

Book Reviews

Gordon G. Globus

*Quantum Closures and Disclosures:
Thinking-together Postphenomenology
and Quantum Brain Dynamics*

Amsterdam/Philadelphia: John Benjamins, 2004,
198 pp, ISBN 90 272 5180 0 (pbk)

In his new book, Gordon Globus brings together two seemingly irreconcilable discourses: an application of quantum field theory to brain functioning with the philosophies of Heidegger and Derrida. In other words, he tries to reconcile a powerful tradition within continental philosophy with the quantum revolution in science, and applies the outcome to crucial issues in philosophy, brain science, mathematics and psychiatry. There are three principal topics; the first considers Heidegger in relation to Vitiello's quantum brain dynamics, the second reviews similar approaches by other people (i.e. Dreyfus, Pylykko and Plotnitsky), while the third deals with Derrida and the quantum brain.

Globus calls his methodology 'thinking-together'. This involves

a weaving of different strands into a locally unified but never totalizable discourse. ... There is no implication of a full translation between these two discourses, only the claim that there are significant regions of discourse space where the discourses dock well to each other (p. xx).

He describes his project in relation to those of Plotnitsky and Pylykko, who have

gone to the border of this undiscussed place in thinking-together postphenomenology with the first quantization of quantum mechanics. I take a further step to the second quantization of quantum field theory and try to think together quantum field

theoretical *neurophysics* with the postphenomenology of Heidegger and Derrida (p. xx).

One might well think this too ambitious. In recent decades it has been Anglo-American analytical philosophy that has sided with natural science, while continental philosophy and natural science, in Globus' own words, 'have an attitude toward one another generally ranging from utter indifference to disgust'.

Heidegger thought it essential to learn to know *Dasein* in its 'concrete every-dayness'. This means that, in order to study being, one should not separate the object of analysis from the concrete being of the scholar at work. Much of natural science has proceeded in exactly the opposite way. For example, in mainstream consciousness studies there is a drive to seek the essence of consciousness in neural mechanisms, and the 'being' of the scientist her- or himself is sidelined as much as possible. From a Heideggerian viewpoint, therefore, much of contemporary consciousness studies might well be seen as yet another 'barrier which keeps man from the original involvement of Being in human nature'. It is thus no trivial task to 'think together' Heidegger and natural science.

But natural science goes beyond orthodox neuroscience with its classical framework. Relativistic and quantum phenomena challenge the mechanistic view of matter, and some of the new perspectives have involved consciousness in an essential way. Quantum field theory is particularly sophisticated and provides the context for Globus' project. But what does quantum field theory tell us about reality? Is there any point in applying it to the brain? How could all this connect with postphenomenology?

Globus uses Umezawa's *thermal* quantum field theory (Jibu and Yasue, 1995; Vitiello 2001). It is claimed that this avoids the problem of extremely rapid decoherence that vitiates most proposals for relating quantum theory to brain function (see also Hagan *et al.*, 2002). Moreover, as developed by Vitiello, the theory allows the existence of what is termed a 'tilde-universe'. The relationship of this to the more familiar 'non-tilde' universe described by conventional quantum theory is central for Globus. Vitiello suggests that the quantum brain, too, functions in two modes, tilde and non-tilde. Globus emphasizes that these two 'modes' then have a *between*, allowing a so-called *tilde conjugate match*, which generates *presence*. (Technically, this match is between a complex number and its complex conjugate in the tilde mode. It generates real numbers, which can be supposed to refer to 'presence' in the sense of observable phenomena.) It's a fairly fantastic story, but illustrates the type of idea needed by anyone wanting to reflect the physical meaning of our best scientific theories.

Globus' main thesis is that *dual modes and their between underlie both postphenomenology and quantum brain dynamics*. In Heidegger's case the dual mode connects with the notion of *abgrund* — the unobservable foundation of reality. Derrida, in turn, is 'concerned with the abgrund of *writing*, not worldly presence but *textual Being*.' In summary, Globus tells us that

[t]he fruit of this surprising rapprochement between postphenomenology and QBD is a theory of presencing (*Sein*). Why is there something rather than nothing? The dual modes bring a between-two, and in their special form of match the two of the between disclose lighted world (p. xxi).

