

Book Reviews

Catherine Malabou (trans. from French by Sebastian Rand)

What Should We Do with Our Brain?

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Reviewed by Jan Slaby

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‘Why do we persist in our belief that the brain is purely and simply a “machine”, a program without promise? Why are we ignorant of our own plasticity?’ asks Catherine Malabou in her book *What Should We Do with our Brain?* (2008, p. 9). In it, the French philosopher undertakes nothing less than to articulate a ‘consciousness of the plastic brain’ — trying to open up a fresh perspective on the potentials of the developing, transformative, enabling nature of our central nervous system and thereby attempting to supersede the pervasive, thought-numbing talk of rigid mechanisms and neural determination that still dominates much of the discourses in and around today’s neurosciences. Malabou’s central claim is refreshingly simple: current research in neuroscience increasingly reveals that the human brain is plastic and malleable in ways previously unthought-of. In effect, this insight reverses the signature claim of the champions of cerebral subjectivity, transforming the merciless ‘You are your brain!’ into the encouraging, empowering ‘Your brain will become what you are!’. It puts the person back in charge — both of their lives and of their nervous system’s organisation. However, this message has, so far, largely failed to reach an audience, both in science or academia, and in the wider public. ‘Humans make their own brain, but they do not know it’ (p. 2). There is yet no consciousness of the brain’s plasticity and thus no awareness of the potentials for development, and reorganization. ‘Neuronal man’ has yet to gain a sense of his own freedom.

In times where much of philosophy is lacking both a critical spirit and an energizing vision, Malabou's book is a much-needed manifesto coming at the right time. However, in the end it is little more than a manifesto — it is no worked-out study, it does not present much of an argument. Still, this might be what this branch of philosophy is in urgent need of. How long have we waited for sentences like this one: 'Even if it is fascinating to observe aplysias, we cannot spend our time in ecstasies over slugs' (p. 67)? Malabou dares to articulate powerfully an inchoate feeling that many share, but few have so far given sufficient expression: the sense that, despite all the exciting advances and insights into the functioning of the brain, the predominant narratives that are routinely spun, the stories that are being told about neuronal organization are remarkably lacking in spirit, creativity, or possibility. Instead, what we are presented with, over and over again, are variations of the same sad tales of rigidity and determination, of stable traits and hard-wired routines, of dumb mechanisms programmed in the stone ages by the unrelenting imperatives of natural selection. This virus has infected philosophy, as expressed in the lingering-on of the lame spirit and boring habitus of nineteenth century materialism and early twentieth century scientism, superficially 'fancied up' with borrowings from modern technoscience with its futuristic machinery and colourful images of 'the mind at work'. In short, we live in an academic environment hostile to creative thought, hostile to the new — a world in which it is clear that god *and Nietzsche* are dead.

Were it only for the boredom of the predominant narratives, we could probably still live with the situation. But according to Malabou there is more at stake. The lack of a well-articulated consciousness of the plastic brain creates a vacuum that opens the door to ideological infiltration. If you don't come up with your own narratives and ideas to take charge of your life, others will happily provide ideas and stories for you. In our day, the chief providers of ready-to-use narratives for all areas of human existence are the spin-doctors in personnel departments and counselling companies of corporate capitalism. We witness the rise of a new spirit of capitalism, the soft but unrelenting pressures of globalized economy, the universal demand for adaptability, flexibility, emotional intelligence, creativity, self-motivation, and other 'new values' that will further entangle work and life, that will facilitate the near-complete absorption of existence into the corporate culture of the work world. This, then, is the crucial question for Malabou, the leading thread running through her short book:

Does brain plasticity, taken as a model, allow us to think a multiplicity of interactions in which the participants exercise transformative effects on one another through the demands of recognition, of non-domination, and of liberty? Or must we claim, on the contrary, that, between determinism and polyvalence, brain plasticity constitutes the biological justification of a type of economic, political, and social organization in which all that matters is the result of action as such: efficacy, adaptability — unfailing flexibility? (p. 31)

The central contrast is the one between plasticity, the watchword of the new brain sciences, and flexibility, the watchword of the new capitalism; and the relation between the two is construed as clear-cut: flexibility is the ugly sibling, the mutated miniature of a hopeful idea — ‘the ideological avatar of plasticity’ (p. 12). If we fail to see and capture the potentials, the realities of the brain’s plasticity, we can rest assured that the open space of possibilities will soon be closed for good by the demands and norms of the new world order: flexibility, functionality, adaptability in the work place, and the ability to constantly relocate and re-connect emotionally — the profile of the ideal employee will be set in stone. ‘Indeed, what flexibility lacks is the resource of giving form, the power to create, to invent or even erase an impression, the power to style. Flexibility is plasticity minus its genius’ (p. 12). The looming prospect of a ‘hostile takeover’ of the promising idea of plasticity by its miniature flexibility is the organizing principle according to which Malabou arranges her material. In this way, she stylizes today’s neuroscience as facing a crucial choice:

Indeed, without this freeing [of the speech of ‘neuronal man’], neuroscientific discourse will have the sole consequence — beyond medical advances — of unwittingly producing criteria, models, and categories for regulating social functioning and increasing daily the legitimation of the demand for flexibility as global norm. To produce consciousness of the brain is not to interrupt the identity of brain and world and their mutual speculative relation; it is just the opposite, to emphasize them and to place scientific discovery at the service of an emancipatory political understanding. (p. 53)

What sort of brain science do we want? Is there such a thing as a critical, even emancipatory, way of doing neuroscience? Is this even possible? Unfortunately, this question is not developed to the full. Instead, characteristic passages are those in which Malabou provokes and energizes to help the reader grasp a sense of the futility, the boredom, the dangers that arise when neuroscience — and its ‘neuro-’ philosophical choruses — fail to understand the full potentials and responsibilities that come with their insights. Malabou thus hurls

sentences such as the following at the members, friends and sympathizers of the neuroscientific community:

How can we fail to see that the only real view of progress opened by the neurosciences is that of an improvement in the 'quality of life' through a better treatment of illness? But we don't want these half-measures, what Nietzsche would rightly call a logic of sickness, despairing, and suffering. What we are lacking is *life*, which is to say: *resistance*. Resistance is what we want. Resistance to flexibility, to this ideological norm advanced consciously or otherwise by a reductionist discourse that models and naturalizes the neuronal process in order to legitimate a certain social and political functioning. (p. 68)

It is the chief merit of the book that Malabou links, probably for the first time, the sociological and social-philosophical discourse on 'the new spirit of capitalism' (Boltanski and Chiapello, 2006) with the discourses in neuroscience and naturalistic philosophy of mind. This is largely unexplored territory, although the danger of detracting attention away from social conditions and social pathologies through neuroscience's methodological individualism and mechanistic determinism has always been clear enough. With the cultural hegemony of the neural and cognitive sciences steadily increasing in Western societies, it is high time to explore these uncanny entanglements and start a debate about these things (for another initial attempt, see Choudhury *et al.*, 2009; Slaby, 2010).

