

apex, the energetic process reverses and descent begins, also representing putrefaction and fermentation. This is an acknowledgement of decay and death which we now face as a species, and which we are invited to embrace and transform. Here there is no shortcut; we have to take ownership of these shadow aspects and personalities in the fire of purification in order to reach the centre. The sage represents the distillation of life wisdom whose role is to 'question our deepest intentions and beliefs until only the truth remains' and we step into true authority. In a discussion of the miraculous heart, it is encouraging to read that healthy cells can entrain sick cells back to health, 'causing both to beat in harmony' and reminding us to *be* healing rather than just giving healing; resonating with and transmitting the frequency of Divine Love.

As we are embraced by the Great Mother in these two transformative books, we are reminded that we all emerge from the One, to which we also return - unfolding then refolding, as Walter Russell put it. The core message is to wake up, to reconnect with the Source, with Life on Earth and with each other to bring about the birth of a new and more unified world that fundamentally respects freedom and diversity rather than attempting to impose digital slavery and social uniformity.

SIDESTEPPING GALILEO

Peter Reason

■ GALILEO'S ERROR: A NEW SCIENCE OF CONSCIOUSNESS

Philip Goff

Rider, 2019, 240 pp., £14.99, p/b
– ISBN 978-1-84604-601-8

This is a book about the philosophical perspective of panpsychism, written by a leading academic advocate. Panpsychism refers to the view that mind (or sentience, or consciousness) is a fundamental aspect of matter; and, in tandem, that matter is a fundamental aspect of consciousness. Goff offers panpsychism as an alternative worldview to dualism, which holds that mind and matter are two separate aspects of reality; and materialism, which holds that there is nothing other than the stuff of the world as described by physical sciences.

The book is focussed around the problem of consciousness. David Chalmers has contrasted the 'easy' problem of explaining the link between consciousness and behaviour to the 'hard' problem of explaining why there is any consciousness at all in a

material world. Goff sidesteps both problems by showing that the origin of the problem of consciousness has its roots in Galileo Galilei's foundational articulation of the scientific worldview.

In his celebrated phrasing, Galileo told us that nature is a book open to our gaze, so long as we understood that it is 'written in the language of mathematics'. In doing this, Galileo bracketed off the material, 'primary', properties of the world from the sensory. Material properties - size, shape, location, motion, which came to be described as 'primary' - can indeed be described mathematically (at least in their external effects). But sensory, secondary, qualities - the colours, tastes, smells of experience, the redness of a tomato and the spiciness of the paprika - can scarcely be communicated from one person to another, certainly not mathematically. Goff points out that this re-imagining of nature was essentially a *philosophical* move: it has no empirical basis, and so no 'scientific' justification.

But sensory qualities didn't go away. Galileo had no intention of including these in his mathematical science. Rather, he saw them as existing in the soul: 'Just as beauty exists only in the eye of the beholder, so colours, smells, tastes and sounds only exist in the conscious soul of the human being'. Galileo took a dualist view and 'only ever intended to provide us with a partial description of reality'. Essentially, Galileo's philosophy of nature *created* the problem of consciousness that now preoccupies so many academics.

Goff suggests three possible solutions to this problem. One is to accept Galileo's dualism that there are immaterial minds beyond materialistic understanding. The second solution is to hold to the materialist view that, in time, consciousness will be explained in terms of the chemistry of the brain, or indeed explained away altogether as illusion. The third solution, which Goff argues for, is panpsychism, which holds that consciousness is a 'fundamental and ubiquitous feature of the physical world'.

The panpsychist view holds that consciousness in some form is part and parcel of the physical world, that simple forms of consciousness exist *as fundamental aspect of matter*. 'We know that consciousness is real

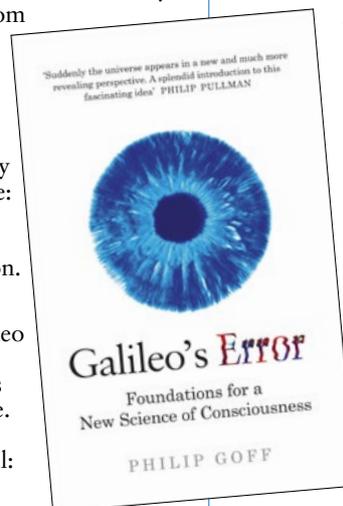
and so we have to account for it somehow. What panpsychism offers us is a way of integrating consciousness into our scientific picture of the world...' Goff asserts that there 'seems nothing incoherent with the idea that consciousness might exist in very simple forms'; and argues that complex consciousness of human and animal brains can be explained as evolving from the simple consciousness inherent in matter.

Goff takes us back to the ideas of the physicist Arthur Eddington and the philosopher Bertrand Russell. Writing in the 1930s, they argued that modern physics has been so enormously successful because it tells us what matter *does*; but it fails to tell us anything about what matter *is*, to account for the *nature* of matter.

Mass, distance, force, all give names to properties of matter, but say nothing about what these properties actually are. In the nineteenth century it was still possible to conceive of atoms as tiny billiard balls bouncing off each other, but the strange worlds of relativity and quantum dynamics have put paid to this. This is 'Galileo's error' of the title: mathematical models do not 'open our gaze' to the *intrinsic nature of matter*.

This leads us toward a broader conception of science that doesn't confuse the practical utility of prediction and control with the ontological question of a complete theory of reality. Goff writes, 'Here is the idea. Physics characterises mass and charge "from the outside" (in terms of what they do) but "from the inside" (in terms of their intrinsic nature) mass and charge are incredibly simple forms of consciousness'. It isn't that neurosciences have to explain how consciousness arises in the material interactions of the brain; it rather sees consciousness as actually that bit of reality we have direct access to and really can understand. The rest (matter) is mystery!

