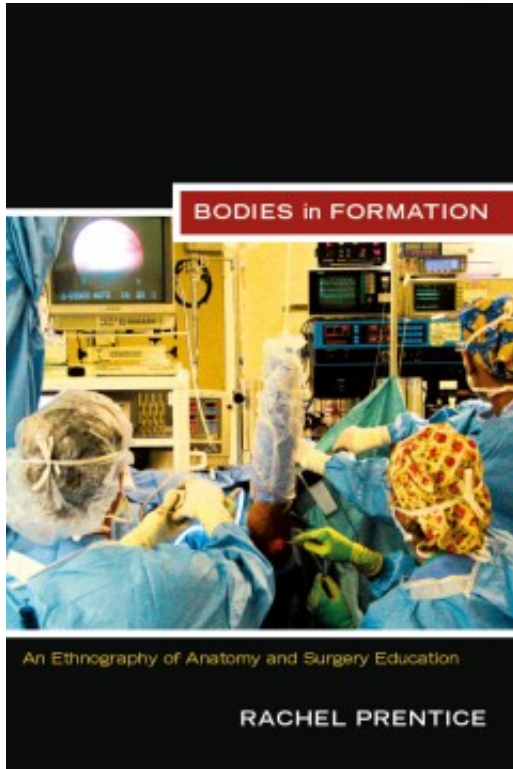


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Book review - Rachel Prentice's Bodies in Formation

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By Talia Gordon



[*Bodies in Formation: An Ethnography of Anatomy and Surgery Education*](#)

By [Rachel Prentice](#)

Duke University Press, 2012

312 pp., US\$24.95 paperback

The relationship between medicine and technology is long well established; indeed, the interconnectedness of the two worlds has shaped scientific knowledge and practice for centuries. Particularly in the realm of surgery, the inextricability of technology from medical practice has become necessarily axiomatic. Technological advancements have underpinned much of what is possible in surgical performance, while allowing for the

expansion of knowledge about bodies – their components, structures, functions and pathologies. Increasingly, technologies are being developed as pedagogical tools for surgical training, replacing and reshaping traditional approaches to teaching and learning.

Rachel Prentice's book, *Bodies in Formation*, explores the new frontier of technological presence in the world of surgery education, and sets out the complex and evolving questions that dot its landscape. Prentice examines the ways in which ethics, affects, and judgments are constituted by and within surgical trainees and practitioners through interactions with increasingly sophisticated surgical technologies. At stake in the shifting terrain of skill and knowledge acquisition are “forms of perception” of bodies and persons (5) and the embodied values of medical care. Through interviews with trainees, residents, master surgeons and technologists, close observations of teaching techniques and surgical practice, and through her own experiences in the anatomy laboratory, Prentice demonstrates how students are molded into surgical practitioners at the changing interface of medicine and technology.

Bodies in Formation begins in the anatomy laboratory, a traditional cornerstone site of surgical education. Here, medical students are first exposed to the body's structures in three dimensions, an experiential departure from previous encounters with graphic or textual representations of human anatomy. Prentice introduces human cadavers – the primary objects and subjects of anatomical training – as fundamental tools in physician formation. Cadavers are bodies marked by an “ontological duality” (33) that allows them to be viewed and acted upon selectively as *either* persons *or* things. In the laboratory space, trainees and teachers carefully negotiate this duality in the handling of the dissection process, particularly as emotional responses are evoked and interworked with anatomical learning. Prentice describes the laboratory space as a “liminal zone” (40) between the university and the clinic, whereby students move from the pages of their textbooks into the first moments of surgical practice. Within this framework of liminality, the cadaver acts as somewhat of a conduit between spaces: the transmission and embodiment of surgical knowledge begins with the experience of dissecting a human body.