The strong points of Malabou's book come at a price, though. The book is indeed a manifesto and not an analysis, even less a scholarly one. It has its strengths when it energizes, when it stirs up a spirit and creates a fresh motivation — when it is openly an intellectual call to arms. It does not argue for a worked-out theoretical position and certainly it does not succeed at informing its readers about a developing area of research. The presentation of research in neuroscience on neuronal plasticity is highly selective and not at all up to date, shunning a lot of complexity. It is thus clear that this book will not serve everyone's tastes. On the other hand, that might exactly be the problem these days: too many people in the humanities want to serve too many tastes, catering simultaneously the demands of the neoliberal university ('research grants', 'interdisciplinarity!'), the debilitating culture of political correctness ('no *ad hominem* arguments...'), the trend towards careful, piecemeal, local studies instead of large-scale social critique ('better be careful!'), often resulting, on the part of scholars in the humanities, in escapes to aestheticized or marginal treatments. Can we re-invigorate ourselves — even enrage us to

revive the spirit, the power of intellectual critique? Do we still have the guts to say 'no'?

To cancel the fluxes, to lower the self-controlling guard, to accept exploding from time to time: this is what we should do with our brain. It is time to remember that some explosions are not in fact terrorist — explosions of rage, for example. Perhaps we ought to relearn how to enrage ourselves, to explode against a certain culture of docility, of amenity, of the effacement of all conflict even as we live in a state of permanent war. It is not because the struggle has changed form, it is not because it is no longer possible to fight a boss, owner, or father that there is no struggle to wage against exploitation. To ask 'what should we do with our brain?' is above all to visualize the possibility of saying no to an afflicting economic, political, and mediatic culture that celebrates only the triumph of flexibility, blessing obedient individuals who have no greater merit than that of knowing how to bow their heads with a smile. (p. 79)

Despite being rife with this much-needed energizing spirit, the book leaves its readers somewhat dissatisfied in the end. This is because it leaves too much hard work undone, too often remains on the level of mere gesture, is not worked-out enough as a study. Even to awaken a critical spirit, to bundle the forces of opposition, one will have to do some more, harder work, to demonstrate, to argue, to come up with facts. Otherwise, the dissenters will be disorganized, without plan and direction, and moreover those who are the target of the critique can too easily shrug it off as irrelevant. For instance, how to substantiate the claim of an unwitting connection between the values and culture of today's capitalism and the impoverished discourses around the brain's plasticity in the terms of flexibility, adaptability and 'decentralized networks'? How to show that it is more than a superficial correspondence in some formulations? In our own project of critically engaging with the current neurosciences (Choudhury *et al.*, 2009; www.critical-neuroscience.org) we have learned how hard it can be to follow-through with detailed, fact-based critical analyses of the forces and factors that stabilize today's neurocentric discourses, how complex the academic landscape, how varied the discourses, how complicated the science, how polyvalent the influences, how tricky the philosophy, how diverse and varied the interests, attitudes, orientations, technical expertise and local cultures of the scientists. Sure, it is somewhat of a dilemma: how to be *both* explicit and critical enough *and* sufficiently systematic, detailed, argumentative — in one and the same work? Malabou is not yet facing up to this problem. Her little book is in the end no more than a call to arms without much of a battle

plan. Rhetorically impressive, timely, much-needed — but not more than a very first step. It is time to follow up and go to work.

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James Austin

Selfless Insight:

Zen and the Meditative Transformations of Consciousness

Cambridge: MIT Press, 2009, Hardcover

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It would seem that, when it comes to writing about Zen and the brain, James Austin is incapable of writing a short book. Thankfully, he also tends to write very good books. His latest, *Selfless Insight: Zen and the Meditative Transformations of Consciousness*, is no exception. A 345-page ‘slender sequel’ (p. xxiii) to *Zen and the Brain* (1998) and *Zen-Brain Reflections* (2006), Austin writes in buoyant prose, deftly integrating cutting-edge brain research with personal anecdotes and Zen teaching and practice. The result is a rich and readable study that helpfully crystallizes Austin’s previous work while indicating new directions for future research. Though the reader would perhaps appreciate a more nuanced philosophical treatment of some of the many important, and potentially controversial, issues discussed within, the book nevertheless stands as yet another example of how contemporary consciousness research can benefit by undertaking a serious and sustained engagement with non-western contemplative practices.

The reader unfamiliar with Zen Buddhism will find basic principles presented in a clear, straightforward way, supplemented with myriad quotes from Zen teachers old and new. However, the unprepared reader may find the accompanying blizzard of neurophysiological data somewhat overwhelming. A sympathetic author, Austin recognizes the complexity of both Zen and the brain as topics of enquiry and thus invites the reader to ‘read slowly, skim when appropriate, and to refer often to the figures, tables, glossary, and mondo summaries at the

end of each part' (p. xxii). This reviewer took Austin at his word and found the approach to be a helpful strategy. The result is a work that invites — and can indeed accommodate — modes of readerly engagement both intense and casual.

Despite the wealth of material covered, the book is relatively well-organized. Aside from a brief introduction, it consists of seven main parts, each organized around a particular theme and encompassing many shorter chapters. The first six parts of the book helpfully conclude with a short *mondo* (i.e. question and answer exchange) in which Austin summarizes the main points of the previous chapter in a conversational manner. These short exchanges are welcome moments to digest and take stock of the preceding analysis. The book helpfully cross-references Austin's previous books, allowing the interested reader to explore many topics in greater detail by consulting the earlier texts. There is also a short glossary of relevant Zen and neurophysiological terms.

Part I: On the Varieties of Attention surveys different forms of attention, their neural mechanisms, and discusses how Zen mediation facilitates fine-grained attentional training. Specifically, Austin is keen to show that different meditative styles (focused, concentrative vs. open, receptive) train both top-down (dorsal) and bottom-up (ventral) forms of attention. Meditative practice isn't an 'all or nothing' homogenous affair but rather a diverse set of distinct practices, each of which potentially harbours distinct neurophysiological consequences.

Part II: On the Origins of Self considers a theme central to Zen: self-consciousness. Here, the main suggestion is that the parietal lobe cortical networks tend to orient toward egocentric processing, whereas temporal lobe networks are more oriented toward allocentric processing. A central idea is that self-centred processing dominates everyday experience — it underwrites the primitive sense of self we seem to carry with us throughout our lives — but that, under certain conditions (e.g. rapid attentional shifts in response to brisk sensory stimulus), self-referential processing is deactivated and other-referential processing dominates. This shift hints at a physiological basis for understanding the cultivation of Zen states of selfness.

Part III: Toward Selfness explores these states in detail — specifically the experience of selflessness characteristic of *kensho* states, or the fleeting surges of allocentric processing in which the sense of self drops out and attention is wholly focused on seeing things 'as they really are' in their presentational immediacy. Extensive neuroscientific research is surveyed. A suggestion is that, instead of comprising an entirely new way of looking at the world, *kensho* states are

rather the cultivation of ongoing covert processing — and thus that this selfless seeing may be cultivated and refined into an ongoing character trait.

