

Review of *Consciousness in Action*, by Susan Hurley. Cambridge, MA: Harvard University Press, 1998. Pp. xii + 506, H/b £41.95, P/b £17.95*

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Questions about the relation between mind and world have long occupied philosophers of mind. In *Consciousness in Action* Susan Hurley invites us to adopt a “ninety-degree shift” and consider the relation between perception and action. The central theme of the book is an attack on what Hurley dubs the *Input-Output Picture* of perception and action—the picture of perceptions as sensory inputs to the cognitive system and intentions as motor outputs from it, with the mind occupying the buffer zone in between. Hurley argues that this picture confuses the personal level of normatively constrained mental contents and the subpersonal level of causal processes sustaining the mind. The notions of perception and action belong to the former, those of input and output to the latter. In place of the Input-Output picture, Hurley proposes a *Two-level Interdependence View*. At the subpersonal level, she points out, there are not only one-way processes from input to output but also a host of feedback loops from output to input—some internal to the central nervous system, some of wider orbit, involving proprioception, for example, or visual feedback on movement. The system as a whole can be seen as a *dynamical singularity*—a tangle of sensorimotor feedback loops centred on the organism but extending out into the world beyond. The processes at this level are the vehicles of perceptions and actions, but, Hurley insists, the two levels cannot be mapped onto each other in a simple way. Changes on the output side may affect the content of perceptions, and changes on the input side may affect that of intentions. Perception and intention are in this way *interdependent*.

The point here is not the uncontroversial one that perceptions and intentions can *cause* changes in each other. That would be compatible with the Input-Output Picture. The dependency, in Hurley’s view, is not instrumental, but *constitutive*: the contents of perceptions and intentions are each constituted by processes involving both inputs and outputs. Both are functions (albeit different ones) of the same underlying relations between inputs and outputs. On this view, Hurley points out, the “inward retreat” of the mind is blocked. The mind is not sealed off from the world behind an internal boundary, but reappears “out in the open”—as a high-level feature of a complex world-involving feedback system.

This two-level interdependence view is the linking thread for the ten independent essays that make up this book. The first five motivate the view by examining issues related to the unity of consciousness. Hurley argues that we cannot explain co-consciousness in subjective terms, by reference to the contents of the states involved, and that a two-level account is needed which incorporates both personal-level normative constraints and subpersonal structural ones (Essays 1, 3, and 5). At the same time, she cautions against supposing that the unity of consciousness requires a

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unitary locus of consciousness in the brain. We should not confuse the structure of the *vehicles* of consciousness with the structure of consciousness itself. Rather, what is required is the functional unity provided by the existence of a dynamical singularity.

Motivation also comes from reflection on the role of agency in perceptual consciousness (Essays 2 and 6). Many philosophers would agree with Kant in stressing the active nature of perception and rejecting the view that unified perceptual content is a psychological datum (the “myth of given”). But, Hurley points out, those who reject that view often tacitly accept a parallel one with regard to action—assuming that the content of our intentions is an unproblematic psychological primitive. (Hurley dubs this the *myth of the giving*.) A more adequate view, she argues, sees experience and agency as constitutively interdependent. The existence of such interdependence, Hurley suggests, is part of what it is to have a unified *perspective* on the world.

Later essays address the relation between perception and action more directly. Essays 7 and 8 focus on content externalism. Thought experiments employed in this area typically assume that internal physical states could in principle be duplicated in different external environments, as in Block’s Inverted Earth example. Hurley argues that this overlooks the dependencies between perception and action and the feedback relations between output and input, and she goes on to trace out the consequences of these dependences and relations in exquisite detail, developing new thought experiments which cast doubt on the duplication assumption. The moral is, not that content externalism is false, but that traditional arguments for it are wedded to the Input-Output picture. Indeed, Hurley can be seen as an ultra-externalist—suggesting, not only that mental content is determined by external factors, but also that the *vehicles* of content extend beyond the organism.