In her discussion of ontological duality, Prentice presents the choice to either “objectify” the body or “activate” the person as dichotomous; often, the instructor deliberately makes the distinction through a variety of pedagogical approaches. However, in many moments the body becomes marked as object or person according to the trainees' affective stances and ethical registers. Prentice describes how the cadaver's personhood is evoked through students' exposure to “highly charged” body areas, such as “hands, genitals and faces” (43) and through the discovery of other

culturally recognizable and significant markers of social existence, including, for example, tattoos or tan lines from weddings bands. In contrast to these markers, which activate and emphasize personhood, the body becomes objectified in the laboratory space through the experiential process of cutting and dissection. Finally, Prentice argues, the cadaver body “becomes multiple” (59) as the student attempts to reconcile these opposing binaries of personhood/thingness and emotion/practice. The ontological duality of the cadaverous body thus generates a productive tension that begins to shape medical students into surgeons.

However, Prentice describes the increasingly deemphasized role of dissection in medical education training and the shift instead toward “simulation as pedagogy” (72). Critics of human cadaver dissection argue that it is a costly and inefficient tool for teaching anatomy to students at the starting point of their surgical training. Anatomical knowledge comprises an understanding of the body’s structures and the learned ability to articulate these structures in proper medical language. Those who oppose dissection claim that this knowledge can be made available to trainees through the use of technological methods such as computational modeling. However, advocates of traditional dissection counter this position by arguing that the early interactive experience with a body provides trainees with crucial lessons about emotions and ethics – particularly around death – that reach far beyond knowledge of anatomical structure and terminology. Prentice unpacks the “pedagogical effectiveness” (81) of dissection and points to the difficulty in evaluating – or replicating through technologies – what is learned affectively; indeed, the central question of the chapter hinges on whether anatomy training represents “a ritualized introduction to medical culture or ...a more abstract exercise in learning language and spatial structures” (82).

Prentice also points to the different conceptualizations of the body constructed from its representation by a human cadaver and through its virtual rendering in medical technology. Here, she introduces another oppositional duality: the “canonical” and the “instantiated” body (97). The former is marked by anatomical typicality; it represents an idealized, nonpathological set of bodily norms that are rarely encountered in surgical practice. Yet, it is the canonical body that is represented in surgical textbooks and in technological applications of anatomy education. By contrast, the “instantiated” body of the laboratory cadaver is synonymized with the “real body, the clinical body” (99): it reflects the innate variability of human structure and pathology. Prentice’s conversations with both medical students and anatomy instructors illustrate the important pedagogical differences in using human cadavers or technological models in surgical training. In particular, anatomy professors argue that the discovery of unanticipated structural “anomalies” (96, 97) through human dissection more closely replicates the surgical experience; thus,

anatomical variations found in the laboratory setting provide strong teaching opportunities. In digitalized – idealized – models of human anatomy, a similar discovery process cannot occur. Indeed, through Prentice’s powerful ethnographic encounters, she demonstrates the heuristic value of anatomical dissection in reifying conceptualized bodies as bodies in practice.

Though the themes of body formation and representation are woven in throughout *Bodies in Formation*, a central point of ethnographic inquiry for Prentice is the concept of “surgical embodiment” in medical training: the multiple and often unarticulated ways through which students acquire the surgical skills and affective dispositions that together form the surgeon’s *habitus* (260). Prentice examines the acquisition of surgical skills through the adoption of various “techniques of the body” which comprise both physical (or practical) and affective learned behaviors. Indeed, beyond anatomical knowledge of structure and function, trainees acquire a set of “embodied dispositions” (123) as they move from the laboratory into the clinical setting. Embedded in clinical training measures is a “hidden curriculum” (110) of “surgical acculturation” through which trainees are exposed to different forms of tacit knowledges: senses of intuition, ethics and judgment, professionalism and physical comportment. In the clinical setting, trainees learn by watching practitioners and through the experience of occupying unfamiliar spaces of surgical practice. As Prentice demonstrates, surgical skills become a blurred and complicated category; they are at once technical “ways of knowing and doing” (107) that become habitually incorporated into the surgical self and “perceptual, social and affective” (109) modes of practice. Thus, “surgical embodiment” indexes the dual mediation and bolstering of trainees’ technical skills through the processes of surgical acculturation.

