

Robert Mitchell and Phillip Thurtle (eds.), *Data Made Flesh: Embodying Information*. New York, Routledge, 2004.

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Bodies in Motion in the Information Age: Singing the Body Information

The late twentieth-century could come to be known as the Age of the Body, the era in which echoes of Plato's complaints about the body finally faded away and thinking men and women began to rally around Nietzsche's claim that there is only body. All efforts in the post-Phaedo world to disassociate thoughts and minds (and brains, I might add) from bodies have failed. Today, what remains of the Platonic realm and its transcendental offshoots are all victims of the embodiment movement. What is this but the triumph of some form of materialism. We need to mobilize efforts like those reported in this volume to reject transcendence and to eradicate vulgar notions of materialism without rejecting materialism. Marx brought the calculus down to earth, Spengler and Wittgenstein went further and anthropologized mathematics. Durkheim is the modern locus classicus for the rejection of transcendence. He is well-known for the argument that God is a collective formation and collective elaboration. What is not so well known is that in the closing pages of the study in which he argues that God is a symbol of society, he demonstrates that logical concepts are also collective constructions. With the coming of science studies and cultural studies, we disciplined mathematics and scientific knowledge as social constructions. The next phase of this "rejection of transcendence" is now underway in the sociology and anthropology of mind and brain. Information has classically been as recalcitrant as pure mathematics in resisting embodiment, but now it too is falling under the disciplining measures of materializing and embodying strategies. The Age of Information might easily displace The Age of the Body as the most appropriate representation for our era.

Robert Mitchell, an English professor, and Phillip Thurtle, a sociologist, have collected a set of essays that convincingly demonstrate the embodied materiality of information. It is as much argumentative acuity as imaginative choice of sites and contexts that helps the volume as a whole manifest the editors' goal of illuminating "the material poiesis of information." The materiality of information is revealed in case studies of medicine and semiotics in eighteenth century France; horse breeding and horsemanship metaphors; machines; mind, brain, and consciousness; biotechnology and genes; performance art; cyborgs; women and digital bodies; virtual reality; and the self. The contributors are luminaries and rising stars in the world of digital artists and cyberculture critics (Richard Doyle, Mary Flanagan, N. Katherine Hayles, Robin Held, Eduardo Kac, Elizabeth Leguin, Timothy Lenoir, Mark Poster, Steve Tomusula, Anne C. Vila, Bernadette Wegenstein, and Kathleen Woodward). Incidentally, this is another example of the movement associated with postmodernism that has seen literary theorists and professors of art, history, and especially English replacing philosophers as the arbiters of logic, theory, argument, and cultural critique.

As we move through these case studies, we add to the consiliency of evidences that incrementally builds the argument for the materiality and embodiment of information. The body begins to materialize in chapter 1. In eighteenth century France, “the sensible body” was the core metaphor that guided thinking about body, mind, and society. Sensibility, aligned with medical semiotics, afforded the physician-as-philosopher and intellectuals from Diderot to de Sade ways of modeling the body. The body is a bridge concept, a contested object, across a variety of discourses – it is a boundary object. Information is also a boundary object, and it is where these two boundary objects meet that the rationale for this volume emerges.

Command and control issues dominate the next two chapters. Their messages are that equine metaphors of control are widespread in our car culture, that the horse-human system informs the discipline of the body, and that horse breeding is the basis for lessons on biology and society and especially on eugenics. It is worth remembering at this point that the goal of “breeding” a professional class alluded to in this part of the book was a practical alternative to a eugenics program that could not be ethically or scientifically realized. The concept of “profession” was in fact developed and promoted by eugenicists.

This section of the book takes us into the information age. The focus here is on the body as a boundary object between information and control in an era of bioinformatics, the shift from a cryptographic to a pragmatic paradigm in biological discourse, and hybrid bodies. The analysis gives witness to the commodification of the body, something we should recognize in more general terms as part of the commodifying blitzkrieg of latter day capitalism. Consider, for example, Robert Mitchell’s chapter on body wastes, information, and commodification. We are living in a transitional (or post-?) capitalist society organized around an informational mode of production, with the social relations of production informaticized, and informational forces of production. As we informaticize objects, bodies, and relationships, everything becomes more readily commodified, including body parts and body wastes. Capitalism as discourse and information reaches its apex as a system of inclusion and exclusion in commodity imperialism, colonialism, and market expansionism.

New forms of embodiment abound: virtual informatic surgeons, digibodies (a third space between mind and body), and informatic emotions. Finally, we find ourselves at the intersection of bioinformatics and the visual arts, engaging installations such as “Einstein’s Brain” (by Dunning, Woodrow, and their collaborators) and Kac’s “Genesis.” Here are the results of moving from conceptual criticisms of biotechnology to using it in aesthetic formations. The cult of information arises out of a sea of media bodies, reality-transforming symbols, and the mindbody concept. The meaning of the human genome is not simply the province of the scientists, but a boundary object batted about and battered in the arenas of art and culture. As we move through this text, representation fades away and data is made flesh. Simultaneously, the flesh becomes more complicated.