Part IV: On the Nature of Insight explores insight and its role in fostering human creativity. Insight is said to be a sudden act of seeing clearly and comprehensively. Austin claims that insight is an aspect of general intelligence devoted primarily to the solution of seemingly intractable problems; and, additionally, that insights are progressive refinements along the broad continuum of creative intuition.

Part V: On the Path toward Insight-Wisdom explores the extent to which the principles governing ordinary insight extend into the more privileged realms of *insight-wisdom*, i.e. the intuitive knowledge accessed via fleeting *kensho* experiences. Specific consideration is given to the attitudinal changes that result from such experiences and the knowledge attained therein: for example, an appreciation of the interrelated nature of all things, heightened compassion, and the ability to see through various *I, Me, Mine* constructions into the ultimately empty nature of the self.

Part VI: Toward Emotional Maturity investigates how meditation and Zen practice can favourably influence the normal developmental trajectory of emotional maturity. Meditation is said to assist in suppressing/transforming overconditioned emotional responses, instead allowing one to live more openly, spontaneously, and with greater emotional clarity and stability.

Part VII: Updating Selected Research does what it advertises, updating selected studies from the rapidly-swelling field of Zen-brain research since the publication of the previous volume in 2006.

These parts, while thematically distinct, nevertheless (in good Buddhist fashion) thoroughly interpenetrate. Austin often reaches backward whilst moving forward, weaving previously-discussed research with newly-introduced material. While this dialectical approach gives the dramatic impression of a slowly-unfurling narrative, the end result is, at times, somewhat messier. The story Austin wants to tell is long and complex, the supporting material extensive. And while he's a gifted writer, it's occasionally difficult to maintain focus on the larger narrative being woven and to appreciate the immediate salience of each new piece of data presented. There's simply an awful lot of it. A slower, more systematic analysis in spots — for example, the rather brisk analysis of emotional maturity in Part VI — would have helped establish a clearer larger picture.

For all of its emphasis on simplicity of both teaching and practice, Zen harbours substantive philosophical dimensions. As both a serious

Zen scholar and practitioner, Austin is clearly aware of this. However, a failure to engage with these philosophical dimensions in any sustained way is a weakness of the book.

For example, Austin's rich analysis is motivated by an unquestioned reductionism — the idea, in short, that all conscious episodes (e.g. *kensho* flashes, upwelling of other-directed compassion, myriad everyday experiences) can be explained by providing an account of their neural (i.e. physical) basis. This is fine — except that one might question whether or not this assumption is consistent with traditional Zen views about the ultimate nature of mind. The thirteenth century Sôtô Zen master Dôgen, for instance — quoted several times throughout the book — equates mind with 'mountains, rivers and the earth, the sun, the moon, and the stars', insisting that 'all things and all phenomena are invariably this one mind — nothing is excluded, all is embraced' (quoted in Kim, 2004, p. 117). Dôgen's view is admittedly subtle and elusive; and Austin, understandably, has concerns other than metaphysical speculation and historical exegesis. However, the point is that it's not at all clear that historical Zen — like Buddhism more generally — is an easy ally of unquestioned physicalism. Moreover, some contemporary authors (B. Alan Wallace, 2007, comes immediately to mind) use Buddhist approaches to consciousness to question the very reductionist programme Austin seems to take for granted. And neurophenomenological approaches (e.g. Depraz, Varela and Vermersch, 2003; Thompson, 2007; Varela, Thompson and Rosch, 1991; Thompson, 2007) — many of which draw upon Buddhist contemplative practices to develop refined, first-order descriptions of experience that can be used to supplement neuroscientific findings — have also weighed in on this issue. So, it's somewhat curious that Austin doesn't engage any of this literature, or at least pause to acknowledge and defend the philosophical presuppositions informing his reductionist programme.

On a related note, I found the two central chapters on self and self-consciousness (Parts II and III) disappointingly thin in terms of phenomenological description. This is a shame, since descriptions of *kensho* experience — in Austin's terms, a pivotal shift from an ego-centric to an allocentric mode of processing giving rise to selfless, nondual states of seeing 'all things as they really are' (p. 117) — surely call out for a nuanced description of the phenomena under consideration. Yes, such states are seemingly 'ineffable', and plagued by linguistic 'inexpressibility' (p. 117). But careful descriptions of these elusive states from the first-person perspective are indeed possible (see, e.g. Albahari, 2006; Shaner, 1985). And while they're certainly

no substitute for the actual experience of the state itself, phenomenological descriptions help us get a grip on some attendant philosophical puzzles. For example, if the *kensho* experience of no-self doesn't entail 'that a person stops witnessing' (p. 117), wouldn't this seem to imply that some sort of residual 'witness self' — i.e. a first-person perspective or phenomenal self (Dainton, 2008; Zahavi, 2005) — endures? What are we to make of this enduring phenomenal self in light of Zen claims about the selfless nature of all things? Might there be experiences where this minimal self, too, dissolves? More careful phenomenological precision might also assist in untangling related claims that 'the anonymous observer is finally graced by the glimpse of an unimaginally [sic] "objective vision"... into the eternal perfection of "all things as THEY really are"' (p. 117). How are we to understand the scope of this claim? Is it intended purely to be phenomenological description or rather a stronger ontological claim about privileged access to a 'pure' objective reality? If the latter, what might that actually *mean*? Austin offers few resources for navigating these philosophical waters.

These philosophical quibbles aside, Austin has written another excellent book skillfully linking Zen practice and current brain research. His many readers will be grateful for it. One hopes for yet another entry in this series, 'slender' or otherwise.

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Matthew Nudds and Casey O'Callaghan (eds.)

Sounds and Perception: New Philosophical Essays

Oxford: Oxford University Press, 2009

ISBN: 978-0-19-928296-8

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The cover of this pioneering volume of essays on auditory perception is a striking photograph of Sam Van Aken's *Thumper* — a head-high, spherical geodesic lattice, studded with dozens of sub-woofer speakers. Connected to five, thousand-watt amplifiers, the metal sphere emanates a droning bass sound, which loops from angry physical insistence into silence and back again. *Thumper* is the cover of a manifesto. Too long have philosophers been obsessed with sight. Too long have they neglected the distinctive puzzles raised by non-visual modalities, and developed distorted vision-based models of the other senses. *Thumper's* message is: listen up. Anyone interested in perceptual experience (or for that matter epistemology, metaphysics, or aesthetics) will have much to learn if they do.

Nudds and O'Callaghan introduce the ten diverse papers they have collected with a comprehensive and valuable introduction in which they helpfully map out the conceptual geography. Firstly, they distinguish two broad issues: one 'constellation of debates' concerning the *ontology* of sounds, another concerning the *contents* of auditory experience. Evidently, the two debates are connected. If we know anything about sounds, it is that they are amongst the objects of auditory experience.