The last two essays draw on neuropsychological work. In Essay 9 Hurley seeks to undermine the Input-Output Picture by describing various cases—some real, some thought experiments—in which distinctions and invariants in the content of perceptions and intentions seem to depend noninstrumentally on both inputs and outputs. One such case is the paralyzed eye phenomenon. If a person with paralysed eye muscles tries to look to the side, they find that the world seems to jump sideways, even though their eyes have not moved—suggesting that perception can be a function of motor output as well as sensory input. Another example is the way biofeedback can enable us to acquire direct control over bodily processes that are not normally susceptible to it—suggesting a similar dependence of intention upon sensory input.

The final chapter sets Hurley’s views in the context of recent work in psychology. The orthodox view of the mind, Hurley notes, is that mental processing is linear and that there are merely instrumental relations between perception and action. She reviews some alternatives to this view, focusing in particular on *motor theories* of perception and *control systems theories* of action, both of which appeal to dynamic feedback and posit constitutive dependencies between perception and action. Together, she suggests, these theories offer a way of filling out the Two-Level Interdependence view. The upshot is a view of the mind as *horizontally modular*—

composed of multiple dissociable sensorimotor layers, rather than being vertically divided between input, cognition, and output.

There is a huge amount to admire in this book. A brief summary cannot give any indication of its breadth of scholarship, subtlety of analysis, and range of subplots. And its themes are important ones. Much of the most exciting work in recent cognitive science has been in the fields of connectionism and dynamical systems theory, and Hurley applies this work to traditional philosophical problems in a way that illuminates both. Her case for decentring our view of the mind is powerfully made and promises to have important applications. (For me, one of the most attractive of these—not stressed by Hurley—is in relation to phenomenal consciousness. Hurley's thoroughgoing externalism should help to undermine some of the Cartesian intuitions upon which strong forms of qualia realism depend.) Hurley's stress on the importance of distinguishing levels is also salutary. It is plausible to think that everyday mentalistic discourse has subpersonal structural commitments—that there is more to having a mind than simply being interpretable as having one. But attempts to spell this out usually assume that the commitment is to the existence of structures isomorphic to the entities of the everyday discourse—involving, for example, the discrete representation of propositional attitudes. The idea that the fundamental commitment is to the existence of an environmentally embedded dynamical system is an appealing alternative.

Of course, the worry about Hurley's approach is that it risks discarding the baby with the bathwater. If the mind is a collection of sensorimotor feedback loops, then how do we account for sophisticated forms of cognition, such as conceptualized thought? A horizontally modular view may be appropriate for *online* cognition, devoted to the immediate guidance of action, but what of the more reflective offline kind? Hurley addresses these questions briefly in the final chapter (pp. 401-12). She makes two suggestions. First, high-level features such as rationality and conceptual structure may be emergent properties, which arise in an unpredictable way from the complex *interaction* of multiple content-specific layers. (Again, there need not be an isomorphism between the personal and subpersonal.) Secondly, some cognitive processes may involve sensorimotor interactions with external linguistic artefacts, exploiting the structure of natural language. (A language of thought, Hurley notes, need not reside in our brains.) Neither of these themes is developed in detail, however, and Hurley may legitimately respond that they take us beyond the scope of the book. In this, as in other respects, this work can be seen as setting the stage for future research.

One could not say that *Consciousness in Action* is an easy read. The wealth of detail and minute analysis can be daunting, and it requires some stamina to work through the volume. (Hurley provides some help, however: an Introduction helpfully highlights key themes, and an Appendix provides section-by-section outlines of the essays.) There is also some repetition between essays, several of which have been published previously. Indeed, the book is a bit like a dynamical singularity itself, with many parallel threads looping round from chapter to chapter and the big philosophical

themes emerging gradually from the detail. But if the book requires effort, then it repays it handsomely. Anyone interested in the nature of the mind should read it with attention.