Nietzsche and certainly our own contemporary students of body have helped to make a place for new kinds of bodies with new kinds of lives. This book demonstrates that it is in our (will to) power to construct new bodies, new entities, and and new forms of life. Bodies are systems of meaning, interpretations, and this means that what counts as a body is a cultural decision. One could easily imagine that we are witnessing the end of the body. Claude Levi-Strauss

(1967) argued the academics tend to focus their attention on things just at the point they are coming to an end. On closer inspection, however, endings are more likely to be transitions and transformation. The studies and analyses in this volume manifest Martin's (1990:1) contention that one sort of body is coming to an end and another kind of body is coming into being. Again, it is more accurate to think in terms of plurals rather than singles. Just as we are cautioned in science studies to think in terms of sciences rather than science (or Science), so more generally postmodern thought has pluralized our classifications and categories. The body, always in fact the focus of pluralizing disciplines if we think about it in historical cross-cultural terms, is arguably at the center of more intense disciplining actions than ever before. One reason is that the body is centrally linked to all the other entities now being subjected to pluralizing disciplines. Judith Butler (1993) expressed her frustration at how resistant the body was to being disciplined. In order to get some control over her subject (and perhaps over her self), she adopted a Foucauldian posture to address the regulatory norms through which the body is materialized. She found herself at odds with constructivism and questions about agency, but she problematized these ideas contra constructivism in a way that was prohibitively narrow sociologically.

N, Katherine Hayles takes the opportunity in her chapter to update the argument she developed in *How We Became Posthuman*. In that book, she analytically distinguished the body from embodiment. Like many of us who are struggling to escape dualistic thinking, Hayles too has found it difficult to stay the "holistic" course. In this chapter, she tries to complete her escape by adopting the strategy of positing "relation" rather than pre-existing entities (on relational thinking as a recurring intellectual strategy, see Restivo, 1983: 40-41). She adopts Mark Hansen's term, *mindbody*, to denote the emergent unity of body and embodiment in a dynamic flux of biology, culture, and technoscience. The relational stance gives us mind, body, and world as constructions of our experience.

The body as subject and object is a locus of tensions that emerge around new technologies. The powers behind these technologies announce them as gateways to utopias – it was atomic power in the mid-twentieth century, it's the human genome and nanotechnology today. These announcements call forth critics, writers who respond with dystopic and doomsday scenarios. As the body technology, increasingly fluid and evasive, emerged in this century Wells, Kafka, Orwell and others imagined the dark futures that might be ahead of us (Dyens, 2001). Today, authors such as Don DeLillo, Caleb Carr, Dan Brown, and Michael Crichton oppose the utopias of the nanotechnologists and information engineers with visions of bodies and cultures transformed in near future dystopias.

There are only a couple of allusions to the significance of the new social robotics in this volume, and some attention is given to artificial intelligence. Poster points out that experiments in robotics and artificial intelligence are blurring the boundary between the living and the dead. I would look more closely at the development of socially intelligent, sociable, and emotional robots. Woodward takes steps in this direction in her "low key manifesto in favor of respect for the material lifeworld that we are creating in our own image." She discusses the Kasparov-Deep Blue chess match, which was billed as a "man versus machine" event, and predictions about the emergence of machines with emotions. Her defense of "artifacts" spills over into a Latourian world of machines with voices. It is important to remember that Latour is at best

ambivalent and at worst maddeningly obscure on the issue of whether he believes machines can speak for themselves. In any case, Woodward's piece gives us an opportunity to clarify some misunderstandings about what is going on here. Take the Kasparov-Deep Blue match. The rhetoric of "man-versus-machine" masked the fact that Kasparov and Deep Blue were stand-ins for two networks of humans (including experts of various kinds) and machines. "Man" is already a cog in a cyborged network. As for machines with emotions and consciousness, the problem resolves itself differently if we proceed from the idea of "robots 'r' us," that is robots as a new life form, or if we think of robots as robots, that is, as machines. The robots 'r' us position leads to skepticism about whether robots could ever be conscious or have emotions in the way that we do. If we adopt the robots as robots position, however, then it becomes possible in principle to think in terms of robot (machine) emotions, and robot (machine) consciousness.

The work on social or sociable robots and affective computing has created a social space of border tensions between minds, brains, and bodies, machines and humans, and scientific and theologico-religious authority. Not only are we reinventing bodies, we are reinventing science and posing new challenges to religion and ethics. As a species, we are working globally on so many different planes of action that we are faced with the unintended, unpredictable, and unknowable consequences of a multiplicity of multiplier effects.

Information technologies are ready targets for social criticism and critical theory, and ethical analysis. Information itself has until recently escaped these critical and analytical tools. The Critical Art Ensemble collective draws attention in this volume to the theological rhetoric that surrounds the human genome project and how it masks the eugenic origins of this discourse. Genesis creator Kac, in his chapter, explains that he has tried to represent the continuity between imperialist ideology and reductionist genetics. He accomplishes this artistically by translating a passage from the King James Bible into Morse code and then translating the Morse code into a gene.

