

## Medical images: truthful records or moral constructs?

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Images are very powerful rhetorical tools, and this is probably one reason why scientific images in general, and medical images in particular, are often used as arguments by the defenders of socio-moral accounts of science and epistemology.

In *The Image of Objectivity*<sup>1</sup> and in *Objectivity*<sup>2</sup> Lorraine Daston and Peter Galison analyse scientific atlases produced between the late 19<sup>th</sup> and early 20<sup>th</sup> centuries to demonstrate that the proliferation of mechanically produced images, characteristic of that period,<sup>3</sup> was the symptom and consequence of a process of “moralization of objectivity”.<sup>3</sup> What was at stake was the suppression of the subjectivity of the observer through the elimination of any possible human intervention between natural objects or phenomena and their representation. Hence, mechanically produced images, considered virtually invulnerable to the “temptation” of interpretation, functioned as “protective charms” or “talismans” against the human impulse of making scientific and aesthetic judgements. An impulse that caused a seemingly generalized “anxiety” and that had to be “disciplined”, kept under “surveillance”, and “policed”.

In a similar language Lisa Cartwright, in *Screening the Body*,<sup>4</sup> describes 19<sup>th</sup>-century medical imaging techniques (including kymograph, microscope, x-ray and motion pictures) as “optical techniques for social regulation”.<sup>5</sup> Here the production of images by scientists is interpreted in terms of “anxiety” and “desire” to restrain and discipline not the subjectivity of the observer, but rather the body and mind of other people.

In my paper I maintain that although these accounts help clarifying issues about the rhetoric of the neutrality of scientific images, they say nothing about the real epistemological problems of mechanically produced images. I therefore defend that, although the epistemic status of images is very problematic, it is first and foremost their cognitive value that gives sense to their use in medicine.

To this aim I will first argue that Daston and Galison’s account of the history of scientific images as a story of displacements and replacements of imaging practices and metaphysical/moral attitudes is highly questionable. In fact many techniques of scientific illustration typical of the 18<sup>th</sup> century (and the metaphysics that goes with them) are still alive and well today, depending on the scientific field in which the image is produced and on its purposes.<sup>6</sup>

Subsequently, I will try to show that, since most of the scientific images produced by the end of the 19<sup>th</sup> century represent objects and phenomena that cannot be seen by the human eye, they simply fall outside Daston and Galison’s account of mechanically produced images as instruments (or “charms”) to police the subjectivity of the observer. In fact, if the machine makes something that is intrinsically imperceptible to the human senses visible, there is simply no room for an intervention of the observer between the phenomenon and the representation, i.e., no interpretation that can be “policed” and “restrained”.<sup>7</sup> I will improve on this argument (which, of course, has its own internal problems) by stressing the fact that the working conditions of imaging machines are generally well known, controllable and standardized. On these bases I will defend that, although scientists of the late 19<sup>th</sup> century might display a moral (and naïf) rhetoric

when they talked of mechanically produced images, the actual use of these images was motivated in large part by their epistemic properties: On one hand they showed something that couldn't otherwise be seen, on the other they were public records, retrievable and sharable, i.e. inter-subjective (I give therefore a kind of "minimalist account" of objectivity, one that identifies objectivity with the inter-subjectivity made possible by the sharing of observation conditions, conventions, procedures and standards).

For what concerns Lisa Cartwright's stances, I will restrict my critique to what I consider the most striking contradiction of her book. In fact, while in the first five chapters she outlines a creepy picture of all kinds of medical imaging techniques – with scientists and doctors inevitably playing the role of sadistic and anxious torturers of animals and human beings – in the last one she tells "a less condemning story of scientific visuality"<sup>8</sup> and advocates for the right of people (particularly women and other disadvantaged social groups) to have access to diagnostic imaging. Certainly anticipating critiques to this ideological leap, in the introduction she writes: "Although this chapter in some ways breaks both thematically and methodologically with earlier ones, I have allowed these differences to stand, rather than attempting to recast earlier arguments."<sup>9</sup> To recast her earlier arguments, however, would mean to make a finer analysis, one that acknowledges that medical imaging, in its multifarious forms and applications, is not merely the product of the worst human and social drives, but also the result of (sometimes) successful strategies for visualizing and understanding something so elusive as the morphology and physiology of living beings.

Drawing on all these arguments I will finally try to show that medical images are neither transparent records of the inner body nor moral constructs, but rather complex visual reconfigurations of real biological signals,<sup>10</sup> which acquire sense in a specific context (medical research and practice) where conventions for image production, interpretation and use are highly standardized.

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<sup>1</sup> Daston, L. and Galison, P. (1992), The image of objectivity, *Representation*, 40:81-128

<sup>2</sup> Daston, L. and Galison, P. (2007), *Objectivity*, Zone Books, New York

<sup>3</sup> Daston and Galison, 1992, p. 88

<sup>4</sup> Cartwright, L. (1995), *Screening the body. Tracing medicine's visual culture*, University of Minnesota Press, Minneapolis

<sup>5</sup> Cartwright, 1995, p. xiii

<sup>6</sup> Cf. Pombo, O. and Di Marco, S. (Eds.) (2010), *As imagens com que a ciência se faz*, Fim de Século, Lisbon

<sup>7</sup> Here I draw directly on Snyder, 1998 and indirectly on Hacking, 1983. Snyder, J. (1998), Visualization and Visibility, in Jones, C. and Galison, P. (Eds.), *Picturing Science Producing Art*, Routledge, New York, London, pp. 379-397; Hacking, I. (1983), *Representing and Intervening. Introductory Topics in the Philosophy of Natural Science*, Cambridge University Press, New York

<sup>8</sup> Cartwright, 1995, p. xv

<sup>9</sup> *ibid.*

<sup>10</sup> Cf. Bogen, J. (2002), Epistemological Custard Pies from Functional Brain Imaging, *Philosophy of Science*, 69:S59-S71