



[Next](#) | [Home](#) | [Previous](#)

EVERYTHING FLOWS

DANIEL NICHOLSON AND JOHN DUPRÉ

Reviewed by Adam Ferner

Everything Flows: Towards a Processual Philosophy of Biology

Daniel J. Nicholson and John Dupré (eds)

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For a few years now there have been strange rumblings emanating from Exeter. Many of them have been coming from the Centre for the Study of Life Sciences, Egenis, and the process philosophy research-group set up by John Dupré and Daniel J. Nicholson, with Stephan Guttinger and Anne Sophie Meincke. Nicholson and Dupré are the editors of this collection, and its publication marks the conclusion of their five-year 'PROBIO' project, collecting together the contributions from their first major workshop, 'Process Philosophy of Biology', alongside others. And while they may object to the suggested metaphysical implication, I'm happy to say this is a substantial contribution to discussions of process in analytic philosophy of biology.

As those familiar with the project will know, the general thesis they've been examining, and which they ultimately endorse, is that the standard static thing ontology fails to capture the dynamicity of the natural world. When we look to the biological realm, we find that the Democritean atomic framework and the Aristotelian substance view fall short. There are—they say, and as Heraclitus said—no things; everything flows. '[...] the world—at least in so far as living beings are concerned—is made up not of substantial articles or things, as philosophers have overwhelmingly supposed, but of processes' (p. 3). So write Dupré and Nicholson in their introductory 'Manifesto'.

The contributions approach this thesis from different angles and the book is structured to accommodate the variety. There's a 'Manifesto' (Part 1), then sections titled 'Metaphysics' (Part 2), 'Organisms' (Part 3), 'Development and Evolution' (Part 4), and 'Implications and Applications' (Part 5). For each, the editors have garnered contributions from an impressive array of philosophers, philosophers of science, and scientists. And while the usual spatiotemporal constraints make it impossible to discuss them all here, a relatively brief overview might be helpful.

In Part 2 of the book, we learn about the ontological character of processes as distinct from things. Things—'substances' as the neo-Aristotelians call them—are entities with determinate(ish) boundaries, which persist in their entirety through space and time. Processes, by contrast, are spread out over time; in addition to spatial parts, they have temporal parts (or so say most processualists). Whether or not they are continuants is up for grabs. In this section, Peter Simons, Rani Lill Anjum, Stephen Mumford, James DiFrisco, Thomas Pradeu, and Johanna Seibt examine the pros and cons of a process-focused metaphysics. What obstacles does the process philosopher face? And must the processualist actually deny the existence of substances, or might they simply say that processes are 'more fundamental'? How does the process model play out in relation to other metaphysical debates (about causation and ontological primacy)?

In the next part, the focus is shifted to the concept of the organism. From Aristotle onwards, living beings have featured as paradigm, 'primary' substances because of the high degree of stability and cohesion they exhibit. The authors in this section—Daniel Nicholson, Denis Walsh, Frédéric Bouchard, and Argyris Arnellos—explore how organisms may plausibly be reconfigured in processual terms. It's important (and reassuring) to note that, unlike those with more extreme reductionist tendencies, the processualists here are not interested in the ontological erasure of organisms. The thesis that organisms do not exist is not seriously considered. The view is rather that organisms are processes, not substances.

In Part 4, 'Development and Evolution', Paul Griffiths, Karola Stotz, Flavia Fabris, Laura Nuño de la Rosa, Eric Baptiste, and Gemma Anderson consider how process ontology plays out in relation to evolutionary and developmental systems theories. As with the collaboration between Baptiste and Anderson (and in Nicholson's contribution to Part 3), attention is directed not solely to the explanatory benefits of a processual

approach, but to the methodological shifts required to accurately capture the insights offered by processualism. New metaphors and new modes of representation are explored.

The final part of this book deals with broader implications of the process thesis. There is, necessarily, a wider spread of philosophical interests represented here. Stephan Guttinger argues for a processual account of macromolecules; Marta Bertolaso and John Dupré examine cancer through a processual lens; Ann-Sophie Barwich offers us a process view of olfaction; and Anne Sophie Meincke (in a contribution that might more properly have been situated in the 'Metaphysics' section) proposes a new approach to the personal identity debate, in which persons figure not as substances but as (surprise!) processes (of a special, higher-order kind).

There is, in short, something for everyone. But unlike many such collections, where the diversity of voices and views might undermine the cohesion of the whole, *Everything Flows* strikes me as an impressively well-organized book. The papers are bound together with the clear aim of examining the central thesis laid out in Dupré and Nicholson's 'Manifesto'. Interestingly, many of the contributions attempt to defend the position (that the world is made up of processes rather than things) by demonstrating its explanatory benefits, either in resolving longstanding issues or generating new lines of enquiry. And this methodological tack takes us to one of the more controversial—and stimulating—features of the project.

In the 'Manifesto', Dupré and Nicholson (p. 4) make the following remark: 'We are commonly asked whether a processual philosophy of biology should really be an ontological project rather than, perhaps more modestly, an epistemological one'. They go on to explain that while some of the authors figure things in precisely those terms (in a manner that many, including this reviewer, find persuasive), they themselves want to maintain the stronger, metaphysical thesis 'that a process ontology is the right ontology for the living world' (p. 38), and that processes are 'in some sense, more fundamental than things' (p. 4). As Peter Simons (p. 52) helpfully clarifies in his entry, 'Processes and Precipitates', they want to say that there are only processes.

