

## BOOK REVIEW

### Jenny Boulboullé, *Laboratory Epistemologies: A Hands-On Perspective*

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*Laboratory Epistemologies* challenges the picture of René Descartes as a rationalist who favoured disembodied abstraction over sensory experience. Focusing on the wax passage in the *Second Meditation*, Boulboullé reinterprets Descartes as an experimenter entangled with technical and manual practices. Drawing on Edmund Husserl's concept of substitution (*Unterschiebung*), she argues that Cartesian epistemology was shaped by a philosophical operation that retroactively replaced embodied experimentation with abstract reasoning.

Boulboullé situates this revisionary reading within the broader 'crisis of perception' in seventeenth-century science. As experimental mechanics supplanted Aristotelian natural philosophy, instruments and trained perception increasingly mediated observation. Galileo's inclined-plane experiments, for example, were staged to produce reliable effects – polished balls and smoothed surfaces replaced untutored observation. For Boulboullé, Descartes's wax passage reflects and responds to this epistemological crisis. Rather than rejecting the senses, Descartes dramatizes an experimental manipulation of wax – touching, heating, reshaping it – to enable abstraction. The senses are not discarded, but transformed into epistemic tools.

Boulboullé's analysis of Descartes's anatomical practice reinforces this reading. His correspondence attests that he conducted dissections and emphasized the epistemic value of touch in acquiring medical knowledge. His *Treatise on Man* reflects Jean Fernel's *scientia/ars* model, grounding contemplative physiology in manual anatomy. Thus the wax passage is not an allegory of sensory failure but a literary staging of experimental method, crafted for an audience familiar with anatomical theatres and artisanal workshops.

To support her reinterpretation, Boulboullé turns to Christian meditative traditions. She notes how Descartes blends Ignatian sensory imagination with Augustinian introspection to produce a hybrid meditation that uses multisensory engagement to reach rational clarity. Drawing on Husserl's *epoché* and his distinction between *Körper* (body-as-object) and *Leib* (lived body), she argues that Descartes's *res extensa* emerges not just from mathematics but from tactile estrangement from the objectified body – akin to the estrangement experienced in anatomical dissection. These interventions support the claim that modern epistemology is rooted in a forgotten materiality: the manipulated wax, the dissected corpse. For Boulboullé, this material moment was effaced by a philosophical substitution

that privileged abstraction over the embodied work that enabled it. Drawing on Husserl's critique of the mathematization of nature, she critiques how scientific abstraction was legitimized by overwriting its bodily origins.

Later chapters extend Boulboulé's analysis to contemporary life sciences. She critiques classic laboratory ethnography for neglecting the epistemic role of embodied labour by either disembodiment of the observer or rendering the body 'silent', treating sensory and manual skill as peripheral or invisible. Instead, Boulboulé foregrounds sterile environments in molecular biology, where bodily presence is hyper-articulated. Drawing on her training in gene technology and participant observation in clean rooms, she shows how tools like micropipettes extend practitioners' bodies to interact with invisible materials, functioning as epistemic interfaces requiring disciplined touch and choreography. She reads laboratory work as an aesthetic practice that regulates bodies and renders them epistemically productive. Cleanrooms are reframed as zones of heightened bodily awareness, where the body, far from disappearing, is reconfigured as an opaque but sensitized co-agent of knowledge.

Although *Laboratory Epistemologies* offers an incisive theoretical critique, its ethnographic foundation remains uneven. Boulboulé draws on an impressive range of phenomenology, history and STS literature, but her fieldwork is limited to training courses, artistic workshops and a brief internship. The laboratory is depicted as a space of affect and discipline – offering insights into science pedagogy – but not as a site where theoretical insights are materially enacted through investigative practice. Her ethnographic observations are evocative but fragmentary, functioning more as pedagogical vignettes. Though framed as a 'historioethnographic study', a heavy reliance on secondary literature renders the approach hands-off – more textual exegesis than ethnographic study: her analysis engages other texts more than it probes scientific knowledge production through systematic case studies, typical of social-historical epistemology. Thus her ethnographic insights remain disconnected from scientific theorizing. Meanwhile, the focus on canonical laboratory ethnographies overlooks a significant recent shift towards emphasizing embodied experience as central to scientific practice. This oversight leads her to overstate the novelty of her intervention, framing it against an outdated account of the field's engagement with embodiment.

At times, conceptual slippages undermine analytic precision. For instance, Boulboulé characterizes the micropipette as an 'epistemic thing', following Hans-Jörg Rheinberger. But epistemic things are conceptual-phenomenal hybrids that drive experimental systems by generating indeterminacy; the pipette, while enabling access to such knowledge-generating entities, is more properly a technical object. Likewise, her shifting use of 'hands-off', referring both to the discursive displacement of manual labour in Cartesian epistemology and to the regulated suppression of touch in clean-room protocols, risks conflating a rhetorical-epistemological strategy and an embodied epistemic practice. Clarifying this distinction would sharpen the analytic force of her otherwise compelling account.

Nevertheless, this book is a theoretically ambitious interdisciplinary contribution. Restoring the body to rationalist epistemology through a 'radical rereading' of Descartes challenges conventional interpretations of his associations with disembodied knowing and bodily transparency. The book's originality lies less in introducing embodiment to laboratory studies than in its genealogical strategy. In tracing the historical-philosophical erasure of manual labour and material manipulation from rationalism's canon, Boulboulé reframes Cartesian epistemology as entangled with the bodily regimes it purportedly transcended, giving her critique its distinctive force. Her argument challenges persistent myths about modern science's origins, while offering a material genealogy of rationalist

epistemology. Boulboulle's work aligns with broader efforts in historical epistemology, post-phenomenology and science studies to reconceive knowing as a material, embodied, situated practice. Though its ethnographic grounding is limited, the book's theoretical provocation is clear: historical epistemology must reckon with the body as a generative site of scientific knowing.