No doubt many of the central ideas of the book will remain cryptic in the context of this short review. Yet one of its great virtues is the effort put into guiding the reader through some of the most difficult ideas of contemporary academic culture. It should facilitate understanding of Vitiello's far from mainstream theory, which may well merit sympathetic consideration. Moreover, Globus suggests interesting modifications of both Vitiello's and Heidegger's views. The book also provides a particularly lucid discussion of Pykkö's views. It offers an excellent introduction to contemporary postphenomenology, while deepening Globus' own themes.

We can let Globus have the final word. He tells us that one of his motivations is:

a deep conceptual uneasiness with the prevalent idea in brain science and Anglo-American philosophy that our brains really are a fancy wet version of a computer. ... Human beings aren't living computers with better bodies! What's left out — dare I say it? — *Geist*, Spirit. If quantum neurophysics were accommodating of Spirit, then the great split between science and Spirit would be healed, two mutually wary, great cultures peacefully united. ... I will show that the brain with quantum degrees of freedom can do much more than compute and that what it is to be such a body-embedded quantum system is to exist, to always find oneself thrown amidst a world, and even to write (xiii).

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References

- Hagan, S., Hameroff, S. & Tuszynski, J. (2002), 'Quantum computation in brain microtubules: Decoherence and biological feasibility', *Physical Review E*.
- Jibu, M. and Yasue, K. (1995), *Quantum Brain Dynamics and Consciousness: An Introduction* (Amsterdam: John Benjamins).
- Vitiello, G. (2001), *My Double Unveiled: The Dissipative Quantum Model of the Brain* (Amsterdam: John Benjamins).

Matthew Elton

Daniel Dennett: Reconciling Science and our Self-Conception

Oxford: Polity, 2003, 312 pp., £15.99, ISBN 0 7456 2117 1 (pbk)

As a student starting philosophy, I often found myself stirred to emotions ranging from excitement to frustration. The 'excitement' needs little comment — most people who read philosophy are motivated by the sheer exhilaration of ideas. Unfortunately, after the initial thrill of reading Plato, quite a lot of more recent philosophy, and the way it was taught, seemed deeply disappointing — the worst ideas in the worst order (to adapt Matthew Arnold). In pursuit of something 'useful', I chose temporarily to change course. This was a pity, for I might otherwise have met Daniel Dennett and been able to discuss the degree of freedom in my choice. We were at the same university, at the same time, and must have shared some of the same intuitions about the nature of the philosophical enterprise as well as the shortcomings

of its establishment. Dennett of course went on to put *his* intuitions on a firm basis of reasoning and evidence, with important consequences for the study and status of philosophy.

Despite never meeting Dennett, much later I stumbled across his work by accident. This happened in the context of a jurisprudence seminar on the cluster of issues to do with what it is to be a person. Most participants thought that the key issue was free will (or lack thereof) and were happy to maintain various entrenched and incompatible positions on the subject. My own (minority) view was that the whole issue was a chimera. As luck would have it, wandering around a book shop during a break, my eye was caught by a thin volume entitled *Elbow Room: The Varieties of Free Will Worth Wanting*. It proved unputdownable and I have followed Dennett's subsequent work ever since.

The key to his basic position was that, whatever the philosophical problem, we must start from the presupposition that we ourselves are part of the natural world and subject to natural laws. Curiously enough this reflects some insights from Phenomenology — though I don't know whether there is any direct indebtedness. There is no need for 'added extras'. Indeed we should follow Occam's precept and actively eschew 'mysterianism' as an explanatory mechanism — unless there's nowhere else to go. But of course there *is* always somewhere else to go and Dennett's importance is that he has not only been able clearly to demonstrate this, but has also shown how 'Darwinian' processes can take us there.

