

Fokko Jan Dijksterhuis, Andreas Weber and Huib Zuidervaart (eds.), *Locations of Knowledge in Dutch Contexts*. Knowledge infrastructure and knowledge economy 6 (Leiden: Brill, 2019. 322 pp., ISBN 9789004234878); Ab Flipse and Abel Streefland (eds.), *De universitaire campus. Ruimtelijke transformaties van de Nederlandse universiteiten sedert 1945*. Universiteit en samenleving 15 (Hilversum: Verloren, 2020. 148 pp., ISBN 9789087048518).

The COVID-19 pandemic offers a stark reminder of how the sciences are dependent on *where* they are practiced. With archives closed, research that requires access to these sources is now often blocked, forcing scholars to postpone or find alternative sources, affecting the scholarly knowledge they will generate. Conversely, the pandemic has accelerated the use of videoconferencing software for seminars and conferences, making the exchange and reception of knowledge possible at an unprecedented scale and tempo, without participants having to leave their home or office. Ab Flipse is thus right to argue in the introduction of *De universitaire campus. Ruimtelijke transformaties van de Nederlandse universiteiten sedert 1945* that ‘the process of digitalisation and working long-distance, which in recent years – seemingly paradoxically – went together with an increasing attention for the physical space of the university, suddenly intensified’ (15). *De universitaire campus* and *Locations of Knowledge in Dutch Contexts*, the two volumes reviewed here, can be read against this current background. They also build on the scholarship of historians such as David Livingstone, Steven Shapin and Simon Naylor who have investigated what role location, space and geography have played and play in the development, transfer, and reception of scientific knowledge. What do the case studies in these volumes demonstrate and how do their approaches further develop the spatial turn in the history of science?

The two volumes each have a distinct focus. The volume edited by Flipse and Abel Streefland looks at the interaction between universities and cities through its buildings, both in inner cities and campuses in urban peripheries after 1945, when universities experienced exponential growth and growing interest in American-style campuses. The volume edited by Fokko Jan Dijksterhuis, Andreas Weber and Huib Zuidervaart merges the spatial turn in the history of science with the practice turn in this historical discipline. The volume wants to investigate how specific locations shaped practices and values. It asks how locations give ‘shape and meaning to a performance, a performance of knowing’, since a ‘location creates the setting for knowledge production by bringing people and practices, objects and interests together, and by structuring their interactions’ (8). By covering the early modern and modern period, it wants to offer long-term perspectives

and concentrate on 'cities', 'connections' and 'transformations'. This review cannot do full justice to the nineteen contributions in total these two volumes present. What it can do, however, is highlight four themes that can be discerned in these volumes.

First, the contributions demonstrate how sites and buildings helped universities forge their self-image and relate themselves to their urban environment. Flipse, for example, demonstrates how the VU Amsterdam's current campus is presented to an audience of aspiring students and scholars as a compact and complete whole, although its development as a '*cité universitaire*' was marked by an uneven development and contested elements, including its now-iconic main building which was initially seen as a break with Calvinist tradition. Physical sites can also serve as a heuristic to gauge the spatial development of a university. Indeed, Marja Gastelaars establishes four variations in Utrecht University's spatial development: 'a home for one's own', 'focus and concentration', 'manageability for all' and 'plenty of space'. These concepts help understand why the university moved, in part at least, from the inner city to the Uithof Campus in Utrecht's outskirts, but also the spatial needs of specific disciplines. In similar fashion, Martin Weiss shows how Hendrik Lorentz' curatorship of Teylers Museum in Haarlem coincided with the transformation of the institute into a museum, because it did no longer have sufficient space for large-scale research which the ascendant universities had, but also because investments in new scientific instruments were no longer made, leading also to a growing appreciation of its museal function.

