

The art of medicine

Medicine and the radiant city

“Modern society is throwing off its rags and preparing to move into a new home: the radiant city.” In this way, Le Corbusier—high-modernist architect, urban planner, and philosopher—invited readers in 1933 to envision a new kind of urban life. Such a life would be situated within and enabled by a new, utopian landscape of Le Corbusier’s design, intended to facilitate “the expansion and flowering of men’s lives” through the planned arrangement of separate spaces for living, working, and commerce.

Strict concepts of geometric order suffused Le Corbusier’s vision of the radiant city. Throughout his substantial body of architectural drafts and city plans, which together form an important part of the cannon of 20th-century urban design, networks of identical high-rises repeat across grids of elevated, interconnecting super-highways. To Le Corbusier, such schemes of geometric order were far more than purely aesthetic choices. Rather, they represented key elements underlying his vision of a city that, through the very features of its design, could prevent vexing social problems, such as poverty, crime, and pollution, that Le Corbusier believed were fostered and perpetuated by what he saw as the cramped, chaotic layouts of Europe’s historic cities.

When they were put into action, however, Le Corbusier’s ideas failed dramatically. In the Brazilian capitol of Brasília, planned and built by Le Corbusier’s disciples from the ground up between 1957 and 1960, the new city’s massive dimensions and its regimented layout made life within its confines uniquely sterile and isolating. 20 years after

its completion, the capitol remained substantially less populous than the improvised communities that had sprung up on its outskirts. By 1991, art critic Robert Hughes had pronounced the grand modernist experiment of Brasília a failure, calling it “a façade, a ceremonial slum of rusting metal...a vast example of what happens when people design for an imagined Future rather than for a real world”.

The planned urban environment envisioned by Le Corbusier and realised by Brasília’s developers reflected a desire to make all facets of city life capable of being systematically observed and regulated from above. Yet to the extent that it also ignored the ground-level knowledge and practices necessary for real cities to function, this very concept of order was a principal cause of the practical failures of Brasília and other similar projects, including the Unité d’Habitation in Marseille and the Pruitt-Igoe housing complex in St Louis, Missouri.

Seen in the context of health policy, Le Corbusier’s utopian vision, as well as its eventual failure in practice, offers lessons about both the promise and the limitations of standardisation as a means of improving health care. Like Le Corbusier’s arguments for the standardisation of the urban environment, arguments for greater standardisation of health-care through guidelines, checklists, and protocols carry utopian overtones of their own. Typically, such arguments imply a strong faith in the power of quantitative data—in the form of findings drawn from clinical trials and comparative effectiveness studies—to bring rationality to the apparently chaotic, disordered world of clinical medicine by defining “best practices” for patient care. Such faith, though widespread, is problematic when seen from a viewpoint that envisions scientific research itself as a social and cultural phenomenon. Decades of scholarship in the social studies of science have highlighted how all research studies, to one degree or another, rely on their own, culturally determined, ways of categorising and ordering the world around them. Such scholarship has emphasised how scientists’ own practices of categorisation and ordering both enable and limit the insights that can be gleaned from their research findings. Most importantly, such work suggests that the cultural features of scientific research create a need for acts of translation and interpretation to make the findings of any individual research study useful in the real world.

Such perspectives run counter to dominant trends in 20th-century medical thought. In the years when Brasília was being slowly populated by its first generation of residents, Alvan Feinstein, an internist and epidemiologist at Yale University, was formulating his own arguments for an increasingly scientific practice of clinical care. Like Le Corbusier, Feinstein’s calls for clinicians to more fully



Brasília, Brazil, 1961, the National Congress building by Oscar Niemeyer

Elliott Erwitt/Magnum Photos

“exploit their opportunities for scientific investigation... as conductors of...experiments at the bedside” were linked to a utopian vision of a better future. Promising that a more explicitly rational approach to clinical care would allow physicians to “prognosticate more accurately and to evaluate therapy more effectively”, Feinstein pointed to the development of a more standardised, structured approach to patient care as the next “major intellectual challenge in contemporary clinical science”. Feinstein offered his readers a range of new concepts and terminologies that, when coupled with new forms of statistical analysis, promised to allow a complex, heterogeneous population of patients to be classified into uniform groups to be systematically observed, studied, and managed.