What is at stake here? Transgenic artists such as Eduardo Kac, according to Tomasula, are creating early-warning systems to alert us to the consequences of the world(s) we are fashioning for self, species, culture, and "nature." The quotes around "nature" signal an increasing awareness that the idea of Nature is not as transparent, unified, or universal as we once thought. We need to become comfortable with the idea of natures, just as we are learning to become comfortable (more or less) with sciences instead of Science, and bodies instead of Body. When Oswald Spengler wrote some eighty years ago that there is no Mathematic, only mathematics, he was helping to usher in a world of multicultural pluralities. In this (brave?) new world of pluralities, even the bodies and identities of children are at stake. What sorts of children will come from a world in which the forms of family life are multiplying side by side with novel child-machine images? This is the question Mark Poster raises in his chapter. The future, he writes, holds new ways of inscribing the body with desire, and the uncertainty of what lies ahead means the end of (depending on how much reality you ascribe to this Freudian notion) the Oedipal child. Perhaps we are harvesting lessons about children and humanity we have been taught by history (e.g., in the work of Phillipe Aries) and imagined in science fiction (notably in Arthur Clarke's *Childhood's End*).

Doyle affords us another opportunity to consider what is at stake in the informatic understanding of life by linking LSD and DNA narratives. What if Timothy Leary and Francis Crick were speaking the same language, Doyle queries? The language of information becomes a locus of the organic and the machinic enfolding each other helically, and the result is that sometimes “the capacity for replication goes through the ceiling.” Doyle perceptively infers a Nietzschean joyous science (or science of joy) from life as information. He comes very close to embracing my claim that the best science is practiced as and within anarchistic social formations. And if life emerges at the edge of chaos, we may as well say that it emerges at the edge of information, that life is informatic and that bodies are at once and already bodies of information. It is a relatively short step to recognizing where the “feeling” for the cyborg (Woodward, 194) comes from; embodiment is necessary for learning emotions. The possibility of “peaceful collaboration” between humans and “artificial entities” is dependent on the cross-species communication of the “caring emotions” (especially empathy and sympathy). We are at the threshold not simply of understanding the conditions for relating to machines but to other humans, to the Other (whether fellow human, alien, or animal).

There is another contender besides the body and information as we consider how to describe our era: The Age of the Social. And all of these writers are haunted by the shadow of the social. They must turn around and face this terror squarely (as all of us must do) to ground embodiment and body in social discourse and social practice. We and everything we invent and discover are socially constituted, for there is no other way to make our worlds than through our interactions with each other as socially constructed selves. Here is where we will find the re-solution of the mind/body and mind/brain problems. The turn to the body is a significant reply to the mistaken focus on brains and genes as the seats of our humanity, our creativity, our consciousness. It is not brains and genes that learn and act, but an integrated informatic entity that erases the boundaries between brain and body. We socialize this informatic entity, not selves or persons or individuals in the classical senses of these terms. We “inform” this entity. Some move in this general direction is necessary if we are going to overcome the cults of the brain, the body, and the gene. In that case, the concept of mind might become dispensable.

Globalization, as a practical expansion of the ecumene (as a function of the pragmatics of expanding markets through economic intimidation and warfare) is about the construction of new world orders but also about the construction of new bodies, new selves, new worldviews, new ways of classifying and categorizing who, what, and where we are. The informed body – the body information – is one of many informational vectors along which the world’s cultures move in a multicultural dialectic of bodies and information in motion. It should not be surprising then that “circulation” has become one of the key ways of dealing with the ways in which the logic of flows apparently trumps the logic of structure in the works of such thinkers as Castells, Harvey, Latour, and Deleuze and Guattari (Lash, 2002). We may, however, be dealing with a flow/structure duality that it is dangerously tempting to think of as loosely analogous to the wave/particle duality. I suggest this as a precaution against reifying flows and circulations as something more than themata, schemas, or paradigms. In any event, the dynamics of bodies and information, the movement of our most fundamental systems of classification, the fluidity of cultural boundaries will continue to place challenge after challenge into our public agendas. The arena of science and public policy is challenged to change its dimensions and rules of engagement. The challenges to traditional ways of thinking about

nature and society, humans and machines, and data and flesh threaten the very idea of science and therefore the meaning of “science and public policy.” It is tempting to seek Latourian (Latour, 2004) solutions to our “science and society” dilemmas.

The lessons Latour draws from science studies about the nature of science, especially that we need to think in terms of sciences and not science or Science, are ignored at our peril. To imagine, however, that it is still possible to think philosophically and metaphysically about democratic institutions and to seek solutions in constitutional and parliamentary metaphors that violate the realities and complexities of our social and cultural moments and movements cannot be sustained in this new world of flows and circulations (Restivo, 2005). Latour’s work demonstrates that we may have pushed past the limits of philosophy and metaphysics as modes of inquiry and action. Our more immediate concerns must be with a world at war. While we were waiting for atomic bombs to announce World War III, it engulfed us without mushroom clouds and radiation but rather through explosions of terror. There is no guarantee we won’t annihilate ourselves in the variety of warfares that signal world wide changes in political economy and ecology. But with some sort of future awaiting us for the moment, we are starting to construct the latest creation myth, and this one begins: “In the beginning was INFORMATION.”

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