Nudds and O'Callaghan (p. 12) go on to offer a tripartite division of accounts of the contents of auditory experience. Austere accounts insist that we only ever hear sounds and their qualities. Moderate accounts propose that we also hear sound sources: snakes as well as rattles, bitterns as well as booms. Liberal accounts 'maintain that we hear even things beyond sounds and their sources'. In fact, we need a further option, for one might grant that we can hear things beyond sounds whilst agreeing with the austere theorist that we cannot hear sound sources. In his characteristically enjoyable contribution, Sorensen argues that we can hear silence. There is no need to think of hearing silence as hearing a source as failing to make a sound.

The various contributors disagree about a great deal. However, the majority agree that austerity will not do: source-perception must be recognized as a fundamental aspect of auditory experience. Nudds and O'Callaghan (pp. 12–13) summarize four key motivations.

Firstly, without source-perception we cannot explain the fact that auditory experience allows us continually to form beliefs about sources without inference. Secondly, without source-perception we cannot explain 'the fact that we act on the basis of auditory experience as if we heard sounds sources'. Thirdly, if an 'auditory experience as of the sound of a bell' is produced by 'a loudspeaker or a duck', the experience will not be veridical. Finally, empirical investigation reveals that the function of audition is to 'furnish awareness' of sound sources. In addition to these general motivations, Hamilton and Smith respectively argue that music and speech perception reveal the inadequacy of austere views. Hamilton argues for an extremely liberal view on which a wide range of features such as the virtuosity of a performance (p. 166) can, in principal, figure in the purely auditory content of musical experience. Smith argues for the intriguing view that, in hearing speech, 'what we directly perceive are the *sources* of sounds, and the source of speech sounds is the human voice' (p. 183).

Ironically, the austere theorist's best hope of responding to these challenges is to turn to considerations familiar from debates about visual content. There, theorists who wish to place restrictions on the admissible contents of visual experience face a similar challenge concerning our ability non-inferentially to form beliefs about content-inadmissible properties. By way of response, Millar (2000) and others appeal to the notion of a *perceptual discriminative capacity*. Applied to the auditory case, the suggestion would be that where a source has a distinctive sound, a listener possessed of a relevant discriminatory capacity will be able to judge that the source is present without inference, even if the source itself does not figure in the content of the experience.

The austere theorist can appeal to the same idea in relation to the other three considerations offered in favour of source-perception. Firstly, a discriminatory *reactive* capacity might be invoked to explain the immediacy of our reactions to sources upon hearing their distinctive sounds. Secondly, the austere theorist might diagnose the temptation to treat auditory experience as non-veridical when a source makes a sound typically produced by a different kind of source, as falsely assuming that the misfiring of a recognitional capacity always results from a defect in the content of experience. (Note, in any case, how counter-intuitive it is to think that we hallucinate sources whenever we put on a record.)

Thirdly, consider Nudds' argument that a detailed investigation of the *function* of auditory perception determines that we hear sources. Nudds convincingly argues that the epistemological function of

audition is, paradigmatically, to inform us about sources, and that we must understand the auditory system's analysis of input frequencies in this light. However, unless we already assume that knowledge of sources is only possible if sources figure in the content of auditory experience, then it is open to us to think that auditory processing subserves the epistemological task by subserving our awareness of the distinctive sounds of objects, such that, given our perceptual recognitional capacities, we can come to know, through hearing, what is out there. On this account sources themselves need not figure in auditory content.

The two special cases of auditory perception, music and spoken language, raise a number of fascinating issues explored, more or less briefly, by almost all the contributors. Do they tell against the austere view? Consider speech perception. Two tasks are involved in making sense of speech perception. First, we must explain our capacity to understand others by hearing them speak. Second, we must explain the distinctive phenomenology of speech experience. Once again, recognitional capacities are arguably a crucial part of any epistemological story given by the austere theorist. But can an austere theorist capture the phenomenology of speech experience?

First we should ask what exactly speech is. Here both Smith and Hamilton appear to agree: 'What makes a sequence of sounds into speech is that they are meaningful' (p. 149). However, it is natural to talk of meaningless speech, for example, in certain aphasias, alleged glossolalia, or the jargon of very young children. In such cases, the output is counted as speech despite being nonsense in virtue of sharing the tone, tempo, cadence and so forth of normal human speech. This suggests that the notorious contrast between hearing an 'utterly foreign language' (Smith, p. 184; note the 'utterly') and one's mother tongue is not obviously a direct consequence of meaningfulness, but rather, amongst other things, our inability to perceptually discriminate phonetic structures in alien languages, where these structures are not individuated semantically.

If this is right, the austere theorist can maintain that hearing speech as such is a matter of discriminating distinctive features of, and (perhaps irreducibly complex) groupings of, the sounds that one encounters. It thus remains to be shown that understanding speech requires entirely novel content (e.g. voices, which after all are not distinctively associated with *speech acts*), let alone new sense modalities (as Liberman, 1996, notoriously suggests; here see the excellent contributions by Mole, and Remez and Trout for discussion). As for hearing meanings, it is true that we talk of hearing the meaning in

someone's words; but you do not see your friend's father, when you see her father in her face.

These are but a fraction of the many intriguing issues raised by auditory experience. For one, I have said nothing about the vexed issues of ontology which are the focus of several contributions, nor the role of space in auditory awareness. Suffice to say that the ten new essays in *Sounds and Perception* are full of ideas and interest. One can only hope for the natural companion collections on *Tastes, Smells, and Feels and Perception*.

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Todd E. Feinberg

From Axons to Identity:

Neurological Explorations of the Nature of the Self

New York & London: W.W. Norton, 2009, Hardcover

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Consciousness and the self can be explained, thinks Todd E. Feinberg, by a shift in our thinking about the brain. As long as we focus on the functions of particular parts of the brain we will fail to find or explain the unity of consciousness, and therefore the self. It is when we examine the processes of the brain that we find the underpinnings of the self. In *From Axons to Identity*, Feinberg advocates the view that 'you are not a pack of neurons; you are what your own pack of neurons collectively do' (p. 212). However, the book is not limited to a discussion of hierarchical brain processing. Feinberg is a neurologist and psychiatrist, and he draws on psychoanalysis and clinical neurology to provide insights into the nature of the self more broadly construed.

From Axons to Identity divides rather neatly in two: in the first half Feinberg's concern is with identity. He begins by describing and classifying a variety of disorders of the self, including bodily disorders such as anosognosia, asomatognosia, somatoparaphrenia and what Feinberg labels 'disorders of the relational self' which include fantasies about imaginary persons and delusional disorders of misidentification, such as Capgras Syndrome.

Feinberg's fascination with such pathological experiences is evident in his writing. He offers sections of transcripts of interviews with some of his patients to illustrate both the ways in which the conditions become manifest, and the difficulties we can have in interpreting their words. He suggests that we can understand what may seem to be a diverse group of disorders as all involving a perturbation of the self. He also suggests that we can uncover common causal factors for these neuro-psychiatric disorders, providing us with a 'unified theory' of the group.

