Bethan Mitchell
Engaging with Actor-Network Theory as a Methodology in Medical Education Research, London and New York, Routledge, 2021, pp. 150

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Actor-Network Theory (ANT) has proven to be particularly useful for analyzing and understanding technoscientific practices in health-care settings. From the study of laboratory practices by Bruno Latour and Steve Woolgar (1979) to the multiple ontologies identified by Anne Marie Mol (2002), researchers inspired by this approach highlighted how the heterogeneity of the phenomena involved in various ways in the practical of scientific products and care practices can be understood only considering their relational and dynamic dimensions. Technoscientific objects and practices, according to ANT, are not universally given entities, endowed with unique and immutable properties. On the contrary, they need of being analyzed in the environment of use and in their socio-material networks to identify their salient characteristics. How can this perspective also be useful for studying the production of knowledge in a medical educational program? This is the question Bethan Mitchell intends to answer with the book *Engaging with Actor-Network Theory as a Methodology in Medical Education Research*.

Analyzing two empirical case studies situated in UK, the author takes the socio-materiality position of ANT by considering knowledge and learning in its development through space and time, bringing together objects, people, knowledge, institutions, and relationships. Starting from this assumption, the author aims at bringing those who are not familiar (especially in the educational field) with ANT into this approach, and at producing new scientific arguments regarding the production of knowledge in medicine. The book tries to reconcile both communities in an argumentative path structured in successive steps that gradually provide the intellectual tools to understand when applying ANT to medical education research.

The volume consists of eight chapters, with a brief introduction acting as a prelude to the book. The first two chapters are mainly aimed at those who are not familiar with ANT to illustrate its main theoretical and methodological characteristics, by briefly retracing the salient stages of its historical development. Although these chapters do not provide those familiar with ANT with new content, they are relevant for them too for understanding the book's purpose and structure. The third chapter provides the historical and theoretical coordinates to frame the UK institutional system in medical education and pharmacy studies; it deals with the specific setting in which the research was carried out: a peculiar regulatory device that

falls within what is called "improvement science". This label defines a systematic approach that identifies desirable improvements in the medical field (in terms of quality, efficiency, equity, and value), and validates their reliability and credibility so that such improvements can also be disseminated in contexts other than the medical one.

The author defines the two case studies as Student-Led Improvement Science Projects (SLISPs). These consist of two training courses, which represent an elective part of the formal curriculum in medicine and pharmacy, whose participants act as "change agents" to improve existing practices: the first case refers to medical students working on an improvement to the process of antimicrobial prescribing practice in two different wards; the second case regards an inter-disciplinary students group investigating insulin prescribing practices and how these could be improved. It is not always easy to understand the articulation of different levels the study refers to: educational, professional, organizational, and cognitive. All are filtered by the ANT reflective and socio-material perspective. Although the author makes considerable efforts to clarify the above-mentioned levels, at times the text is not so easy to follow, which may be problematic for readers not already accustomed to the multilevel complexity of ANT reporting.

The fourth chapter describes the methodology of the study and is significantly called "the research assemblage", to show how the ANT approach permeates the entire research path and is not just a heuristic means to address the empirical field. The chapter consists of two parts: in the first, the methodology is outlined by describing socio-materiality and ANT as derived from the practice and professional education (network, symmetry, and multiple worlds are the key concepts); in the second part, the research design, the data gathering, and the analysis procedures are described by using the two SLISPs cases. The next chapter focuses on exploring SLISPs in the hospital setting. In the first case (about antimicrobial prescribing as part of a wider project in quality improvement), "the antibiotic story" comes out as a network of interconnecting materials (gentamycin form, roles, ward, etc.) which requires the alignment of humans and non-humans; the second case (about improving medical reconciliation for insulin-dependent patients) shows the effects of non-human actants on the learning process intended as socio-material assemblage. In the sixth chapter, the different enactments of SLISPs become explicit, with a focus on the pedagogies of improvement science and with professional and practice learning orientation. The chapter oscillates between the discussion of ethnographic data concerning the research paths pursued by students and the inclusion of these researches within improvement science. Here, the ANT perspective helps to grasp how improvements are enacted between two main elements: the clinical staff of the ward, who need to be convinced that the SLISPs will improve practices, and the students, who require the time and the commitment to developing the improvement. This analysis also shows

