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Shelley McKellar, *Artificial Hearts: The Allure and Ambivalence of a Controversial Medical Technology* (Baltimore, MD: John Hopkins University Press, 2018), pp. xii + 350, \$54.95, hardcover, ISBN: 9781421423555.

On 18 May 1968 the *Times* published a sketch to illustrate the thirty-five ‘spare parts’ – pieces taken from another human being, or made from plastic, woven fibre, or metal – that could, by then, be added or exchanged in human bodies. It was an impressive list of apparently interchangeable parts, some to transplant (cornea, kidneys, hearts, bone chips), others to implant or to serve as external prostheses (an ear, a joint or a heart valve, a leg [‘not powered’]). Some researchers dreamed that the end product of these operations would be an electronic creature made from a combination of flesh and sophisticated pieces of machinery.

Of all organs, it was the heart which attracted most attention, both from surgeons seeking to transplant one between human bodies, and those who implanted artificial devices attached to external power consoles or powered by radioisotopes. Some surgeons – Michael de Bakey, Adrian Kantrowitz, Denton Cooley – both transplanted human hearts and implanted artificial ones. Could a mechanical heart accomplish for end-stage cardiac patients what dialysis machines offered to those suffering from chronic kidney disease? Might they be a stopgap measure which kept the patient alive while they awaited another’s heart, or, as Cooley envisaged in 1969, would a grafted human heart be but a stepping-stone to a mechanical one, if only such a device could be perfected?

At that time, it was unlikely that a patient who received a recycled human heart would survive the operation and its aftermath, due to the heart being rejected or to infections and cancers caused by the drugs administered to inhibit that immune response. Although artificial heart implants also had a generally dire record of patient survival, they offered a way to avoid at least some of the practical and ethical problems with which human-to-human transplantation was imbued: a shortage of donors, questions about whether they had been legally dead when their hearts were cut out, and whose consent (if anyone’s) had first been obtained.

If, as surgeons argued, the heart was just a pump, then it was one that proved to be extraordinarily difficult to replicate. Shelley McKellar explores this pursuit in her book, *Artificial Hearts*. Until now most scholarly accounts of artificial heart research and development, together with its clinical application, have focused on the 1980s and been written by social scientists and bioethicists. McKellar argues for a longer perspective to enable additional layers of endeavour and complexity to be exposed as the political, economic, and social context in which this work was undertaken changed. Hers is a deeply contextualised historical examination of the quest to manufacture and implant artificial hearts, from the 1950s to a present in which the perfect device still awaits invention. This is predominantly an American story, set within a distinctive US medical research culture highly supportive of technological fixes. Those involved were savvy operators who understood how crucial it was to attract and maintain political and public support for their expensive endeavours. Everything depended upon an ability to attract funds, which in turn relied on surgeons gaining visible status and authority in the field. They held press conferences while garbed in surgical costumes, appeared on front covers of *Time* magazine, deployed celebrity patients to the cause.

McKellar examines the messy reality behind these operations and events. She admirably analyses this in seven detailed chapters that explore the research, manufacture, and clinical application of devices designed either to replace, or to work alongside, an ailing human

heart. In chronological order, she discusses the impact of human heart transplantation on the development of artificial hearts; considerations of technology and risk (focusing on the nuclear-powered atomic heart); the seemingly triumphant Jarvik-7 heart (despite the seizures, strokes, and memory loss patients suffered, some of them becoming household names); and the invention of simpler ventricular assist devices, implanted alongside a patient's own heart and producing a disconcertingly pulseless blood flow.

There is much here for historians of medicine to ponder, for a wealth of research has gone into the making of this book. I was particularly drawn to three themes woven throughout. McKellar analyses the divergent interests always present in the artificial heart field – those of researchers, clinicians, patients, bioethicists, and the media – and how these changed over time. This is a story which features professional conflicts and transgressions, feuds, and accusations of device theft. Secondly, I found McKellar's analysis of the relationship between these men (and men they all were) and the media fascinating. This theme in her book joins that of historians in related fields, notably Susan Lederer's *Flesh and Blood: Organ Transplantation and Blood Transfusion in Twentieth-Century America* (Oxford: Oxford University Press, 2008), Ayesha Nathoo's *Hearts Exposed: Transplants and the Media in 1960s Britain* (Basingstone: Palgrave Macmillan, 2009), and Duncan Wilson's *Tissue Culture in Science and Society: The Public Life of a Biological Technique in Twentieth Century Britain* (Basingstoke: Palgrave Macmillan, 2011).

Third, McKellar notes the malleable and crucial use made of the concept of 'success' in describing laboratory experiments and implant operations. Key actors maintained these had succeeded, despite animal and human suffering and deaths. So, success was claimed when a laboratory dog survived with a pneumatically driven plastic heart for ninety minutes before the device failed, and when the atomic heart implanted into a calf kept the animal alive for eight hours before a kink in an inflow tube 'terminated the experiment' (pp. 33, 104). Operations were deemed to have succeeded despite patients dying within a matter of hours or days, cast as having been doomed due to their parlous pre-operative state. 'Success' was crucial in a young and highly competitive field which needed to attract research funding and political support. It showed that knowledge had been gained through the experiment, and maintained individual motivation and confidence in the 'grand pursuit' (p. 51).

Artificial Hearts is an excellent contribution to our knowledge about the search for a high-technology solution to end-stage cardiac disease. By grounding that pursuit within a decades-long historical context, Shelley McKellar shows how those undertaking this high-stakes endeavour fought for and gained authority, funding and public acclaim in the face of others' scepticism that an artificial heart might, one day, be the perfect substitute for the real thing.

Helen MacDonald

University of Melbourne, Australia

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Matthew Oram, *The Trials of Psychedelic Therapy: LSD Psychotherapy in America* (Baltimore, MD: Johns Hopkins University Press, 2018), pp. 288, £37.00, hardback, ISBN: 9781421426204.

It is difficult to explain to a seven-year-old why some drugs are legal, some are legal only when a doctor says they are, and some can get you arrested. I tried during a recent drive