Another form of embodied knowledge that develops through the affective mediation of technical skill is that of “surgical sight,” which refers to the “relationships between perception and action” (172) incorporated into the surgical self. Prentice discusses the ways in which sensory and perceptual faculties constitute embodied knowledge of surgical practice, and how new technologies have reconfigured this form of knowledge. Prentice upends conceptualizations of surgical sight as a synthesis of the “visual and mental” (172) and instead focuses her analysis on its more nuanced features. Through years of practice, surgeons master multiple sensations connected to touch and gesture; together with knowledge of human anatomy and surgical procedure this becomes a set of “embodied skills” (193). However as Prentice’s discussion of minimally invasive surgical techniques demonstrates, new technologies often intervene in and disrupt the habituated sensory and perceptual practices of surgeons.

Prentice explores what she terms the “turn to virtual reality in medicine”

(207) and demonstrates how the technologization of bodies has fragmented and reconstructed medical knowledges. In stark contrast to cadaver dissection, through which the body is envisioned as a whole comprised of parts, the development and design of technological anatomical models disassembles and divides up the body in multiple ways. Through attempts to digitally and virtually build “body objects” (220), the body is reduced to minute assemblages of pixelated tissues and reconstructed into unconnected, floating organismic structures. Each body object becomes its own medical and technological entity disconnected from any origin or whole. In the medical student’s transition from training to practice, the patient’s body is thus distanced from conceptualizations of wholeness and personhood, rather, it becomes “a dataset that can be accessed, divided and recombined in new ways” (208). The ontological duality of the cadaver body does not reside within “body objects”; the activation of personhood in technologically conceived replications is, as Prentice argues, impossible

Thus, emotion and affect are edged out of anatomical training through the deployment of technologies and body-objects; these embodied knowledges cannot be digitalized. Prentice examines the pedagogical implications for medical training and the formation of the surgical self in the final chapter of *Bodies in Formation*. She writes: “much of medical education entails articulating two bodies – the patient’s body and the physician’s body” (229). Through anatomical training and surgical practice, the undifferentiated canonical body becomes formed into a conceptualized body with potential personhood. Technologically fragmented bodies intervene in this conceptualization and the trainee becomes formed in accordance with his or her relation to body objects, rather than bodies-as-persons. The embodiment of surgical disposition is similarly disrupted and reworked; subjective experiences of surgeons cannot be digitally imaged and grafted onto trainees in the same way “techniques of the body” become learned and habitually incorporated through clinical training. Interestingly, Prentice positions technologies designed to teach surgical practice as exclusionary of the “aspects of surgical performance that cannot be encoded in a simulator” (252). Certainly, the acquisition of embodied knowledge and surgical skill could occur through a hybridized pedagogical approach that retains elements of surgical acculturation.

Throughout *Bodies in Formation*, Prentice remains measured in her arguments and descriptions and balanced in the deployment of a critical approach. Indeed, though ethnographically and theoretically rich, *Bodies in Formation* is carefully restrained in its evaluative or prescriptive stance. Perhaps most powerful are Prentice’s own personal experiences in the anatomy lab and in the operating theatre, the inclusion of which draws the affective, ethical and sensory forces of dissection into sharp relief. Though

Prentice is firm in stating her conviction that the cadaver's ontological duality presents a crucial pedagogical tool for medical students, *Bodies in Formation* is not intended to be a lengthy case for retaining dissection in medical education, and certainly should not be read as such. Rather, it is an exploration of how knowledges, skills and dispositions are shaped and become embodied by students through the multiple experiences of surgical training. Ultimately, *Bodies in Formation* offers a thoughtful negotiation of the shifting and complex relationships of medicine and technology in a field where the bodies of the patient, student and practitioner are constantly worked upon – and where ways of doing and forms of knowing are perpetually at stake.

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