In Chapter Two Feinberg turns his attention to child development, in particular to childhood defences, which he believes to correspond clearly to the behaviours of his adult patients. His suggestion is that the mirroring of immature psychological defence behaviour by adults with self-disorders indicates a deep commonality between the two. In chapters 3 and 4 Feinberg elaborates on this, suggesting that the neuropathologies he details in the first chapter can be understood as the workings of what he calls 'the brainchild within'. By locating parallels between particular adult disorders and normal childhood defences, Feinberg suggests we understand the former as the pragmatic defences of the adult in stressful, confusing circumstances and in the case of mental illness. A developing child will typically exhibit such defences as denial, personification and the creation of imaginary companions. These bear striking similarities to the conditions of anosognosia, asomatognosia and misidentification disorders respectively. What Feinberg claims is that the similarity in behaviour of the developing child and the adult patient is rooted in a similarity in function. In normal development the child outgrows the immature ego defences of denial, projection and splitting, making use of more mature mechanisms such as sublimation and humour. When an adult is subject to brain dysfunction both negative and positive symptoms can be observed. The negative symptoms represent the loss of faculties resulting from and specific to damage to an area of the brain. The positive symptoms result from the activity of the remainder of the brain that still functions, but in the absence of the activity of the damaged areas. Feinberg notes that 'some of the positive symptoms we see in the presence of brain disease are actually the *normal functions* of the remaining but hierarchically lower systems that are released from the inhibition' (p. 104). In the cases of disorders of the self, damage to the areas of the brain that inhibit the 'brainchild', the parts of the brain responsible for immature defences, result in regression on the part of the patient: 'these defenses and patterns of thought

remain dormant in adults and are only revealed in the presence of significant damage to the brain' (p. 106).

At the same time Feinberg also provides evidence that the brain dysfunctions associated with the conditions he discusses can be localized to right frontal regions (pp. 106–110). His suggestion is that there is a clear relation between brain function and psychological defence, evidenced by the clear correlation between right frontal brain damage and regression to childhood defences. The damage lateralized to the right hemisphere corresponds to loss of certain faculties, perhaps including areas responsible for mature psychological defences, whilst the intact left hemisphere seems to be responsible for the immature defences exhibited in self-related disorders.

In a substantial shift of subject matter and method, the neurological underpinnings of consciousness and self become the focus of the second half of the volume. In Chapter Five Feinberg outlines the basis of a hierarchical neural architecture of the self. He distinguishes the systems of the brain responsible for the internal functioning of the organism from those dedicated to the interactions of the organism with the world, and what he calls the 'integrative self system', that assimilates those lower level systems and gives rise to more advanced 'aspects of the self'. In defining these different systems Feinberg also indicates the physical composition of the levels of the hierarchy.

In Chapters Six through Eight he develops the conception of nested hierarchy to provide what he calls the Neural Hierarchy Theory of Consciousness. With reference to the hierarchical structure of the brain we can account for the existence of conscious experience, the intentionality of the mind and the unity of the mind. Many would defend the thesis that in some way or other the brain enables the subjective feeling of a unified self, but more specifically, says Feinberg, 'an understanding of neural hierarchical processes provides a solution to the mystery of consciousness itself' (p. 158).

Chapter Six is devoted to an explication of how the functions of the neural hierarchy that Feinberg outlines can contribute to the unity of the mind. The functional nesting of hierarchies is essential to the emergence of consciousness. Higher levels bind together the lower levels of the hierarchy, constraining them and thereby providing 'purpose': 'in the hierarchy of our conscious awareness, it is *meaning* that provides the constraint that "pulls" the mind together to form the "inner I" of the self' (p. 180). By being bound together by a higher level, lower levels of the hierarchy are represented in awareness inter-dependently — in a unity.

Central to Feinberg's account is an insistence that consciousness cannot be explained by understanding the hierarchical organization of the brain to be non-nested only, that is, structured like a pyramid. The brain should be understood as being organized as a functionally nested hierarchy such that both lower and higher levels contribute to consciousness. In a non-nested hierarchy the higher levels control the operations of the lower levels. The constraint of the system comes from above and is imposed on to the lower levels. These higher, constraining levels are physically independent from the lower levels. By contrast, in a nested hierarchy the elements of the lower levels are combined within the higher levels. There is no physical independence of the higher and lower levels. So too, the constraint of the system, the control imposed on lower levels by the higher levels, is manifest in the whole system. Feinberg's Neural Hierarchy Theory of Consciousness states that a conscious system will be one that 'displays features of both non-nested and nested hierarchies' (p. 178) simultaneously.

The subjective nature of conscious experience, intentionality and mental unity are all to be explained by the Neural Hierarchy Theory of Consciousness. In fact, argues Feinberg in Chapter Seven, they are the products or outputs of the neural hierarchy of the self: 'these three features of consciousness are, within, the constraints of our biologies, based upon the hierarchical arrangement of neurons' (p. 201) because it is the advanced 'higher self that achieves and experiences the wholeness of being, feels the warmth of the sun and the pain of the flame, and appreciates the underlying meaning of a Picasso' (p. 202).

To close, in Chapter Eight Feinberg argues that we must understand consciousness and self as a process or function of the brain as a whole rather than as localized in any part of the brain. He says, 'although we experience ourselves as things, as fixed entities occupying a physical space in the world, we are in reality a process, a continuous unfolding in time, constantly becoming' (p. 210). Feinberg describes the 'essence of self' as being 'a process of the brain' (p. 204).

One of Feinberg's central claims is that by understanding the hierarchical arrangement of the nervous system we can demystify such puzzling phenomena as consciousness and selfhood.

I have several concerns over this project. One concern is that the account is not as complete as Feinberg suggests, whilst a second is over the absence of unification between the first and second halves of the book.

Amongst the phenomena that Feinberg suggests his Neural Hierarchy Theory of Consciousness can account for are intentionality and qualitative character. The hard problem of consciousness is the

problem of explaining why we have qualitative phenomenal experiences. Feinberg seems to interpret this, in part, as the problem of explaining why different experiences have distinct qualitative features, why seeing a red object is different to seeing a green one. But an account of how differences in qualitative content are realized will not itself explain why it is that we have experiences with phenomenal properties at all. Thus Feinberg's account, according to which different phenomenal properties result from particular interactions between hierarchically arranged neural levels, fails to address the challenge. It explains particularity but not phenomenality.

So too, Feinberg's explanation of intentionality seems to presuppose the directness of mental phenomena, rather than explain them. Taking John Searle's definition of intentionality as 'the feature by which our mental states are directed at, or about, or refer to, or are of objects and states of affairs in the world other than themselves' (1984, p. 16), Feinberg accounts for such intentionality by way of two features of the brain. One is that the brain has no sensation of itself. Hence brain activity is not 'about itself' and 'conscious neural activity refers to external objects, not to the brain itself' (p. 200). The other feature is that the brain represents objects in the world 'with reference to the experiencing self' (p. 200). Although Feinberg does not state this explicitly, I take it that his point is that the existence of a subject of experience can explain how it is that our mental states are about something because the subject acts as the consumer of our mental states. This is problematic as an explanation because it seems to reduce intentionality to subjectivity. Whilst it may be correct that intentionality and subjectivity are not explicable in isolation from one another, the directness of mental states cannot be explained by simply positing an experiencing self.

