Review Nelly Oudshoorn (2020) Resilient Cyborgs: Living and Dying with Pacemakers and Defibrillators

Lucie Dalibert

Nelly Oudshoorn (2020) Resilient Cyborgs: Living and Dying with Pacemakers and Defibrillators. Singapore: Palgrave Macmillan. 350 pages. ISBN: 978-981-15-2528-5

Lucie Dalibert

   lucie.dalibert@univ-lyon1.fr

How one lives and dies with an implanted heart device is the topic of Nelly Oudshoorn's latest book, which mainly draws upon extensive fieldwork conducted in the Netherlands. While most STS research tends to focus on new and emerging technologies, Oudshoorn invites us to pay attention to older and more mundane technological objects of a particular kind: pacemakers and implanted cardiac defibrillators (ICDs). As she gives centre stage to technologies that are neither useable, handleable nor, in any case, detachable from their users, but rather implanted in their bodies until the end of life, Oudshoorn raises questions regarding the agency, vulnerability and resilience of people living with such technologies. Indeed, "what does it takes to keep hybrid bodies alive" is her main interrogation (p. 12). Still, in contrast to most work that focuses on life with, and of, technologies, be they usable, prosthetic or implanted, Oudshoorn is also concerned with the death of implanted heart devices and their wearers, that is, on the one hand, with how these technological objects affect how one dies with the device and, on the other hand, with what happens to pacemakers and ICDs after the death of their users. Doing so, she provides an original and welcome contribution to the field of STS and scholars interested in the agency and interactions with biomedical devices. Through 10 chapters grouped in 3 parts, Oudshoorn offers several heuristic tools for understanding the life and death of 'everyday cyborgs' (Haddow et al, 2015) or 'wired heart

cyborgs' (p. 20). As they act on and modulate the heart's rhythm, pacemakers and ICDs aim to reduce their wearers' vulnerabilities. Yet, living with such devices introduces new vulnerabilities, which demands that one builds resilience to be able to cope with them. Besides adopting a constructive approach to vulnerability and resilience by drawing on recent STS scholarship and showing how vulnerability and resilience reside not with the individual but rather emerge and materialise in sociotechnical networks of human and nonhuman actants, Oudshoorn also builds upon Anselm Strauss' research to underline how living and dying with an implanted device requires work. The implant's disappearance under the skin does not amount to its disappearance from attention nor to a "seamless merging of humans and technologies" (p. 117). Rather, living with implanted heart devices and keeping hybrid bodies alive "involves an intensive trajectory of anticipating, monitoring, and adjusting the working of pacemakers and ICDs" (p. 117). It further "require[s] the active involvement of people having these implants, their close relatives, technicians, nurses and cardiologists, and the devices themselves" (p. 229). Through a fine-grained account of the dance of agency that takes place between technicians, wired heart cyborgs and implanted heart devices when adjusting and fine-tuning pacemakers and ICDs (chapter 3), Oudshoorn introduces the first heuristic tool that composes her sociology of resilient cyborgs, namely the conceptualisation of the