I often argued as a student (probably tendentiously) that many so-called problems of philosophy were not philosophical problems at all, but scientific ones. Dennett and others have now shown that science cannot be ignored and that design, complexity, consciousness and — ultimately — free will and morality, *can* be explained in terms of simple laws operating on simple entities within an entirely material context. This is a very significant achievement and it seems appropriate that, in this 'Key Contemporary Thinkers' series, Matthew Elton should offer an assessment and overview of Dennett's work in which his reevaluation of the relation between science and philosophy is emphasised.

It might be argued that Dennett's writing is clear enough to speak for itself. However, such

a large body of work, produced over nearly thirty years, must inevitably contain difficulties and apparent inconsistencies. Moreover many of Dennett's ideas are controversial and threaten vested interests, while the context within which he is working is not always generally familiar. The merit of Elton's account is that it clarifies many of these supposed problems and shows that, in general, Dennett's views are coherent and consistent, while his emphasis on the status of science is sustainable and timely.

Where Elton finds difficulties with shifts in Dennett's viewpoint, he may be overlooking historical explanations: Dennett is continually revising his ideas in the light of scientific developments which of course, in the relevant fields, have been exponential. There is no need to go through a series of mental contortions to reconcile apparent contradictions — better to await the next book! For instance, a recent book, published after Elton had written his study, titled *Freedom Evolves* (Penguin, 2004), shows how Dennett, shifting his focus and taking new evidence into account, tackles some of the questions Elton finds insufficiently addressed.

Occasionally, though, Elton, avoids an uncomfortable issue. The part of Dennett's work I find most difficult is his enthusiasm for the notion of memes — i.e. Dawkins' (quasi?) autonomous units of cultural transmission. I was hoping Elton would throw some light on this. Unfortunately he only comments, in passing, that the issue is controversial.

On the other hand he gives an excellent account of other controversies surrounding Dennett's work. In particular his accounts of Adaptationism and various notions of intentionality are clear and helpful.

Eliot situates Dennett's work in the wider context of modern thought, explaining clearly why he takes the positions he does and justifying his inclusion amongst 'Key Contemporary Thinkers'. All in all, this is a useful, well-written, accessible book. I enjoyed reading it and recommend it to anyone at all interested in what may broadly be called 'cognitive studies'. We will be fortunate if the rest of the series maintains this standard of readability and relevance.

John Dance

Philip Ball*Critical Mass: How One Thing Leads to Another*

New York: Farrar, Straus and Giroux, 2004, 520 pp., \$27 ISBN 0-374-28125-4 (hbk)

Steven Johnson*Emergence: The Connected Lives of Ants, Brains, Cities, and Software*

New York: Scribner, 288 pp., 2001, \$25 ISBN 0-684-86875-X (pbk)

Readers of *Critical Mass* by Philip Ball will learn many new concepts and ideas from a skilled science writer with a doctorate in physics. His book opens with a brief historical account that weaves the political confusion that engulfed Britain in the seventeenth century into early developments of science, but it is with the work of Thomas Hobbes that the author is particularly concerned. Although others had imagined ideal societies — Plato's *Republic*, Thomas More's *Utopia*, and Francis Bacon's *New Atlantis* come to mind — Hobbes attempted to deduce the laws of society from basic postulates, as Isaac Newton had recently managed to explain planetary motion. In other words, Hobbes sought to establish a 'physics of society', which is also the aim of Ball's book.

Sensitive to charges of 'arrogance', Ball asserts that his work is 'not an attempt to prescribe systems of control and governance, still less to bolster with scientific reasoning prejudices about how society ought to be run'. Rather he would help us to understand how 'patterns of behavior emerge — and patterns undoubtedly do emerge — from the statistical melée of many individuals doing their own idiosyncratic thing'. Thus he uses the tools that have recently been developed in nonlinear science (Scott, 2004b) to understand collective social behaviour.

To this end, the historical introduction is followed by a discussion of the concept of probability and the corresponding growth of statistical physics that developed in the nineteenth and early twentieth centuries. The general reader who would understand these important ideas will benefit from the early chapters which clearly expound the notion of a *phase change* (think of boiling water or melting ice). As a central metaphor for much of the book, Ball carefully presents the *Ising model*, which comprises a two-dimensional array of

rotating magnets (think of small compasses) each influencing the orientations of its nearest neighbors. Below a certain 'temperature' (random vibrations of the magnets), the magnets all 'freeze' into a certain orientation — a *global* effect that stems from *local* (nearest neighbour) interactions. To what extent, the author asks, do local interactions among people lead to the emergence of global social phenomena?

