

influence the shape of neural networks (p. 154). Some ideas, like gender, can become so fixed within neural networks that they can be mistaken as genetic. Other ideas and their cultural expressions (such as marriage, virginity, celibacy, or revulsion at incest) appear more as traditions or institutions. Whether adaptive or maladaptive, as these ideas or traditions affect the neural pathways, they can consequently replicate themselves and even “infect” other people. These structures, however, are not biologically or culturally fixed. Indeed, like other animals, humans seem naturally inclined, and even wilfully relish, testing their biological states and the limits of their cultural norms.

Although natural selection mitigates some of the more harmful effects of these habits, the intentional testing of these limits has broad social effects. One is that individual tinkering (whether due to genius or deviance) can unintentionally cause significant fluctuations in the long-term shape of human culture. Palaeolithic man may have had a genetically adaptive predisposition for acquiring identity markers like jewellery, but the Postlithic consequences of that predisposition—e.g. commodity culture—have far transcended the original adaptation’s biological advantage. Another effect, even bigger, is that civilizations, rather than putting an end to biology, enable it. Ultimately, the narrative of the brain—the neurohistorical perspective—reveals that although the testing of human limits may be of ancient genetic origin, its effects have been with us ever since in the transcendence of the cultural over the biological.

In a satirical light, one might see Smail’s argument actually unfolding before our eyes. The idea of the “neuro” certainly seems to have had a discernable cultural impact. For all its slick packaging, rhetorically appropriate relativism, historiographically informed analysis, and self-assured paraphrasing of Darwin’s *Origin of species*, one could nevertheless dismiss this book on the grounds that its argument has something of the simplicity of the origin tales in Rudyard

Kipling’s *Just so stories* with none of the charm. But, in this case, satire is too apathetic. There is much more at stake here than whether history can be done in the absence of documents or with the tools of science. Smail is most certainly correct in his claims that culture matters and that discourses construct received truths. Yet, he can provide scant evidence for why and how culture becomes “wired” (a metaphor Smail deploys frequently but never explains) into our brains. Furthermore, the limits of some of the scientific support he musters are self-evident—Do women *really* gossip more than men? Do we *really* understand why horses snort? Is not some of this science still conjecture, hypothesis, or correlation? Another point against this metanarrative is one that Karl Popper might have offered. Its explanatory power seems capable of explaining practically everything; whatever happens always confirms the theory. Finally, by asserting this new metanarrative, Smail has unwittingly drafted yet another chapter in what Michael Foucault termed the manifesto of biopower. One would have thought that the logic of his own argument would have made Smail more cautious.

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Lorraine Daston and Peter Galison, *Objectivity*, New York, Zone Books, 2007, pp. 501, 32 colour plates, 108 black and white illus., £25.95, \$38.95 (hardback 978-1-890951-78-8).

In *Objectivity*, Daston and Galison challenge the received view that it is possible to observe nature without contaminating it with preconceived notions, prejudices and above all over-interpretation. This ahistorical view embraces the possibility of knowing the world as it “really is” without the involvement of a knower subject. Daston and Galison’s key weapon to contest this position is no more and no less than history. They argue that the ahistorical outlook only emerged in the

mid-nineteenth century and was associated, although not exclusively, with the development of new technologies and methodologies such as photography and statistics (mechanical objectivity). From the seventeenth century, open interpretations of nature by the observer/expert were the norm and were thus cherished. Human anatomy and botany, for example, required a defined preconception of phenomena, one that entailed seeing beyond the imperfect individual specimens that nature offered to the viewer.

Without denying the visual input of other sources, the authors focus on scientific and medical atlases. These offer a selection of images representing the objects of inquiry of several disciplines at a particular time. They, therefore, set the standards for how natural or medical phenomena are to be seen and depicted. Atlases are also performers of “collective empiricism”, a must for the practice of natural philosophy and more especially modern science from the mid-nineteenth century onwards. Finally, for the historian of science and medicine, atlases are privileged windows from which to observe past and present scientific and medical practices as well as the “scientific self” that performed and performs them.

This takes us to one of the boldest proposals of Daston and Galison’s work: the idea that for scientific objectivity to exist it should embody an array of ethical and moral codes that have to be carefully internalized and acted upon by a cultivated and conscious “scientific self”. For a pre-Enlightenment natural philosopher or a mid-nineteenth-century scientist, for instance, the aspects of the scientific self that were cultivated and/or suppressed were different to those held by a current technoscientist. *A la Foucault*, Daston and Galison claim that to attain objectivity the scientific self is exercised and reinforced by techniques of self-discipline, which could be as varied as, for instance, laboratory note-keeping in the case of a mid-twentieth-century scientist, and by a belief in the scientific self as, simultaneously, an active experimenter and a passive observer.