David Wiggins, one of the subtler proponents of analytic neo-Aristotelianism, has taken umbrage with this kind of approach (which Dupré and Nicholson happily admit as radical). 'At one and the same time', Wiggins ([2012], p. 16; see also his [2016]) has written, 'how can we deny ordinary substances their status as proper continuants, insist that ordinary substances are really constructs, yet lean shamelessly upon our ordinary understanding of substances when we come to specify that from which these constructs are to be seen as constructed or assembled?'. How indeed? Even ardent process philosophers like Dupré or Johanna Seibt will agree, I think, that the way we ordinarily conceive the world is pervasively substantialist (the 'myth of substance', indeed, is part of the problem). We get about by treating each other as things, persisting in our entirety through space and time, rather than as beings with temporal parts. Dupré and Nicholson (p. 38) go so far as to say that our bias towards substances, 'may well be rooted, at least in part, in our cognitive dispositions'.

The import of this claim—that the substance concept may be a central strut in our conceptual framework—depends on one's meta-metaphysical commitments. That is, counterintuitively, the structure of the world shifts according to the metaphysician's methodological commitments. To deploy a now somewhat neglected distinction of Peter Strawson, it may be that the fundamentality or existence of processes depends on whether you are a descriptive or a revisionary metaphysician (the distinction is found at the start of Strawson [1959]). Wiggins is a descriptivist; he thinks one can examine the structure of reality by examining the

structure of the minds (ours) that perceive it. The Exeter processualists (to shamelessly generalize) are revisionary metaphysicians; they recognize that we experience the world in a certain way, but maintain that proper metaphysical inquiry should extend beyond the limited human perspective. One of the guiding principles behind many of these essays is the thought that science, and specifically biological inquiry, gives us better insight into the warp and weft of the world.

The descriptive approach is on the wane, possibly with good reason. Even if there were some unchanging pre-theoretical conceptual framework shared by all humans it is dubious whether linguistic analysis—the go-to for descriptivists—can grant us access to it. At the same time, there are important lessons to learn from Wiggins and his friends. Despite claims to neutrality, the sciences are undeniably human practices, and the scientists and their equipment are (perhaps) geared to understand (or be understood by) substances/things. Does this render substances conceptually prior? And if so, in what else might the putative priority of processes rest? I can't offer any answers here, but I strongly recommend reading Susan Haack's ([1979]) excellent (and, again, somewhat neglected) 'Descriptive and Revisionary Metaphysics', which specifically positions the Strawsonian project alongside that of the (in)famous processualist, A. N. Whitehead (a philosopher whom the editors take great pains to distance themselves from).

It's also worth noting that the editors' position sits at odds with Dupré's ([1993], [2003]) well-known support for ontological pluralism—his so-called promiscuous realism. True, Dupré's stated pluralism pertains to individuation, but it remains unclear (to me, at least) why the processualists cannot endorse—as Wiggins, Roman Ingarden, and Amie Thomasson do—kinds of cotenable metaphysical frameworks in this domain. Why does process have to be the only game in town? (And reading this collection, I wonder whether certain processualists do, in fact, endorse the pluralistic view simply in virtue of working within the restricted 'metaphysics of science'.)

Whether or not one agrees with the radical metaphysical thesis, there is an admirable, if slightly quieter, radicalism underpinning the book's production. I am, on the whole, somewhat cynical about inter-disciplinary chatter (see Ferner and Pradeu [2017])—but this collection stands as a notable example of productive conversations across standard disciplinary boundaries. I was especially pleased to see Gemma Anderson's artwork reproduced here (p. 288), happily enabled by the presumably costly full-colour printing. It indicates Dupré and Nicholson's commitment to nurturing dialogue and increasing engagement. (It was a shame that the rest of Anderson's work on the project wasn't included, but [it's accessible here](#).)

Inevitably, one of the downsides to a genuinely interdisciplinary collection is that no single reviewer is sufficiently well equipped to assess it. But from this reviewer's limited perspective, all the arguments are eminently comprehensible (if not all persuasive) and those contributors whose expertise lies more firmly within science seem to be engaged with the philosophical debates as thoroughly as the professional philosophers. More broadly, the editors should be commended, strongly, for making the book open access—and I take this to be fully coincident with their aims of increasing engagement, and interdisciplinary conversation.

Everything Flows is an impressive collection and a worthwhile read for metaphysicians, philosophers of science, and biologists (as Johannes Jaeger makes clear in his 'Foreword'). It is interesting not only for the stimulating (sometimes provocative) arguments, but also for its methodological approach. It is, to re-use Simons's phrase, the precipitate of a fascinating and wide-ranging process project (funded by the ERC), which has drawn together a panoply of researchers, combining them in a way that is to my mind both (relatively)

accessible and generative (I'm glad to see that the project will issue in another book; Meincke and Dupré [forthcoming]). Whether or not support for processualism will grow or dwindle remains to be seen; irrespective, the book stands as an absorbing study of a specific moment in analytic philosophy of biology, and a manifesto for a distinctive movement in that field. I won't encourage you to buy this book (because it's open access), but I encourage you to download it, sit back, read it—and process.

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Notes

[1] This first part treats purely quantum processes, whereas the second part includes classical data and its interaction with quantum data, and the third part treats the concepts of observables and complementarity by means of 'internal' Frobenius and Hopf algebras.