Beginning with discussions of snowflake growth, the formation of complex patterns in bacterial colonies, and the dynamics of flocking birds (in which the interactions are local), the author turns to collective phenomena involving humans, including the organization of passing rules on sidewalks and corridors, tragedies stemming from inept crowd control, path formation in parks, and the nonlinear dynamics influencing the growth of cities. These fascinating discussions are followed by a chapter on traffic flow (in which the dynamics of jamming are clearly explained) and several chapters on economics.

In the first of these, Ball considers fluctuating price levels, which Adam Smith deemed to be governed by the collective effect of an 'invisible hand' as far back as the eighteenth century. An important aspect of price variations, well laid out in this book, is their statistics. If all the influences on prices were random, the variations would be governed by *Gaussian* statistics with large variations falling off as a negative exponential of the square. In fact, large variations are often found to be much more likely than in a random process, suggesting the statistics of *Lévy flights* used unconsciously both by foraging bees and also by Jackson Pollock in his famous drip paintings (Taylor *et al.*, 1999). Interestingly, an analysis of the S&P 500 market fluctuations shows a *power-law* distribution lying between Gaussian and Lévy statistics in which the likelihood of a variation is inversely proportional to a power of its magnitude. Power-law distributions have been found to govern many phenomena including the probabilities of avalanches and earthquakes, sizes of individual incomes, and growth rates of firms. From economics, Ball segues into the more slippery area of politics. Appealing to the Ising model, he considers analytic descriptions of the possible international alliances prior to the Second

World War, statistics of recent voting patterns in Brazil (which are also found to follow a power law), and various models for investigating balances between social order and justice. Final chapters discuss the nature of interconnecting networks, the World Wide Web (in which the number of links to a site are governed by a power law) and analytic evaluations of strategies for international relations. Surprisingly, Ball ignores the application of collective dynamics to the human brain even though physicist John Hopfield has famously based such a description on the Ising model (Hopfield, 1982).

While *Critical Mass* is mainly about the nonlinear phenomenon of emergence, there is only one citation to this term in the index, but *Emergence* is the title of Steven Johnson's excellent book. Subtitled *The Connected Lives of Ants, Brains, Cities and Software*, Johnson compares a diagram of the human brain and an 1850 map of the city of Hamburg in his front matter, thus suggesting that related dynamic laws may govern widely disparate systems — a fundamental tenet of modern nonlinear science (cf. Scott, 2004b). Although from a broad perspective these two books are concerned with the same topic, they complement rather than overlap each other.

Well written for the general reader, Johnson's book begins with a description of the dynamics of slime mold and the behaviours of social insects, leading naturally into a discussion of Alan Turing's 1952 paper: 'The chemical basis of morphogenesis'. This seminal work is related to the contemporaneous work by Claude Shannon on information theory, Norbert Wiener's 'cybernetics', and Warren Weaver's classic paper on 'Science and complexity' which directed scientific attention toward those systems that comprise nonlinear interactions among more than a few dynamic variables, but still too few to allow the statistical methods emphasized by Ball. These early works are deftly related to Jane Jacob's thoughtful analysis of the growth of cities, emphasizing the important role played by positive feedback in emergent nonlinear dynamics. While mentioning somewhat different names than come to my mind, Johnson provides a clear and vivid description of the social paradigm shift leading to the acceptance of nonlinear science in the 1980s.

Clearly it is the application of the concept of emergence to the dynamics of a human brain that is of most interest to readers of *JCS*, and Johnson traces this connection ably from social insects through cities to the internet. Starting with medieval Florence as a metaphor, he describes the city as a means to store collective information, somewhat analogous to the iMac that I am typing on, raising the question: Can the World Wide Web become intelligent? On balance, Johnson believes the answer is no (because it lacks efficient feedback loops), but nonetheless he finds the question worth asking. In his discussion of brain dynamics, Johnson relies largely on the important recent work of biochemist Gerald Edelman, which in turn is based on that of Hopfield and also on the related mid-twentieth century concept of the *cell assembly* formulated by psychologist Donald Hebb (cf. Hebb, 1949).