The final chapter moves beyond the issue of consciousness and places panpsychism in the context of the climate crisis and what he calls a 'naturalised spirituality'. Panpsychism directly challenges the view that humans are separate from nature; and the related view that nature has no value in itself, other than its utility to humans. Goff writes, 'Panpsychism has the potential to transform our relationship with the natural world. If panpsychism is true, the rain forest



is teeming with consciousness. As conscious entities, trees have value in their own right: chopping down a tree becomes an action of immediate moral significance. Moreover, on the panpsychist worldview, humans have a deep affinity with the natural world: we are conscious creatures embedded in a world of consciousness’.

This is a truly important statement. Panpsychism offers a lifegiving alternative to the strange combination of materialism and dualism that has evolved from Galileo’s science, and which has such destructive consequences for our world. It is unfortunate that this comes too little and too late in the book. The problem of the origin of consciousness, while fascinating, is trivial compared to the existential question of the future of life on Earth. Tying panpsychism so firmly to the problem of consciousness does it a disservice. I would follow panpsychic philosopher Freya Mathews and argue that panpsychism provides the metaphysical grounding that will allow us to live as true participants of life on Earth.

Written elegantly for a general readership rather than an academic audience, Philip Goff’s book is very clearly written, making complex ideas maybe not easy, but accessible. This is a clear introduction to the panpsychic perspective on the problem of consciousness, and a first step in bringing the wider significance of panpsychism to a general readership.

ECOLOGY AND ECONOMICS

THE DIGITAL AS POLITICAL

David Lorimer

■ FUTURE POLITICS

Jamie Susskind

Oxford, 2018/2020, 516 pp.,
£9.99, p/b –
ISBN 978-0-19-884892-9

It is not surprising that this brilliant and ground-breaking book was chosen as a Guardian book of the day and Prospect and Evening Standard book of the year when it came out in hardback. It is essential reading for anyone who wants to get to grips with the profound and far-reaching impacts of digital technology on politics. The fundamental issues have moved on from 20th-century preoccupations with the relationship between states and markets and require a radical rethink of the scope of basic political categories. And as the author points out in his preface to the paperback edition, we are neither intellectually, philosophically nor morally prepared for the world we are creating.

The six main parts address what the author calls the digital life world, then the respective futures of power, liberty, democracy, justice and politics. Given increasingly capable systems, increasingly integrated technology and increasingly quantified societies, the challenge posed is the extent of control by digital systems whereby those who control technology will have enhanced opportunities to control us through this very power and to limit our freedom accordingly. As Sir Tim Berners-Lee observed, he and his colleagues are ‘philosophical engineers’ redesigning the very basis of our political and social fabric. So it becomes important to be able to explore these issues within the context of political theory and its practical applications. Here some basic vocabulary and analysis is enormously helpful, for instance the elements of social order in terms of coordination, cooperation and control and various types of analysis - conceptual, normative and contextual. Then questions of how we gather, store, analyse and communicate information. All this is occurring within the overall context of our commercial and political world expressed through the Internet and driven by the migration of advertising revenues online where we as users unwittingly become the product. It is still crucial, however, to be able to hold elites to account.

The section on the digital lifeworld is enormously informative and will surprise readers with its reporting on AI with, for instance, programmes for lip reading performing at 93% accuracy and forecast of outcomes of legal cases at 79%, not to mention records on chess and other board games. Machine learning is now developing automation of automation with computing power expected to multiply by 64 in terms of speed in the next 10 years. Algorithms are omnipresent, as Amazon and Netflix customers will know only too well (advertises for a suitcase I looked at came up on my weather forecast even though I had bought another one), and this technology is pervasive, connective, sensitive, constitutive and immersive. We now generate more data in two hours than was generated since the beginning of time up until 2003, while companies like Facebook and Google compile ‘life logs’ from our ‘data exhaust’ that are able to predict our activities and decisions.

In the new connected digital lifeworld, code and algorithms are power. Power can either be power to (empowerment)

or power over in terms of force, scrutiny and perception-control, all of which the author examines in detail. Power is further analysed not only as force, but also coercion, influence, authority and manipulation. We are now open to scrutiny - and consequently to a corresponding abuse of power - to an unprecedented extent with respect to our lives, desires, plans and even purposes; and all the more so with the advent of smart devices to be intensified with the advent of 5G – the author gives a telling example of a clue to a murder derived from an unusually excessive use of water metered by the criminal’s own device. And self-driving cars will not allow us to break speed limits or park in restricted areas. Positively, the author argues that this could constitute a form of ‘wise restraint’ with smart fridges advising obese people on what not to eat. Perception control is effectively behaviour control, and we already subject to a great deal of filtering, for instance news feeds and searches (research has shown that positive and negative news feeds can affect our moods accordingly, as the

current coronavirus crisis so tellingly demonstrates). So the bottom line is that these powerful economic entities wield immense political power.

Liberty and freedom also require new concepts beyond freedom of action and thought. The author offers and defines the scope of Digital Libertarianism, Digital Liberalism, Digital Federalism, Digital Paternalism (see wise restraint above), Digital Moralism and Digital

Republicanism. Online technology offers us new affordances while at the same time feeding into predictive algorithms with political implications, as we saw with the 2016 US election. Interestingly, both in this campaign and in Brexit, up to a third of messages and tweets came from bots, and this is likely to continue - it is already also the case with respect to the debate on climate change. The discussion on liberty then feeds into future democracy: ‘if we care about liberty, there must be a corresponding increase in the ability of the citizenry to hold that power to account.’ (p. 208) The author then gives a brief history of democracy with more details of online campaigning and highlighting its new forms, including, crucially, deliberative democracy at a time when people are increasingly confined within self-looping bubbles of information and no longer critically exposed to other