active engagement of everyday cyborgs in building resilience as work (p. 304). To draft her techno-geography of resilience, Oudshoorn also shows with great detail how living with a technology inside one's body transforms one's sensations. Here too, work is required to get used to the technology and the new sensations it induces. When ICDs and pacemakers produce beeping sounds that one has to learn to recognise, ICDs generate shocks as well, including inappropriate ones, that one must sense and tame in order to build resilience. Even though it does not directly engage with STS research on sensory experiences in the medical sphere (Rice, 2010; Harris, 2016), Oudshoorn's work resonates with it as it draws attention to the way sensations constitute a form of (practical) knowledge as well as to how being attentive to them plays a critical role in getting habituated to the technology and its agency (see also Dalibert, 2016 and Slatman et al, 2016). Accounting for this process (chapter 4), i.e. wired heart cyborg's expertise, by including sensory experience and resilience techniques constitutes the second heuristic tool of Oudshoorn's sociology of resilient cyborgs. Through attentiveness to their bodily feel and collaborative work with medical professionals and their close ones, people living with heart implants build resilience and a body-technology alliance. In contrast to most work on cyborgs and intimacy between bodies and technologies, one of the strengths of Oudshoorn's book is to show that the realisation of such alliance is not enough to be able to live well with a pacemaker or an ICD (chapter 5). If in high-income countries we live in environments filled with technological devices, the density and "the texture of [the] 'technosphere' within which we undertake our daily affairs," as philosopher of technology Don Ihde phrases it (Ihde, 1979: 7), is more intensely felt by people living with implanted and prosthetic technologies (see Dalibert, 2014). Becoming a 'resilient cyborg' thus demands 'disentanglement work' from humans and nonhuman actants alike (p. 118). Such work requires people to identify and anticipate potentially disruptive technologies, from airport security gates to induction plates, and people's behaviours, from strangers' intrusive gaze to loved ones' gestures, that might create harm to

one's implanted body. The building of resilience through both the making of a body-technology alliance and disentanglement from disruptive actants thus demands particular efforts. It also entails conceptualising implanted technologies as 'body-companion technologies', which is Oudshoorn's third heuristic device (chapter 10). Oudshoorn draws upon Donna Haraway's notion to emphasise the reciprocal relationships between humans and technologies as well as the work needed to sustain such relationships. When body-companion technologies can be considered as 'co-travellers' (Haraway, 2003: 9), three reciprocal relations and interdependencies are involved in body-companion technologies and in making resilient cyborgs: mutual guarding, disciplining and domesticating. In these relations, attention to gender and age matters to understand life and death with implanted heart devices (chapters 6 and 7). While "gendered mismatches between devices and bodies and Western cultural norms about femininity and beauty […] all contribute to a techno-geography of resilience which delegates new responsibilities to women" (p. 49), such as mastering passing techniques regarding scars or articulating new forms of normalcy, "implants also affects the lives of younger and elderly people in very different way" (p. 49), the latter giving different meanings to their device, which creates different kinds of anxieties and demands different forms of emotional work. With sensitivity to difference the fourth heuristic tool offered by Oudshoorn to undertake a sociology of resilient cyborgs, the STS scholar insists on the necessity to account for the ways in which implanted bodies are subjected to different norms, expectations and work due to their particular position in power relations and axes of domination. The originality of Oudshoorn's book and proposal for a sociology of resilient cyborg also lies with her focus of life *and* death with and of an implanted heart device. Following the whole life-cycle of hybrid bodies is her fifth and last heuristic tool. Reviewing American, European and Dutch medical guidelines (chapter 8), Oudshoorn shows how "pacemakers and defibrillators shape the process of dying and who is granted the right to turn off these devices" (p. 230). These implants create 'dying trajectories' that involve particular anxieties and uncertainties.

In a direct call to medical professionals, Oudshoorn highlights how "the building of resilience to the emotional distress of the dying process" (p. 251) is hindered by the absence of clear medical guidance and information provided to people living and dying with an implanted heart device. Finally, Oudshoorn turns to the death of the device, or rather to 'the life' of the device after its wearer has died. Attending to the *Project My Heart Your Heart*, she describes how the refurbishment and reuse of pacemakers, hence the making of resilient 'second-hand' pacemakers, is an emergent practice that requires extensive work to meet regulatory standards, thus a particular path creation (chapter 9). In conclusion, this book reminds us that bodies and mundane implanted medical technologies deserve more attention from STS. Oudshoorn has done a remarkable job in following the life and death of people implanted with a pacemaker and an ICD, and of these devices. In the process, she offers several conceptual and heuristic tools that will certainly prove useful to researchers interested in questions of agency, vulnerability and resilience and, more generally, in understanding what it takes to live and die with technological devices inside bodies.

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