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By Holly Willis

Spime, blogjects, ubicomp, everywhere: the world's rich with terms to describe an emerging environment criss-crossed by undulating currents of connectivity and intelligence, a world with computers so embedded in the built environment that they become invisible. "Ubiquitous" and "pervasive computing" are common terms designating this world; others include "physical computing" and "ambient intelligence," with a recent conference on "situated technologies" paying deserved attention to the ways in which networked computing should always be understood within a social dimension.

Some of the earliest articulations of pervasive computing turn up in science fiction, as in Ray Bradbury's eerie – and prescient – short story "The Veldt" from 1951, about Lydia and George Hadley who live in a Happylife Home, a terrific abode that "clothed and fed and rocked them to sleep and played and sang and was good to them." Unfortunately, the home's nursery and its ability to manifest the anger and dark fantasies of the Hadley's two children does very bad things to the hapless parents, helping instigate a pervasive fear of pervasive computing that continues today.

While the idea of pervasive computing flourished in fiction from the 1950s on, histories of the "real" evolution of pervasive computing typically start with the same nodal point: In 1991, Mark Weiser of Xerox's Palo Alto Research Center (PARC) wrote an essay, "The Computer for the 21st Century," describing a third stage of computer use in a trajectory that starts with mainframe computers, then moves to the dispersal of computers into daily life via desktop computing. The third stage is the further dissemination of computers into the environment around us. Weiser wrote many essays describing the form and potential of ubiquitous computing, noting that while decades of interface and computer design focused on creating what he called the "dramatic" machine, he was far more interested in the "invisible" network. "Its highest ideal is to make a computer so imbedded, so fitting, so natural, that we use it without even thinking about it."

In the 25 years since Weiser's essay, thinkers, artists, groups and conferences devoted to investigating ubiquitous computing have proliferated, and the key issues – how does computing shift when it melds fluidly with everyday social interaction? how should we plan for and design this intersection? how can we protect our privacy? is this stuff magic? what about the things that really matter? and who gets to ask and answer these questions? – intersect with topics in overlapping fields, including locative media and wearable technology. Ubiquitous computing also connects with ideas linked to "relational aesthetics," Nicholas Bourriaud's term for an aesthetics that centers on human interactions and social context, and distributed aesthetics, defined in a 2005 issue of *fibreculture* as being concerned with "experiences that are sensed, lived and produced in more than one place and time" in a network.

Centers of discussion around ubiquitous computing include the Tangible Media Group at MIT, as well as the Media Lab's Things That Think consortium under the leadership of Hiroshi Ishii. The key conference is Ubicomp: International Conference on Ubiquitous Computing (although the Situated Technologies conference in October,

2006, focused productively on the social dimensions of ubiquitous computing and the LIFT conference in 2006 centered on ubiquitous computing). Blogs host a good amount of the most topical discussions, with Anne Galloway, Timo Arnall, Nicolas Nova and Julian Bleecker leading the way, and Regine Debatty's blog *we make money not art* showcasing many projects. The Institute for Distributed Creativity list, with guidance from Trebor Scholz, is also often an excellent source for heated debates about the Internet of Things.

Artists working on projects related to ubiquitous computing include Natalie Jeremijenko, Jonah Brucker-Cohen, and Beatriz da Costa and Brooke Singer (Preemptive Media), all of whom create projects that question how we interact with networks and how networked things might interact with us.

Key texts in the ubiquitous computing field include Paul Dourish's *Where the Action Is: The Foundations of Embodied Interaction*, which centers on rethinking the cultural organization of space and reimagining the often ignored metaphors that condition how we understand the physical world around us.

More recently, Bruce Sterling's Mediawork pamphlet *Shaping Things* gave us the word "spime," which refers to a new genre of thing. Spimes are neither old-fashioned artifacts nor complex machines, but instead objects equipped with informational support such that they become "material instantiations of an immaterial system." Spimes, which remain imaginary, speculative concepts at this point, are interesting in that they mix the old and the new, and in Sterling's deft hands, they conjure a material world without its traditional constraints.

Julian Bleecker adds yet another unfamiliar word with his term "blogject." He writes, "'Blogject' is a neologism that's meant to focus attention on the participation of 'objects' and 'things' in the sphere of networked social discourse variously called the blogosphere, or social web." Bleecker also wrote a "Manifesto for Networked Objects," which, in addition to discussing blogjects, develops an impassioned argument for reconceptualizing our relationship with things as they become networked.

Adam Greenfield adopts the term "everyware" in his 2006 book *Everyware: The Dawning Age of Ubiquitous Computing*, in which he describes a series of advances that affect how people are beginning to perceive a world enhanced by networked things.

The questions around things that communicate amongst themselves resonate on deeper political and philosophical levels, too. In the 2005 exhibition titled "Making Things Public: Atmospheres of Democracy" curated by Bruno Latour and Peter Weibel for Germany's ZKM, Latour uses the German neologism "Dingpolitik" to point to "a risky and tentative set of experiments in probing just what it could mean for political thought to turn 'things' around and to become slightly more *realistic* than has been attempted up to now." Latour argues that philosophy and politics have both historically disregarded things, focusing instead on issues, values, opinions and facts. However, writes Latour, what unites people are things, which tend to form the often invisible or elided backdrop for all of the other terms that we use to form communities of agreement. "There might be no continuity, no coherence in our opinions, but there is a hidden continuity and a hidden coherence in what we are attached to."

But what does any of this have to do with design and the focus of Art Center's Media Design Program? Latour's turn to things and the recognition that they're far more complex and compelling than philosophers would care to admit underscores the significance of any work conducted in regard to networked, computational things. Further, the calls for interesting ideas in the realm of ubiquitous computing are frequently directed at designers. Malcolm McCullough, in his 2004 book *Digital Ground: Architecture, Pervasive Computing, and Environmental Knowing*, writes, "The saturation of the world with sensors and microchips should be a major story, and an active concern for all designers." Further, Bleecker claims his "Manifesto" is not about predicting the future, but instead, "[it] is a design imperative." He continues, "I'm saying that design agents should think hard about the opportunities for creating more lively engagements with Things, enrolling them into the thick, contested and messy imbroglions of trans-species dialogue that lead to more habitable worlds." Likewise, Sterling concludes *Shaping Things* by describing technology that understands itself, technology that is, in some ways, self-reflexive. Then he writes, "But it's not enough to think about that, or even write about. If it's to be of any use to humankind, it will have to get done. I hope that you're the kind of person who can do it."