It is also puzzling as to why Feinberg connects the unity of consciousness as he understands it with the pathologies of the first half of the volume, not because it would be unreasonable to connect or even account for the unity of consciousness in terms of the unity of the experienced body (Neisser, 1988; Ayers, 1991), but because Feinberg himself draws no such connections.

The pathologies he describes include failure to recognize a body part as one's own, or to recognize the reflection in the mirror as one's own. Whilst Feinberg draws our attention to the ways in which such pathologies seem to be self-specific, that is the patient exhibits no more generalized agnosia for body parts or mirror images, the claim is not connected by Feinberg to his definition of the self as 'a unity of consciousness in perception and action that persists in time' (p. xi). Making such a

connection would not be unreasonable: the idea that pathologies of the self can be analysed as breakdowns in the unity of consciousness has been suggested elsewhere (Gallagher & Marcel, 1999).

Moreover there is growing evidence from Rubber Hand Illusion experiments that one's ability to perform own-body recognition tasks depends on the integration of multi-sensory information and internal models of the body (Tsakiris, 2010). There may well be an interesting link between, for example, multi-sensory integration and bodily unity, which itself might contribute to the unity of consciousness.

Feinberg chooses instead to synthesize the pathologies neurologically, locating the undamaged left hemisphere as responsible for the behaviours of his patients. And he maps those behaviours on to the behaviours prevalent during childhood development. Yet he never offers an account of how the left hemisphere, in the absence of normal right hemisphere functioning, contributes to a disunity of consciousness, nor why immature defence functions could or should contribute to this disunity. What Feinberg lacks is a coherent conception of selfhood that would mesh the first and second halves of the books together. Whilst his definition suits the subject matter of the second half of the book, it is not apparent what conception of selfhood he has in mind that will also encompass the pathologies of the self as he analyses them. As such it is difficult to judge his success in providing a 'comprehensive neurology of the self' (p. xviii).

The book offers an extensive array of pathologies for examination, and classifies them in an interesting way, offering insight into, and order to, what can seem to be bizarre and dissimilar behaviours. Feinberg's is an ambitious project. Although *From Axons to Identity* offers excellent material for examination of the self, and an intriguing suggestion as to how we should understand the relationship between the brain and consciousness, Feinberg's 'solutions' to the problems of phenomenality and of intentionality are not philosophically convincing.

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Jan Lauwereyns

The Anatomy of Bias: How Neural Circuits Weigh the Options

Cambridge, MA & London: MIT Press, 2010, 262 pp.

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Reviewed by Matteo Colombo

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Does everyone know what attention is? William James thought so. More than a hundred years ago he wrote in his *Principles of Psychology*: ‘everybody knows what attention is... It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others’ (pp. 403–404). Nowadays we might wonder whether James was right. ‘Attention’ resists clear definition; it has no sharp boundaries, and probably it isn’t just a single phenomenon. Once the mechanistic and computational bases of attention are understood, it may well turn out that there are multiple separable and distinct attentional functions which have little in common.

Attention remains a major topic of investigation within a wide range of disciplines such as psychology, neuroscience, education, economics and philosophy that employ different tools and methodologies. Physiologists, for example, study the neural correlates of attention by using single-cell recording in monkeys. Other neuroscientists use functional brain imaging in humans. Theoretical neuroscientists use Bayesian models. Psychologists investigate the effects of attention by using behavioural measures like reaction times.

The major challenge for a genuine understanding of attention is the difficulty in relating vocabularies from such different fields and methods. This is a challenge for any interdisciplinary endeavour. But it becomes more serious when the object of inquiry is a multifaceted, somewhat ‘vague’, ability like attention. Then, how can mutual comprehension of those working on attention be fostered? How can the results obtained through different methodologies be integrated? How can ‘attention’ be made more precise?

In *The Anatomy of Bias* Jan Lauwereyns aims to tackle these problems. His goal is to produce 'a coherent but open-minded account of attention' (p. ix). The reference to attention can be misleading however. Lauwereyns proposes and articulates a 'perspective shift'. Instead of talking of 'attention' he dissects the notion of 'bias'. The concept of bias is the right tool, argues Lauwereyns, to uncover different aspects of attention and bridge the vocabularies of the various disciplines concerned with this ability. 'Bias' is defined in the 'Prelude' of the book. It is 'a core brain mechanism that attaches different weights to various information sources, prioritizing some cognitive representations at the expense of others' (p. xiv). The seven chapters plus the 'Coda' of Lauwereyns' book develop an account of bias that goes some way towards sharpening the meaning of attention. The 'perspective shift' argued for is one that builds substantially on prior research by Lauwereyns on the neurophysiological and cognitive bases of visual perception and attention. Before describing the steps of this journey into 'bias', let me emphasize the most original quality of Lauwereyns' account, namely the *style* with which he approaches a scientific project.

Lauwereyns, Associate Professor at the School of Psychology at Victoria University of Wellington (New Zealand), is a multilingual poet and essayist, not only a cognitive neuroscientist. From the Prelude he sets the stage by delineating the aim and structure of his book, and by giving a taste of his writing style. There are two notable aspects of this style. With respect to the way the content is delivered, Lauwereyns adopts a 'bird's eye view'. He wishes to transmit to the reader a sense of the big picture emerging from current experimental and theoretical work on attention. Lauwereyns' concern is to focus on the relevant features of the experimental approaches that are likely not only to orient future research but also to yield a genuine understanding of what attention is. For this purpose, he avoids reporting unnecessary details of experiments and avoids the technical aspects of the analytical tools employed in the study of attention.

With respect to the literary devices used, Lauwereyns speaks to the reader with an engaging, at times lyrical, but scientific language. The topic of each chapter is introduced with verse from poets that capture the imagination of the reader and prepare the ground for the scientific discourse. This might strike some 'purist' scientifically-minded readers as confusing. But I found it refreshing and inspiring, given the predominant standardized style of scientific reports and the degree of insulation between the sciences and the humanities. The risk nonetheless is that of lack of coherence and precision. Without an exercise of

attention, one can lose track of the points and unfolding of the arguments. At the end of Chapter 2, for example, one might be left wondering what is the relevance of things as various as Japanese poetry of the fifth century, Lacanian psychoanalysis, Skinnerian behaviourism, Wittgenstein philosophy to how reward is represented in the brain. In order to control for this risk, Lauwereyns is careful in guiding the reader through all these diverse paths. Along the journey he provides us with helpful signposts that summarize what has been covered so far and what is to be expected next. Moreover the architecture of the book is made clear from the beginning.

