Students of philosophy, hermeneutics, the nexus of information machines and social relations, as well as intellectual history more generally will find this a useful text for thinking with and thinking against. The discussion of Marshall McLuhan and Donna Haraway, and in particular Lash's revision of McLuhan as a media theorist doing the kind of media theory Lash calls for (minus the politics), is well worth reading. *Critique of Information* is a difficult book and this is a compliment at a time when the academy is called on to render its product ever more applied—in short, a technique rather than a practice aimed to hone critical thinking skills. A greater editing presence would have helped the author's mission but the engaged reader may fill in the blanks. If, following Lash, there is no transcendence in information society, and if information in itself needs to be resisted as the promised land, then this book beckons critical readers to consider how they might take the next steps toward formulating, as a kind of praxis, the media theory sketched in its pages.

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Transductions: Bodies and Machines at Speed, by Adrian Mackenzie (2002). London: Continuum.

Transduction is a technical term that literally refers to the moment when one kind of energy is transformed into another (e.g., microphones transduce voice into an electric current). However, the transductions that interest Mackenzie are much more ephemeral and, hence, difficult to locate. *Transductions* is a series of explorations of localized milieus of technical practice to reveal key points of transformation—that is, transductions—that enable the formation of more recognizable and mobile sociotechnological ensembles. Processes of transformation between the human and nonhuman have been the focus of the now well-established social studies of science literature; however, *Transductions* offers a novel take on these problems through its specific focus on speed and bodies and its theoretical approach through the concept of "originary technicity."

The concept of originary technicity is used to argue that "it may not be possible to think of a body as such because bodies are already technical and therefore in some sense not self-identical or self-contained" (p. 6). It is argued that technology works through the logic of the supplement, such that a "possibility produces that which it is said to be added on" (p. 8). This lack of an origin then points to a complex temporal, or better temporalizing, role for sociotechnical ensembles. Mackenzie develops this point by drawing on the work of Gilbert Simondon and, in particular, his concepts of technicity and transduction. Technicity refers to a particular constellation of relations that allow for a particular outcome in a heterogeneous ensemble and, therefore, it is distinct from any particular component (what Simondon calls a *technical element*). Perhaps technicity is best understood as a resonance, which in turn draws attention to the process of transduction, which takes place around singular points in an ensemble. Transduction is an ongoing process of individuation by which diverse interactions and resonance form in to a recognizable metastability.[1] Such a brief summary can hardly do justice to the subtlety of the theoretical concepts at work here, but these are developed more fully in a series of case studies that show how the concept of transduction

can allow us to think through the formation of bodies, speed, and the potentials for change embodied within sociotechnical ensembles.

Chapter 1 deals with questions of corporeality and technicity and draws on feminist literature on performativity to develop the concept of originary technicity and address fears of the loss of corporeal propriety that are often raised in relation to technology. The second chapter contrasts two historical limit cases—the stone axe used by proto-hominids and supercomputers used in nuclear weapon design. Here, Mackenzie analyses particular technical practices to reveal processes of individuation that lead to the technicity of the stone axe and the nuclear bomb. In doing so he challenges evolutionary technological narratives (i.e., from stone axe to supercomputer) as well as narratives of inevitable proliferation. Chapter 3 provides a detailed discussion of the first pendulum clock and the atomic clocks that form the basis of GPS systems to reveal the moments of transduction at the heart of the clock-time technicity that form global spacing(s) and timing(s). He uses this analysis to question the idea of a global acceleration in time (speed). Chapter 4 takes up the question of speed again, but this time from the standpoint of an individual experience and body as represented in the Stelarc's performance art piece *Ping Body*. In this performance, Stelarc's body is randomly activated by electrical shocks transduced from the ping program on UNIX computers that monitors the delay between sending and receiving signals from the Internet. Although *Ping Body* has been interpreted as a comment on the speed of contemporary life and docility of the modern technologized body, Mackenzie's innovative critique focuses our attention on the importance of the fact that *Ping Body* is animated by delays. *Ping Body* allows us to see that speed is only perceptible because of delays (there is only ever differences in speed), and that such delays are important for considering how we might intervene in "speedy" sociotechnical ensembles. The role of delays is taken up again in the next chapter, where Agamben's concept of the "whatever body" is used to explore how delays in an online computer game can shed light on what kinds of collectives emerge in the real-time universe of contemporary ensembles of computation and communication. Finally, the last chapter deals with biotechnology to address the problem of how to formulate the technicity of an ensemble that is assembled from living and nonliving milieus. It also addresses how biotechnology's curiously half-living, half-nonliving status heightens the instability at the borderline between life and death and makes explicit some of the consequences of the technicity of collectives.

The centrality of temporality in the concept of transduction is particularly interesting because it begins to think through how to represent process in social analysis. Some readers may find that Mackenzie places too much hope in fleeting moments of transduction—that is, instability—but *Transduction*s is anything but another techno-utopian text. On the contrary, his careful analysis of technical practices offers a much more sober approach with no clear solution. The coherence of the argument is helped considerably by his specific focus on the connection between technologies, bodies, and time. Although he admits that there is not absolute justification for this choice, he suggests that "it is in relation to bodies and time that modern technology effects its most intimate synthesis with cultures" (p. 1). This insight encourages us to apply the kind of analysis used in *Transductions* to other areas of social research to explore the connections and delays that allow the world to be set in motion.

Note

1. Although Mackenzie does not draw out the connections, readers familiar with the work of Deleuze and Guatttari will find resonance between the discussion of transduction and Deleuze's and Guattari's discussion of concepts such as the virtual assemblages/plane of consistency and abstract machines.

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