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written permission of Michael A. Fuller, (That should scare them!)

Coda

Lev Vygotsky complained that Piaget's focus was internal and that therefore Piaget ignored the complex dialectic in which humans change the world for their own use and then reshape themselves to correspond. This book suffers from a similar narrowness of inquiry. My initial plan was to establish the model of a developmentally structured system of cortical semantics that underlie the neuronal self and then look at how large-scale external structures affect the stability of the internal system. I intended to explore topics ranging from the social construction of the self to the conflict of cognitive and affective commitments in the abortion debates to the centrality of aesthetic experience in stabilizing our faith in our knowledge of the world. The point of these thematic explorations would have been to flesh out the implications of the model of the neuronal self and its relation to the world that I develop in the book. I decided, however, that just presenting the model itself was perhaps enough of a burden for one short book to carry.

I have no idea if the immediate implications of the biological model are self-evident. My wife would like me to stress the very practical point that finding ways to help the uncertain, frustrated, or depressed parent during the first 12 months of a baby's life will produce a greater benefit than any theorizing on aesthetic issues. This is surely true. If this book can help get the word out, it will have served a useful purpose. That, however, is not my goal: there are extremely good developmental psychologists who already have made these arguments far more

effectively than I. Instead I simply have sought to suggest the depths of structure, meaning, and historical specificity within the neuronal self, to show that the complexity we associate with human discourse is not contingently part of the biological at a merely anecdotal level but an inextricable feature of our current models themselves.

What needs further comment? Is it clear, for example, how temporality pervades the model? Meaning in the cortical system is never entirely self-present: its interpretive structures are the remains of causes that are no longer present and cannot be fully reconstructed. The world always precedes us in ways we cannot grasp. Is it also clear that the bugbear of determinism that shapes our anxieties about science is still with us but does not really matter? Barring unforeseen quantum events, one can calculate the movement of gas molecules in a room, if one knows the initial location and speed of all the molecules (again within limits imposed by quantum mechanical effects). No one ever has this knowledge, and instead we use statistical mechanics to predict the aggregated behavior of large populations. One can calculate the growth of the individuated self as a biological entity, if only one fully knows the laws of transformation and the values of all the variables along the way. Neither is going to happen. Instead, we have the human sciences and their various forms of understanding of this historical self.

Given the predictive uselessness of the programmatic assertion, “What you will do already is determined,” its meaning surely resides in its attack on the idea of individual free will, and an attack on free will is an attack on the essential self that stands outside the accidents of history. This aspect of the neuronal self may be the

most difficult to reimagine. Perhaps a comparison with Buddhist practice may suggest a way to think about the self and its integrity vis-a-vis the world. The basic Buddhist position is not only *anatman*, the non-existence of an essential self, but also the more general non-existence of *svabhava*, self-being. The biological, materialist account concurs in its own way: biological entities are what they (we) are through the long evolutionary dance driven, in the end, by the fundamentals of physics and chemistry. Meditative practice helps one realize that all the entities that we might think of as individual “things”—this book, my shoes, my self—in fact are temporary aggregations brought together by prior causes. In a further development, however, Buddhist philosophers realized that the distinction between the conventional (*samvrti*) and ultimate (*paramartha*) perspectives on objects was itself the product of conventional perspectives. Not only is the ultimate view not ultimate, but the conventional view is not conventional. To deny the existence of the self within its nexus of causes is to be fixated on a pre-dialectical ultimate, just as to affirm the existence of a self outside of conditions is to be mired in pre-dialectical conventional views. The biological self—like the Buddhist version—is there in its fulness as the circumscribed entity it is: it is no other thing, nor need it be.¹

I hope it is also clear why I have paid little attention to consciousness in this account. Consciousness is no doubt important in the integration of information,

¹ Theodor Adorno proposes an analogous dialectical account of identity in his *Aesthetic Theory*. The formal correspondences should not be surprising, since both Buddhists and Adorno focus on responsibility and action within a phenomenology without essences.

plans, and actions and in the structuring of more complex meanings in semantic memory. But in the biological/cognitive view developed in this book, consciousness is not the prime mover, a cause without earlier conditions. Consciousness provides insight into internal structures but does not sit in sovereign majesty above those structures. In this book I have focused on the systemic logic of meaning rather than on the mechanisms by which the brain calls upon meaningful data and performs its evaluations.² I have paid little attention to language, however, for quite a different reason. The logic of linguistic production, the constraints of syntax, the organization of the lexicon, its relationship to other modalities, and many other questions about language all are clearly relevant to our understanding of the structuring of meaning in the brain. Unfortunately, we just do not know enough about the fundamental systems for language in the brain to include them in the story. We can talk about the use of language to organize ever more high-order systems of relationship—using language both internally *and* externally to encode and thus preserve the structure of meaning—but we are far from explaining how these transformations occur at the level of synaptic structure.³

² Consciousness of course is still a central category in experience. For example, I find the philosopher Jeffrey Reiman's argument about the ability to consciously value one's life as the key to "asymmetrical valuing" which in turn can serve as a standard in ethical judgments about killing. See Jeffrey Reiman, *Abortion and the Way We Value Human Life* (Oxford: Rowman and Littlefield, 1999).

³ This issue was central for Vygotsky and, more recently, for the human information systems theorist Andy Clark. See Andy Clark, *Being There: Putting Brain, Body, and World Together Again* (Cambridge, MA: MIT Press, 1997).

Finally, in the absence of specific applications, is the point of the project clear? To take one's own life as biological is to live within dialectics of proximal interpretability and transcendental opaqueness and of identity and alterity. The self, all one knows, and all access to experience are built anew along regular patterns for every person. Judith Butler argues that the body is a social construct: indeed it is, but then in the end the social is a biological construct, so the dialectic of shaping—driven by cortical logic but mediated by family, friends, language, culture, and all that comprises the human world—goes round and round. We do not yet know what new shapings are possible. We can do more and live better, but we can also abuse our growing knowledge of the biological. The directions we travel will require a breadth of vision and acts of informed imagination to which I hope this book contributes.