While these two books are highly recommended to readers of *JCS*, there are two important areas that they miss. First, both authors seem unaware of a seminal study of living systems published by Manfred Eigen and Peter Schuster a quarter century ago (Eigen and Schuster, 1979). Considering how the first biological structures might have become organized, these authors showed that three or more interacting hierarchical levels of organization are necessary for self-reproduction. In addition to being important for the emergence of life, this result has deep implications for the emergence of consciousness in our brains. Why? Human brains are organized into *cognitive hierarchies*, just as living organisms are organized into *biological hierarchies*, and cities are organized into *social hierarchies*. To better understand the dynamics of such intricate systems, we must move beyond the concept of emergence at a particular level of a nonlinear dynamic hierarchy to appreciate the possibilities of downward causation (Andersen *et al.*, 2000) and positive feedback networks that extend over several hierarchical levels (Scott, 2004a). Second, both authors ignore the vast amount of work in cultural anthropology produced by physicist Franz Boas and his many brilliant students at Columbia University over much of the twentieth century. To take but one example, it was Ruth Benedict's classic *Patterns of Culture* (Benedict, 1989) that awakened my interest in nonlinear science as an

undergraduate student. Based upon Benedict's sensitive appreciation of many field studies by herself and her colleagues, this enduring work (first published in 1934) provides several vivid examples of the kinds of emergent social phenomena that are the subject of the books under review.

Al Scott

References

- Andersen, P.B., Emmeche, C., Finnemann, N.O. and Christiansen, P.V. (2000), *Downward Causation: Minds, Bodies and Matter* (Aarhus, Denmark: Aarhus University Press).
- Benedict, R. (1989), *Patterns of Culture* (New York: Mariner Books).
- Eigen, M. and Schuster, P. (1979), *The Hypercycle: A Principle of Natural Self-Organization* (Berlin: Springer-Verlag).
- Hebb, D.O. (1949), *The Organization of Behavior* (New York: John Wiley & Sons).
- Hopfield, J.J. (1982) 'Neural networks and physical systems with emergent collective computational abilities', *Proc. Natl. Acad. Sci. USA* 79 pp. 2554–8.
- Scott, A.C. (2004a), 'Reductionism revisited', *Journal of Consciousness Studies*, 11 (2), pp. 51–68.
- Scott, A.C. (ed. 2004b), *The Encyclopedia of Non-linear Science* (New York: Routledge).
- Taylor, R.P., Micolich, A.P. and Jonas, D. (1999), 'Fractal analysis of Pollock's drip paintings', *Physics World*, 12, pp. 25–9.

Brian L. Lancaster

Approaches to Consciousness: The Marriage of Science and Mysticism

Palgrave Macmillan, 2004, 342 pp., ISBN 0-333-91276-4 (pbk)

Are we today in the midst of a neo-Renaissance? Brian Lancaster, who has co-founded a ground breaking academic programme in Transpersonal Studies at Liverpool's John Moore University, notes how the contemporary resurgence of consciousness studies parallels that earlier epoch of increased individualism. Other parallels between the two eras can be drawn: then there was the influence of Greek thought, mediated through Islamic scholars, now our increasing engagement with Eastern tradition; then the invention of printing, now the IT revolution.

More significant are coincidences of method. Lancaster points out that the development of the experimental attitude, which led eventually to the rise of modern science, was sparked by an

'obsession' with Neoplatonic, magical and spiritualist endeavours to master nature and to 'harness supernatural powers to bring about miraculous changes' (p. 53). Our current mechanistic science arose subsequently out of the more or less successful attempt by the Church to counter this and to portray God as transcendent and matter as inert. These two threads are present with us today. The neo-Renaissance camp 'sees consciousness as a fundamental property of the world, which cannot be reduced to brain activity alone' (p. 55), some within it going so far as to claim that God is immanent in nature while transcendent in His essence. The opposing, neo-reductionist camp supposes that consciousness is generated in some as yet undiscovered way by a class of computational activities, a view with roots in seventeenth-century thinking.