that there is no single, predictable, a priori outcome of improvement science interventions. Mitchell uses the expression "multiple worlds of SLISPs" (p. 111) to emphasize how different realities coexist at different stages of students' research until an alignment is found and produces a stabilization in practice. The overlaps between different ontologies generate ambiguities and controversies that students are led to resolve by moving through material assemblage (lockers and electronic equipment) and organizational spaces (rooms and areas for group work). Exposure to the indefinite, and to the areas of possibility that this uncertainty produces, is seen as a primary source of learning for students. Learning itself, as improvement science, is not predefined, unique, and immutable in practice: Mitchell's work shows how it is "distributed through space and through assemblage of objects" (p. 115).

The last two chapters address the key points of Mitchell's investigation. The network perspective applied to educational practices shows that learning is not just a heroic, benevolent individual act, as it is usually conceived in medical education (Bleakley 2012), and makes it possible to grasp the disruptive force that accompanies the intrusiveness of improvement processes in daily practice. The assumption that learning and improvement are positive in themselves is only an ideal: in their development they can bring disruption and uncertainty to organizational routines and professional procedures, forcing their stability and legitimacy. Objects also move changes in preexisting practice. They "invite" practice through colors, shapes, dispositions, accessibility, and degree of visibility. These characteristics are partly inherent to the objects themselves and, at the same time, are the result of interactions within the network in which they are situated. The ANT perspective applied to medical education opens the "black box" of learning and reveals the ambivalences that inhabit it: expectations and impossibilities, commitments and resistances, convergences and divergences. The main merit of Bethan Mitchell's book lies in this disenchanted look at learning processes within the boundaries of improvement science. From the analysis of the practices, one understands the transformative scope inherent in these processes but, at the same time, the complex articulation they require and the challenges they can bring.

In conclusion, the answer to the question that opened this review (How can this perspective also be useful for studying the production of knowledge in a medical educational program?) is definitely positive, even though the book does somewhat suffer the same fate typical of publications that intend to reach different targets and audiences. It is difficult to maintain the right balance in the dual register of argumentation throughout the text. However, Bethan Mitchell succeeds quite well in this task, ensuring an appreciable readability and an adequate degree of scientific depth of the content, thus managing to satisfy ANT scholars looking for new stimuli

and a new scientific contribution, and those who are interested in the production of knowledge in medicine for professional or educational purposes.

References

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Ilenia Picardi

Labirinti di Cristallo. Strutture di Genere nell'Accademia e nella Ricerca [Crystal Labyrinths. Gender Structures in Academia and Research], Milano, FrancoAngeli, 2020, pp. 124

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The book *Labirinti di cristallo. Strutture di genere nell'accademia e nella ricerca* [*Crystal Labyrinths. Gender structures in academia and research*] by Ilenia Picardi outlines a framework aiming at unravelling gendered practices in academic and scientific institutions.

The author adopts the theoretical perspective provided by feminist studies in the field of Science and Technology Studies (STS) as a toolkit capable of discussing the complexity of the metaphorical and iconographic representations of "crystal ceiling" and the "leaky pipeline" and of observing how gendered practices construct academic paths similar to "crystal labyrinths". With the labyrinth's metaphor, Picardi shows how women *do science* by oscillating between innovative disciplinary mobility and hybridisation dynamics practices (Sciannamblo and Viteritti 2021) and the reproduction of male-dominated career models. *Crystal labyrinths* expose the rhetoric of merit as a system designed to justify the low presence of women in high positions because they are supposedly less competent than men in fields such as science, politics, and business. Indeed, Picardi's book highlights that the current systems of evaluation of competence and consequently of career progression in academic and research work are underpinned by gendered processes.