Daston and Galison’s history of objectivity begins with the change of the “scientific self” as experienced by the British physicist Arthur Worthington, who in 1875 altered his views about the shape of falling liquid droplets. Before he began to use a camera, Worthington had drawn images of these by recalling their form after the flash of an electric spark. When, however, he saw photographs of the falling droplets, he was stunned to realize that his “pictorial taxonomy” of them was wrong, for it not only idealized the phenomenon as symmetrical, hence “misrepresenting” it, but, most importantly, even in the first observations he had selected only symmetrical droplets, discarding asymmetrical ones. The authors argue that this shift in Worthington’s perception of his representation of phenomena corresponds to the shift from one kind of “epistemic virtue” to another. Epistemic virtue, a key concept in the book, refers to a particular vision of what knowledge about nature is in a particular period and how it should be attained. The authors identify three types: “truth-to-nature”, “mechanical objectivity” and “trained judgement”; each of which is associated with well-defined and characteristic “moral virtues” and particular “scientific selves”. Daston and Galison are quick to point out that when an epistemic virtue comes into being it does not fully erase the former, but rather amalgamates and deflects the meaning of its predecessor in a discipline-dependant manner. A certain periodization is however recognizable; “truth-to-nature” runs from the eighteenth century to the mid-nineteenth century and is characterized by the selection of images representing ideal types, an object found in nature but idealized as a universal form. Here, interpretation and author input are highly valued. “Truth-to-nature” is followed by “mechanical objectivity”, a period running from the mid-nineteenth century to the present day which entails forms of automatism that minimize scientists’ intervention and prevent knowledge from being tainted by subjective projections (Worthington shift). Finally, there is “trained judgement”, which runs from about

the mid-twentieth century to the present, and refers to an attitude that allows for interpretation—one which puts an artistic element back into science—that draws on the unconscious in order to select intuitive criteria for objectivity. With “trained judgement” a new kind of pedagogy arose, one that would become very successful in forming self-assured experts in the recognition of particular patterns in the representation or rather presentation of phenomena (for example, Magnetic Resonance Imaging).

All in all, *Objectivity* is a thought-provoking, profound and well-crafted book that shows us that what counts as right depiction hinges on the historical period under analysis. Scientists and medical doctors interested in how knowledge is produced in their disciplines will find it a compelling and pleasurable read. Moreover, it is, as Daston and Galison argue, relevant to current discussions about the existence, attainability and even desirability of objectivity.

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Nicholas Coni, *Medicine and warfare: Spain, 1936–1939*, Routledge/Cañada Blanch Studies on Contemporary Spain, New York and London, Routledge, 2007, pp. xxv, 266, £65.00 (hardback 0-415-38597-0).

Nicholas Coni describes *Medicine and warfare: Spain, 1936–1939* as “the only book, . . . even in Spanish or Catalan, that tries to present an impartial and reasonably comprehensive portrait of the medical, surgical, and nursing implications” of the Spanish Civil War (p. xix). In spite of the vast literature covering many aspects of the Spanish hostilities, and the importance of that conflict in shaping European expectations about the medical consequences of modern warfare, this claim is fair. There has been little attempt to account systematically for the medical practices of either Nationalists or

Republicans and the challenges to which they responded. It is the major strength of *Medicine and warfare* to have filled this gap.

Yet, as Coni admits, his task was both “ambitious and daunting”, and his 266-page tome is a slim volume for a bold project. The range of the twelve chapters indicates how slim: ‘Nursing’, ‘Blood transfusion’, ‘International Brigades’ and ‘Famine and disease’, all feature. Their organization into discrete, free-standing units leaves little opportunity for narrative and does not help to impart a sense of how medical knowledge developed under the particular conditions of “Spain, 1936–1939”. Instead, Coni concentrates on names, injuries, dates and places. This happens especially in the chapter on ‘Wound care’, where ‘Types of wound’, ‘Severe facial injuries’, and ‘Other measures in use for casualties’ are listed without additional comment, followed by short commentaries on burns, frostbite, and wounds of the head, abdomen, chest, eyes, ears, and vessels. This style is typical of several chapters in *Medicine and warfare*, and unfortunately makes impossible a sustained analysis of the complex relations between those two terms.

Coni privileges current understandings of medical concepts and practices. In a discussion of the innovative and controversial use of stored blood by the Republican haematologist, Federico Durán Jordá, he paraphrases the received account of the Barcelona Blood Transfusion Service before endorsing the latter-day consensus that opposition to blood storage was little more than “prejudice” (pp. 75–7). Yet it might have been more interesting to consider how the conditions of warfare prompted reliance upon a technology whose status remained suspect in several countries long after the closure of Spanish hostilities in 1939. Elsewhere, Coni defines “shock” in present-day terms, rather than as a concept that evolved and mutated through the novel experiences and innovations of wartime medicine. So it is unsurprising that his central conclusion is a variant on a familiar, but contentious, aphorism: “medical