Although Lancaster is naturally at home in the neo-Renaissance camp, this volume is a subtle, scholarly attempt to integrate neurophysiological and psychological with spiritual and mystical approaches to the mystery of consciousness, thereby to consolidate consciousness studies as a fully legitimate and unitary discipline. He begins by setting the philosophical scene and continues with individual chapters on these various approaches, finally arriving at the central dilemma facing those who use the transpersonal label: should they claim merely to be practicing a branch of psychology, or does the concept itself necessarily imply the existence of a supernatural order which takes it beyond the purview of conventional Western psychology?

Along the way are many provocative insights and formulations. The author usefully distinguishes three orientations towards consciousness studies: neurophysicalism, holophysicalism (consciousness is a feature of the physical world as a whole) and supernaturalism. Individuals embrace one or other orientation as a matter of belief, of ontological stance, something not based on evidence. He goes on to use data in complementary fashion from all of the three approaches, concluding that on balance certain conscious experiences can be without content or a sense of 'I'. This leads to a consideration of the often misconstrued role of the self in consciousness and to a detailed exposition of the preconscious stages leading to a percept. In this he draws data from all

approaches, not least Abhidhamma Buddhism. Neurophysiology and cognitive psychology teach us the significance of re-entrant pathways in setting perception in a context that gives meaning. He describes how both subjective Buddhist practices and objective scientific investigation lead to the recognition and identification of usually 'pre-conscious' stages in the perceptual process, which, he believes, culminates in the addition of the first person element (the 'I-tag' theory) at a late and not always attained stage. Once that link has been made the whole cognitive event can be recorded in memory. Following on from this, he discusses the autonomous flow of the deep memory process, a concept derived from depth psychology, emphasising the connection between the mystical (and Aristotelian) concept of the Active Intellect and contemporary psychology.

A superficial summary cannot do justice to the clarity with which data and evidence from different traditions, often regarded by their practitioners and others as antagonistic rather than complementary, are here brought together in fruitful entanglement. The book owes much to its thoughtful construction. And it does not duck difficult questions. Is the goal of spiritual practice greater understanding or personal transformation? Can an acceptance of a supernatural element sit comfortably with a respect for cognitive neuroscience? How should we regard the 'hard question', the phenomenological mystery? Each is treated, if not conclusively, at least with wisdom and penetration. All of us who are dissatisfied with the view from a single orientation will enjoy being provoked by this book.

As to the last question, here is the author's almost final word:

Given the reasonable grounds for postulating the role of transcendent reality . . . I propose to accept that [this] fills the elusive missing link in our understanding of consciousness. That missing link pertains specifically to phenomenality. The proposal is, then, that the mystery of phenomenality derives from a transcendent origin' (p. 276).

To learn in detail and depth just how Lancaster comes to offer this characteristically neo-Renaissance proposal you must read the book.

Julian Candy

Alfred R. Mele & Piers Rawling (ed)

The Oxford Handbook of Rationality

Oxford University Press, 2004, 477 pp.,

ISBN 0-19-514539-9

Throughout the history of Western thought, reason has been considered central to human nature. Thinkers from Aristotle onwards have seen rationality as the faculty that distinguishes men from beasts. Before the rise of empirical science and the 'scientific method', clear understanding of the world was often thought to be achievable through reason alone. Science itself confirmed rationality in its position at the pinnacle of human achievement — not for nothing was the Enlightenment known as the 'Age of Reason'.

Enlightenment values, however, have come under scrutiny by a number of thinkers in our 'post-modern' era, notably Michel Foucault who explored reason's links with structures of power in society. It is no longer possible to believe in a value-free, objective rationality unaffected by historical forces. Increasingly the influence of cultural differences, gender and the emotions on our conception of rationality is recognised. Over recent years, psychological investigations have shed some light on how people actually make decisions in everyday life. These demonstrate in many circumstances a singular *lack* of rationality as traditionally conceived.