Secondly, these volumes show how physical sites connect the university with its wider urban environment in the early modern and modern era. Dirk van Miert demonstrates how the disputation hall during the early modern era served the performance and settlement of academic debates, and in doing so mediated between the city and university and raised the intellectual profile of the city. In turn, Zuidervaart makes clear that Middelburg's anatomical theatre in the seventeenth century helped institutionalise scientific research in Zeeland by also being a site for culture, book collecting and a learned society. Ultimately, however, the theatre declined because of local political and religious disputes as well as Zeeland's peripheral location in the Dutch Republic. By contrast, after 1945, and especially from the 1980s onwards, universities were deemed to 'produce' knowledge which benefitted society and the economy, leading to the construction of science parks. As Jorrit Smit argues, this was because such sites had to serve as mediating channels in spatial form between universities and (local) industry, with its development often determined by local political and economic interest and notions about the relation between the university and the private sector. Consequently, these parks also led to a spatial divergence between academic disciplines and vast changes to the physical make up of universities.

Thirdly, these contributions make clear that sites of knowledge depend on networks for the distribution of scientific knowledge, specifically trade networks, personal networks, and professional networks. Concerning the first, Alette Fleischer argues that locations of knowledge can be situated anywhere, provided they are integrated into a network with a regular stream of people and goods. She explains how the Breyne family from Danzig used their trade networks in the seventeenth century to communicate their botanic knowledge of the city's hinterland. Gerhard Wiesenfeldt's contribution on the 'Duytse mathematique' – a practice-oriented mathematical discipline in Leiden, for which the local fencing hall served as a mediating site between university and the city – is exemplary for the second category. It illustrates how family networks were crucial in appointing the discipline's first professors. The critical role professional networks, the third category, could play in communicating scientific knowledge and centred on scholarly conferences is demonstrated in Streefland's chapter on post-war Dutch research into ultracentrifuges and its dependence on transnational professional networks which spanned the geographical divide of the Cold War. In likewise fashion, Ilja Nieuwland demonstrates how nomadic scholarly conferences in the nineteenth century served to professionalise the discipline by regularly changing its locations and to show the scientific prowess of nation states.

Finally, these contributions further substantiate David Livingstone's arguments about the site dependency of knowledge production and reception, thus underlining the causal relation between spatiality and scientific knowledge. In his contribution, Dijksterhuis demonstrates how Amsterdam in the seventeenth century served as a site at large for generating knowledge on urban extensions and controlling waterflows for urban engineers and municipal authorities. Azadeh Achbari argues that the professionalisation of the reliable study of storms in the nineteenth century owed more to data gathered through ships' crew's logbooks from their sea journeys than observations from land, thus making the sea into a site of knowledge-production. Site-dependency also meant the contestation of knowledge generated by differing sites, as Floor Haalboom illustrates in her chapter by way of the disputes over hygienic milk production in the 1920s. Differing notions about the urban-rural divide, milk production and local facilities led to fiery disputes about what constituted proper hygienic milk. A similar competition can be perceived in Marijn Hollestelle's chapter on polymer research in science and industry after 1945, which identifies these sectors as immaterial sites, demonstrating that the knowledge it produced depended much on notions of either pure or applied science.

Both volumes are to be commended for their programmatic introductions, empirically rich case studies, readability, and well-crafted editions. It is inexplicable, though, why the volume published by Brill costs nearly nine times as much as the one by Verloren. There are, however, also notable differences. The volume edited by Flipse and Streefland is more

coherent because of its narrower temporal and topical focus. Paradoxically, because this volume abstains from a specific methodological framework, it also leads to conceptually more challenging chapters, especially those by Flipse, Verwaal and Gastelaars. It abstains from directly engaging with history of knowledge, demonstrating that spatiality in the history of the sciences is a problem that can be addressed beyond this field. By contrast, the volume by Dijksterhuis, Weber and Zuidervaart has a narrower conceptual focus, strengthened by its tripartite structure, providing an even-handed treatment for the early modern and modern era. However, as an edited volume it cannot provide a comprehensive treatment of this problem. For this reason, a concluding chapter that provided diachronic comparisons, offer a *longue durée* perspective and relate the empirical arguments presented in the case studies back to the volume's conceptual framework would have been preferred.

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