Chapter 1 captures the concept of bias by drawing on tools from Bayesian probability, Signal Detection Theory and the LATER model of decision-making (Linear Approach to Threshold with Ergodic Rate). This is the most technical part of the book, but it does not require any background in mathematics. It introduces the analytical tools that will be employed in the rest of the book in a simple and effective way. These tools will serve to 'investigate how neural circuits really weigh the options, in what kind of conditions, under what sort of circumstances, and to what degree of inevitability' (p. 47). The chapter starts with an informal discussion of how expectations shape perception and decision-making. It gives formal vest to such an idea by moving on to introduce Bayesian probability and Signal Detection Theory. The explanation of Bayes theorem is quite clear. Signal Detection Theory and the LATER model of decision-making are probably explained even better. The examples, from psychophysics and single-neuron recordings, discussed by Lauwereyns help the reader to come to grips with 'bias' and 'sensitivity'. Sensitivity is the perceptual ability to discriminate a target stimulus from background non-targets. Bias is the extent to which a perceiver is likely to detect, or fail to detect, that a target stimulus is present. This pair of concepts, for Lauwereyns, is the one that should replace attention 'for a proper investigation of how neural circuits weigh the options' (p. 82).

Chapter 2 is about how 'reward' and 'expected reward' are represented in the brain. At the beginning, a lot of ground is being covered at high speed: Skinnerian behaviourism (pp. 52–56); Damasio's Somatic Marker Hypothesis (p. 57); the reward prediction error theory of dopamine (pp. 60–62); the distinction between 'wanting' and 'liking' components of reward (pp. 63–64 — Lauwereyns here doesn't acknowledge the original work by Kent Berridge and Terry Robinson on such a distinction, see e.g. Berridge & Robinson, 1998). The second part of the chapter is more focused. It mainly examines the computational properties of the caudate nucleus (a 'reward area' in the brain)

by applying the notions of bias and sensitivity to data from single-cell recording experiments on decision-making in monkeys. The chapter concludes with a critical comment on neuroeconomics (pp. 87–90). Because so quick, the discussion here is shallow and doesn't do justice to this exciting new field that promises an algorithmic explanation of the human mechanisms underlying decision-making (Glimcher *et al.*, 2008).

Chapter 3 is about the neural representation of what we care about negatively. It concentrates on the mechanisms underlying aversive emotional stimuli processing. Lauwereyns pays special attention to the extent to which such a mechanism overlaps with that underlying reward processing. Other topics on which he touches are the relationship between bias, negative emotions and evolutionary success; the role of auditory attention in fear conditioning; and the neural bases of loss aversion. The main idea pursued in the chapter is that neural plasticity produced by mechanisms of fear conditioning may produce a 'structural form of bias' (pp. 113–115).

Chapter 4 focuses on the bias in favour of what is familiar and known, and against what is alien and unknown. The most interesting question tackled here is of 'how we can distinguish between familiarity biases that are right and those that are wrong' (p. 126). This is a difficult issue on at least two levels: under what circumstances can a bias lead to positive results as opposed to nasty outcomes? How do we identify those circumstances? Lauwereyns does not tackle the former issue in much detail; however, he gives some positive suggestion with respect to the latter by articulating the idea that learning is 'an obvious prerequisite for flexible and well-adapted behavior' (p. 133).

Chapter 5 explores the spatio-temporal analogue of the 'familiarity fallacy': 'the proximity trap'. The topic is pattern/object recognition. It departs from the familiar perceptual phenomenon that things are grouped by their similarity, spatio-temporal proximity and continuation. After having briefly reviewed research on 'false memories' and 'change blindness', it examines the emergence of gestalts during perception by the now-familiar notion of bias to neural processing of determinate visual stimuli. For example, 'pop-out' phenomena are explained in terms of 'self-organization [dynamics of brain perceptual areas], fueled by contextual bias' (p. 163).

Chapter 6 is perhaps the one that advances the most original idea. It investigates 'selection'. How do we select what we attend to? And what happens to the information unattended? The problems are as well known as the metaphors employed to make sense of them such as 'the spotlight', 'the zoom lens', 'the bottleneck', etc. Lauwereyns

proposes 'to think of selection rather as a mechanism that provides a gain... than an adaptation to the excess of information available in the environment' (p. 176). The 'gain' in question refers to the intensification in processing of the information that does *not* get to 'take all' — be it 'attentional priority' or a place in working memory (p. 177). Lauwereyns motivates and explores some consequences of this idea by laying out a model of competition for the neural network involved in Stroop-like interference (p. 190–197).

Chapter 7, the last before the Coda, imagines what a world without bias would be like. Not only would fear, hope and preference have no place in such a world, 'Everything would be deprived of meaning' (p. 200). This thought experiment leads Lauwereyns to a crucial question, once again: 'If we cannot do without bias... how do we negotiate among biases?' (p. 202). This issue is now explored from the perspective of 'control'. Single-cell recording experiments on eye movements and reward, and imaging studies on social and moral decision-making hint at different ways to conceive of a mechanism that compares biases so as to constitute an economy of biases.

This overview should suggest that these seven chapters do not span every aspect of attention research (*cf.* more comprehensive overviews such as Braun, Koch and Davis, 2001, from computational cognitive neuroscience; Possner, 2004, from cognitive neuroscience; or Mole, 2009, from philosophy). Lauwereyns' is not a textbook. It is not very sophisticated in its epistemological detours either — Lauwereyns' discussion of subtraction methods in cognitive psychology isn't deep; he only mentions the Duhem-Thesis (pp. 160–161) and Popperian falsificationism, which is taken to be 'the core principle of science' (p. 212), *in passim*. This book is a 'biased' account. It displays in itself the main thesis about attention and bias it articulates. Yet the book offers a 'point of entry' in a fascinating field and a source of inspiration for further research. Engaging with Lauwereyns's book is therefore particularly recommended for advanced undergraduate students from a variety of fields with an interest in attention research, and in general for all those researchers who see science as a land with blurry boundaries between fields.

Regardless of whether the academic community will embrace Lauwereyns' style, his remains a valuable experiment and a plea for cross-disciplinary dialogue at its extreme: poetry and scientific discourse meeting in search of a response to common questions! It is not completely clear whether Lauwereyns would like us to abandon the concept of attention altogether and substitute it with the quantitatively precise notions of bias and sensitivity. From his anatomy, however,

the reader should be convinced at least that ‘attention’ is much more fragmented than folk psychology has it, and that bias may be key in fostering our understanding of attention and bridging different theoretical vocabularies. Lauwereyns’ book represents another step in the pursuit of a unified framework for attention.

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Richard S. Hallam

Virtual Selves, Real Persons: A Dialogue Across Disciplines
 Cambridge: Cambridge University Press, 2009, 340 pp. + i–vi
 ISBN: 9780521509893

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This author has written at least two previous books. Both were on anxiety, presumably based on his work as a psychotherapist. While there are many varieties of anxiety, some of them seem more fundamental than others. It’s bad enough being afraid of getting into lifts or thinking that the mafia has a malign interest in you, but to experience ontological and existential anxiety, that is, to become afraid that nothing may actually be what it appears to be, or may even not be anything at all, including yourself, must be about as bad as it gets.