The notion of a 'handbook' carries two major implications — that it will be both comprehensive in its coverage and of use in practical situations. The former is certainly the case here. All of the topics already mentioned and many more are covered, generally in reasonable depth. The book is arranged in two parts, the first dealing with the nature of rationality, the second with links between rationality and other areas of knowledge. This distinction is of only limited value, however, since several of the essays in the first part concern themselves as much with 'applied' as with theoretical issues.

The fundamental distinction, dating back to Aristotle, between theoretical and practical rationality is explained in the opening chapter by Audi. This serves as a useful introduction to the book as a whole. Roughly, the distinction is between what we mean by rational thought — norms of rationality — and what part rational-

ity plays in our actions in the world. Later chapters explore various aspects of these themes. Most authors succeed in combining a fair-minded view of their topic with a personal perspective. There are chapters on two of the giants of rational thought, Hume and Kant, as well as on particular aspects of rationality such as decision theory, Bayesian theory and the role of the emotions in decision-making. Without a chapter to itself, but running through many contributions, is the interrelationship of rationality with the moral philosophy tradition. This is particularly important in Hooker and Streumer's thorough discussion of procedural and substantive rationality, which explores the tensions between acting in one's own best interests and having concern for the common good.

A further theme underlying many of the individual essays is the philosophy of action: several contributors tackle such questions as what it means to describe an action as rational, how rules guide our actions, and how to explain weakness of the will. Taken together they impart a reasonable overview of significant developments in this area.

The first, theoretical, section of the book is likely to prove hard going for anyone who is not a professional philosopher. Nevertheless, it is rewarding and interesting, and serves to introduce important topics in a comprehensible way. Some chapters, such as the one on decision theory by Dreier, suffer from the requirement to compress a complex topic into summary length, but this is inevitable in any book which aims to serve as a general introduction to a broad field.

The second part of the book, dealing with rationality's role in other disciplines, is probably of more general interest. I certainly felt more at ease with the topics in this section. These include psychology, gender, language, science, economics, legal theory and evolution.

For instance, Samuels and Stich, in their chapter on rationality and psychology, amusingly describe many of the experiments which have investigated how far people actually use rational thought processes in making everyday decisions. This has obvious relevance for the understanding of such 'abnormal' phenomena as delusions and cognitive distortions — particularly important for those in the mental health professions. Karen Jones' discussion of gender and rationality acts as a corrective to some of the assumptions underlying the way in which rationality has traditionally been conceived in Western thought. As a further example, there is an excellent and concise introduction to scientific methodology in Thagard's chapter, which attempts to answer the question of how far science itself can be judged rational.

This handbook is indeed comprehensive, but how useful is it? This naturally depends on what you might want to use it for. For anyone wanting a concise, non-polemical and (on the whole) comprehensible introduction to a wide-ranging series of topics in the field of rationality, it will not disappoint. I would imagine that professional philosophers would find it too elementary and general for their purposes. However, students of philosophy, as well as interested non-philosophers working in areas such as psychology, psychiatry and the social sciences, would find much of interest. Its main utility will probably lie in introducing such readers to areas relevant to their own concerns, which they do not have the opportunity (or perhaps inclination) to explore in depth. I shall certainly refer to it myself when confronted with topics — such as game theory or Bayesian probability — which cause me puzzlement.

Peter Howorth

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BOOKS RECEIVED

Mention here neither implies nor precludes subsequent review

Dalai Lama, *Dzogchen: Heart Essence of the Great Perfection* (2nd ed. Snow Lion 2004)

Hansen, G. Wells, *Not Impossible! How Our Universe May Exist Inside a Computer* (iUniverse 2004)

Heading, Anthony, *Hope & Despair: How Perceptions of the Future Shape Human Behavior* (John Hopkins University Press 2004).

Wilberg, Peter, *The Qualia Revolution: From Quantum Physics to Cosmic Qualia Science* (New Gnosis 2004)