

The Restless Clock: A History of the Centuries-Long Argument over What Makes Living Things Tick

Jessica Riskin

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Reviewed By

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Describing paradoxes can be inherently dangerous – how to avoid the very pitfall one is trying to describe? Historian of science Jessica Riskin sets forth nevertheless, and ultimately succeeds, precisely because of an avowed desire not to avoid paradox, but instead to investigate and (if needs be) to explode it from within; basically, to merrily embody it. To this writer’s mind, her challenging and fascinating book treats ‘The Restless Clock’ of its title so well because it resembles a type of textual ‘Restless Clock’ itself.

First appearances are to the contrary, however, with Riskin taking a more standard chronological approach to structure. Her premise is to trace ‘the origins and history of the principle banning agency from science and this principle’s accompanying clockwork model of nature’ (2). Riskin’s point of departure is actual clockwork models of living beings, the surprisingly ubiquitous automata of medieval Europe, and gradually onwards into the global currency of robotics and AI. It is these early lifelike machines, she maintains, that inspired the philosophical discussions which in turn led to the inception of modern science itself.

Thus, developmental scientific debates sit alongside a material history of androids, life-mimicking machines and proto-robots. After the expository chapter on

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Renaissance automata, Riskin patiently relates foundation-building chapters on Descartes, an assortment of ‘natural theologians’ and Cartesian detractors, and the nigh-universal employment on all sides of clockwork and telescope metaphors. These analyses also take in the strikingly life-imbued vicissitudes of now commonplace words such as ‘machine’ (150) and ‘organization’ (180).

All this sets the scene for a description of the rise and fall of Romantic science, and its fraught, equivocal influence upon Darwin. As the power of Darwin’s ideas came to be recognized by peers, and later on by successors, such complex but fruitful ambiguity at their roots was not always readily accepted. Indeed, competing claimants to the most accurate interpretation of Darwin argued fiercely about the provenance of his influences (especially that of Lamarck), but when the dust eventually settled – the clock’s pendulum swinging away once again – the net result was the utter repudiation of even the vaguest whiff of Romanticism, as encapsulated in the neo-Darwinism characterized by Riskin’s villain of the piece, August Weismann.

But far from being solely descriptive, there is a prescriptive, almost political agenda lurking beneath Riskin’s words. She urges that her ‘major purpose [...] has been to demonstrate the importance of historical understanding to current thinking about the sciences of life and mind’ (10). If this somewhat lukewarm opening statement of intent demurs the point, the book then steadily builds to the crescendo of the forthright final chapter, unambiguously titled ‘History Matters’ (337) (and incorporating perhaps unintentionally polemical subtitles like ‘Armies of Idiots’ (339) and ‘Heated Agreement’ (347)).

Between these two poles of tepidity and fieriness, Riskin manages never to waver from her central argument by stoking it up slowly. Though chronological, the inner workings of each chapter tick-tock back and forth from one type of account of nature to another, very much in the manner of Leibnizian loan-term *Unruhe*, meaning ‘restlessness’. These types of account can crudely be summarized as ‘classical mechanist’ vs ‘self-propelling, agential or mystical’. Herein lies the paradox for Riskin: classical mechanism’s ban on agency in scientific explanations silently imported an off-screen supernatural power to underwrite the mysteries of nature.

She identifies in the second, agential category a series of rigorously scientific yet disavowed figures who have been castigated by classical mechanists for just such misdemeanours as the mechanists themselves unwittingly commit. This

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contradiction, according to Riskin, underpins the emergence of modern science, and continues to this day (hence the longstanding but bitter confusion of a ‘Heated Agreement’). The solution, and why ‘History Matters’, of course, is to reverse the disavowal; that is to say, in the words of another of Riskin’s late subtitles, the obvious treatment for the maladies of science is ‘A Dose of History’ (355).

The Restless Clock is an erudite, meticulously researched book, though Riskin takes care not to let her complex subject matter obstruct her lucid prose, keeping almost all secondary commentary to endnotes and an extensive bibliography – indeed, back matter comprises a third of the entire volume. Nonetheless, Riskin laudably maintains a sense of humour throughout, beginning right from her chosen cover image: a mechanical duck (in)famous for defecating, who ‘also did other duckish things – flapping, splashing, ruffling – but its main attraction, drawing people from all over Europe to see it, was its final malodorous delivery’ (133). Cutting-edge but dense research could more often do with just such a sprinkling of absurd, almost Pythonesque frivolity. Additionally, the many pictures and figures in this beautifully rendered volume help to vividly bolster the historical narrative as much as to keep one’s attention.

Almost inevitably given the book’s subject, however, Riskin’s greatest strength and weakness rest simultaneously on a paradox: the increasingly complicated yet correspondingly proselytizing nature of her take-home message. Later chapters, where layers of the agency/passive-mechanism debate pile up and become ever more fine-grained – not to mention impacted by constant technological advance – quickly get jargonistic and a fair bit harder to follow.

As mentioned, this is accompanied by the increased assertiveness of Riskin’s voice, but just as she is becoming more confident and convincing, the opacity of the accrued historical palimpsest is given less space, rather than more as it deserves. This means that, though recent developments are no less important to Riskin than their historical precursors, she seems unable to give full expression to their ever-increasing volume and complexity. Closing sections on Cyberneticists and Schrödinger, for example, are thoroughly intriguing, yet somehow feel rushed by comparison with the languor and cohesion of mid-book sections on Leibniz, La Mettrie and Lamarck.

Nevertheless, Riskin’s gambit – her ‘dangerous idea’, as philosopher Daniel Dennett attributes to Darwin – is to steadfastly defend history (and by extension, the

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humanities) from the slings and arrows of an all-encompassing, reductive brute-mechanism. She does this by showing that such attacks actually undermine unadulterated, ahistorical mechanism itself. History, the humanities, agency, and even religion (heaven forbid) are built into just such aporia-ignoring scientific ad hominem, but are easily avoidable just by science knowing something more of its own history.

Convincingly establishing whether agency exists in nature or not might be a casualty of the sprint to the book's finish line, but this is perhaps not even the point. In a subtle gloss on the admittedly overplayed Two Cultures debate (itself preceded by the 19th century German schism described briefly on pp. 251–260), Riskin stubbornly reminds readers that the historical ban on agency cannot simply be used as a paradoxical excuse to ban history from debate itself. For this *Unruhe*-inspired insight, Riskin and her agency-riddled, restless clock of a book should be praised time and time again.