reciprocal expansion of tacit knowledge required for using the new explicit knowledge" (54). He urges "engineers to recognize the essential element of art and tacit knowledge in their profession" (as in judging, making commitments, and being responsible for social applications, grounded in the ability to doubt dogmatic formulas). If engineers believe they are not artists but scientists, it will be "difficult to persuade them that other professions have this element" of responsibility also (54).

We also meet Mike J.E. Cooley, who sees the main problem to be the forced split of objective from subjective knowledge, whereas knowledge is in fact a symbiosis between its objective and subjective parts. Their "relative levels … a person utilizes vary as one gains expertise" (56), giving bigger and bigger space to the tacit dimension. Cooley presents the process of acquiring knowledge as manifesting a spectrum ranging from data collecting to acting through successive emergent levels, which together are called the *cybernetic transformation*. According to Cooley, "Data suitably organized and acted upon may become information, and information that is absorbed, understood

and applied by people may become knowledge. Knowledge frequently applied in a domain may become wisdom and wisdom the basis for [normative] positive action" (56). As an advocate of human-centered systems design, Cooley shows that when we forget the importance of learning-by-doing and rely solely on machines, they make us lose our grip on real expertise. Gill also gives a surprising amount of attention to the theories of Harry Collins in his *Explicit and Tacit Knowledge*, but (to my relief) provides a devastating critique of Collins's work.

In chapter three, the condensed history of abstract thought is shifted to case studies to understand how people (and machines) really interact. David Efron's landmark studies from 1941 are used to describe how the hidden rules of gestures and cultural conventions shape conversations. Edward T. Hall's groundbreaking research on cross-cultural communication suggests social behavior is dominated by complex hierarchies of interlocking rhythms. Group synchrony can be seen at playgrounds where children usually—though unconsciously—act in an orchestrated way. The proxemics dance of adults, who adjust their distance while converging to a "fraction of an inch" approximately every 30 seconds, is also cited (78). Using the notion of "floating intentionality," Ian Cross concludes we are "bioculturally" shaped to "both perceive and anticipate when an event, be this a gesture or a vocalization, is going to occur, and to mutually respond to it in a coordinated time" (79). All these perspectives indicate that decision-making is always a culturally rooted communication process and that autonomous experts don't exist. Expertise is distributed, and the truth of interpersonal encounters is expressed by rhythms. *Knowledge is carried in rhythm.* Gill suggests that if we affirm Ryle's distinction between knowing *that* and knowing *how*, we should also recognize the importance of knowing *when*.

Chapter four is mainly about "Dialogue Act Theory," perhaps Gill's most important personal contribution to the science of embodied interactions. Her theory expands the field of pragmatics to body-language ("pragmeme," 106). Body moves affect the way people are present to each other, physically demonstrating their commitment to engage, managing possible loss of contact and lack of attention, working in harmony with the intention of the speech-act. The notions of "entrainment" (from biomusicology) and "pivotal moment" (from music therapy) are key aspects of the notion of the *engagement space*, where embodied persons are constantly negotiating and reforming their fields of interaction (109). The most exciting moment is the parallel coordinated move, at which point the bodies stop acting upon an action-reaction model and become synchronized and move in parallel—highlighting that resolution is found in the discussion (113).

In the fifth and final chapter, eight projects are presented. They all balance around art, engineering, and science. They aim to overcome the problems

previously discussed in the book, thereby making technology more truly interactive and human. The Topological Media Lab of Sha Xin-Wei stands out with its inspiration from continuity and process philosophy. One of their persistant questions has to do with human identity, including the relationship between the individual and the environment (i.e., where one begins and the other ends). Maja Kuzmanovic's FoAM lab projects possible futures with progressive creativity and humor.

However, the main message carried through the first four chapters suddenly and surprisingly becomes vague here. Gill forgets to indicate that real interconnectedness must have been difficult to be felt in SecondLife's virtual world (Cosmin Manulescu's project). She also does not criticize the potential usefulness of the Shannon-Weaver model of information in the Faraway project of Kristina Andersen that posits the use of telecommunication for people in love. Although being a good method to check whether the reader truly uses his/her "ability to doubt," one wonders whether it's inevitable that the sharp philosophical standpoints have to fade when artistic models are employed.

This leads to a thin but basic critique of the book: the lack of proper editing. There is overflowing redundancy of examples used in the chapters. Sometimes the same words and sentences are repeated without reference to the previous use of the example. It does not do to lump together many articles written about the same general topic without doing some serious editing.

In spite of the hazy final chapter, the book's conclusion seems unambiguous: the worship of explicit knowledge is not only sterile, it is dangerous. Of course, it is already useful to know you're never going to train your apprentice adequately through video conferences—or even through a wall of glass. But the false belief that experts have their knowledge of a subject in their *heads* and that there exists "the one best way" (92) to accomplish outcomes has led to damaging effects since the 1970s. The use of knowledge-based systems has made purported experts lose their confidence and their ability to judge perceptively. The power of true knowledge lies in being able to deal with uncertainty and ambiguity. It depends on the capacity of a person to digest and reflect upon information, interpreting and judging it. This in turn requires imagination and tacit ability. Certainty is a roadblock. Gill warns that the damage done to date is only going to be "surpassed by the concept of Big Data" (38). It seems impossible to argue against her.

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