Now, one of the occupational hazards of being a psychotherapist is finding that your clients’ troubles can be infectious. Thus it could be that this book was an exercise in self help by a therapist who had contracted existential anxiety from his work. It’s doubtful, but even if it’s true, he must be able to manage it well, since it hasn’t stopped him producing a well researched and clearly written book on the Subject. Here, ‘subject’ is used in the syntactical sense, meaning the person or Selfhood.

At the outset the author notes that as *Selfhood* is so well trodden an area, yet another book on it needs justification. His is that he offers an interdisciplinary view, combining a number of perspectives. The book does indeed offer a discriminating choice of material from psychology, philosophy, neuroscience, anthropology and kindred subjects. This is integrated to advance a constructionist view of personal identity. The implications, possibly disturbing ones, of taking this view seriously are examined in some depth. Readers who share the even-handed breadth of view of the author, even though they may have reservations about his conclusions, will find the book stimulating. It will encourage them to look into other disciplines and re-visit some assumptions of their own.

The first part of the book presents the constructionist view of *Selfhood*, with four chapters on philosophical foundations followed by three on phenomenology and historical narration. The second part takes us through disciplines such as psychology, neuroscience, biology and evolutionary studies to discover how the person is treated in science. It concludes that a constructionist view of the person, of *Selfhood*, is not just compatible with scientific findings, but more or less necessitated by them. In this view, instead of thinking of the Self as some enduring, essentially real, thing we should rather think of it as something made up, rather like a story. Thus, though we might be encouraged by our social surroundings, and indeed by our own experience, to think of *Selfhood* as soul-like, as William James did, we would do better to think of it, as Ernest Becker so concisely put it, as a 'fragile fiction'. This is what may be disturbing about the constructionist view, particularly to the anxiety-prone. But like it or not, this is what a constructionist view proposes that *Selfhood* 'really' is.

The author assumes that science is authoritative on the matter. It is taken to be the necessary framework for inquiry into natural and human phenomena, as commonly accepted now as religion was before the sixteenth century. But this might be contested for a number of reasons. For example, postmodern scepticism towards any system of ideas and practices with pretensions to universality, including science, should make us wary of accepting a position so dependent on scientific evidence alone. Should a book with such a broad remit as this one simply assume that science is ontologically complete and the exclusive origin of our methodological resources?

Two examples here might serve to expand this point a bit. The first is that the book pays little or no attention to radically different approaches to *Selfhood*. For example, Nietzsche's dark celebration of the human being as the 'unfinished animal' is not mentioned, even

though it bears directly on the idea that we continually invent ourselves. His view of what it is to be a person has worked its way through western culture, producing some extraordinary effects. A recent one is the rapid growth of transhumanism, whose objectives and rhetoric might have come directly from *Human, all too Human*. While transhumanists, Bostrom is one, sometimes distance themselves from Nietzsche, they seldom disconnect themselves entirely. Nor could they, since their notion of transcending the human condition by enhancing it is quintessentially Nietzschean, albeit expressed in the language of informatics. Nietzsche was no enemy to science, but his view of Selfhood takes us beyond the realm of ordinary scientific investigation. Likewise, literary voices could have been heard, since they have speculated endlessly about what it is to be a person. Like Vonnegut's warning in *Mother Night* that 'We are what we pretend to be, so we must be careful about what we pretend to be' or like Raymond Tallis's characteristically penetrating remarks in his *I Am: A Philosophical Inquiry into First-Person Being*.

A second, related, example is the rather brief coverage of what has to be a fundamentally important change in cognitive science, that is, the shift to embodiment and the extended mind. While a recent work by Andy Clark gets an honourable mention at the end of chapter ten, the treatment of cognitive science feels slightly out of date. So too is the treatment of the social *milieu* from which Selfhood emerges. There is virtually nothing on the technological developments that so strongly shape the contemporary context of the person. As McLuhan said: 'We make our tools, then our tools make us'. In recent treatments of the extended mind it is proposed that the development of more and more naturalistic means of accessing information technology will mean that when we use the phrase 'the mind' or 'the person' we will increasingly refer not only to particular people, but also to the network of personalized electronic resources to which they are connected. Information and communication technology is already assuming a natural social role in the development of people living in technologized cultures. The extended mind is part of the move away from treating cognition as something solely in individual heads and towards seeing it as embodied in organic systems and shaped by cultural processes. The latter now involves 'sociable technology', which is no longer an oxymoron, which will be assimilated earlier and earlier in human development as time goes on. Although the book does touch on this, it hardly does justice to the vigorous research literature on this subject. Again, much of this literature is found outside the accepted boundaries of science.

Now, any lazy reviewer can pad things out by criticizing a book for not dealing with their particular interests. However, since the role of technology in the construction of Selfhood is generating such a large and expanding interdisciplinary dialogue, this book, given its title and sub-title, might have been expected to take more note of it. Likewise, given that the construction of Selfhood is another major theme, the scant attention given to autopoiesis, that is, to self-construction, is another surprise.

A less surprising omission, perhaps, is Buddhism, given the faith-like status awarded to science. However, it might have deserved a mention since Parfit's position on persons is treated with respect (on pp. 201–206) and Parfit was happy to acknowledge the similarity of his view of personhood and that found in Buddhism. Also, the last sentence of the book could easily have come from a Buddhist source: '... for the adult to doubt the reality of *their own* self — to view it not as natural and inevitable but as constructed — leads to an expansion of ways of relating to the world, including the possibility of being a thinker without a self' (italics in the original).

But omissions aside, the usual suspects make welcome appearances. George Herbert Mead, for example, is given approving attention, mainly through a discussion of the distinction between the 'I' and the 'Me'. Mead made an influential proposal for how it is that human beings became able to make themselves objects of their own thoughts, perhaps the most fundamental precondition of human Selfhood. This was that human self-awareness arises during development from the internalization of responses learned from the social environment. Hallam misses the way in which Mead's proposal might help with a problem he later raises (on p. 236) concerning how during human evolution, context-bound, iconic signs might have become mobile and hence able to be recombined subject to syntactic constraints. Mead's solution is that this was one result of disconnecting internalized responses from the external conditions that originally produced them.

But these are quibbles with what is a thoroughly researched and effectively written book. It will be useful to researchers and teachers in the many disciplines on which it calls. It will be stimulating, even anxiety-provoking, to wonder whether the selves we take ourselves to be might actually be fictions. Useful, and vital for leading human social life, but fictions nonetheless.

BOOKS RECEIVED

Mention here neither implies nor precludes subsequent review

Ross, Andy, *G.O.D. Is Great* (Ross 2010)

Shanahan, Murray, *Embodiment and the Inner Life: Cognition and Consciousness in the Space of Possible Minds* (OUP 2010)

Williams, John F., *Hating Perfection: A Subtle Search for the Best Possible World* (Humanity Books 2009)