To Feinstein, the act of setting things in order was a prerequisite for the scientific investigations of clinical practice that he hoped would transform care. Yet the very ordering schemes that Feinstein proposed came with their own unintended consequences of producing solutions that were ill-suited to the clinical problems they had originally been intended to address. By proposing the concept of “comorbidity,” for example, he provided researchers with a facile way to distinguish the diseases of most interest to them from all of the other conditions a patient might have.

Yet distinct challenges emerged when the findings of research that relied on this concept came to be incorporated into clinical practice guidelines intended for use in real clinical settings. Today, the experience of living with two or more serious chronic conditions is common among older adults. For these patients, the need to manage multiple coexisting diseases all at once highlights the artificial nature of researchers’ distinctions between “principal conditions” and “comorbidities”, potentially making the task of adhering to multiple guidelines, each focused on a single condition, too complex for many patients to achieve in practice.

Comorbidity offers but one example of how the implicit, ordering logics of clinical trials and comparative effectiveness studies can work in unintended ways to distance clinical research findings from the clinical realities they aim to represent. Indeed, guideline developers and quality advocates in the USA have seen metrics and practices embodying “best evidence”—including 4-hour windows for antibiotic administration in community-acquired pneumonia, preoperative beta-blockade for high-risk surgical patients, and tight glucose control in the intensive-care unit—cast into doubt or abandoned when shown to be unworkable or even unsafe when used as a basis for efforts to standardise care on a large scale.

Often, efforts to explain the reasons for such failures in the translation of “best evidence” to real-world clinical practice involve retrospective critiques of the quality of past research and calls for better-designed trials and comparative effectiveness studies. In 1992, near the end of his career, Feinstein voiced similar sentiments in seeking to explain

why “certain improvements in clinical care” that he had predicted years earlier had not yet occurred. He suggested that researchers themselves, in the years since his earlier writings, had produced a body of scientific work that, to Feinstein, was insufficiently “reality-oriented” to impact practice in a meaningful way.

Taken by itself, it is hard to find fault with Feinstein’s urging to clinical researchers to pursue studies focused on practical problems. Indeed, his comments foreshadow contemporary calls for more research to characterise the effectiveness of medical treatments under real-world conditions. Yet Feinstein’s perspective is also notable for what it lacks: namely, a recognition that all scientific research necessitates some degree of abstraction; an acknowledgement that the very acts of categorisation and measurement required for research to proceed also create important rifts between clinical research and clinical reality; and an admission that the degree to which any individual study succeeds or fails in representing such reality remains a matter of interpretation.

Ultimately, the parallels between Le Corbusier’s utopian dream of the radiant city and Feinstein’s equally utopian vision of a practice of medicine rationalised by the power of science illustrate what the social studies of science, and ethnographic inquiry more generally, have to contribute to health policy. By characterising the ways in which clinical trials and comparative effectiveness studies function not simply to describe reality, but to create realities of their own, ethnography can help to map out the differences between what health policy asks of clinical research and what such research is actually equipped to provide. By highlighting the extent to which biomedical research itself occurs as a social phenomenon, both predicated on and limited by distinct, culturally informed systems of belief, the social studies of science can offer a neglected means of understanding the strengths and limitations of clinical research as a basis for efforts to standardise care. Ultimately, as an opportunity to more forthrightly examine the fraught, social nature of biomedical research, such endeavours represent perhaps our best way to identify which efforts to standardise health care are “designed for an imagined Future rather than for a real world”, and our surest means of avoiding the multiplication of radiant cities that prove to be unliveable in fact.

**Mark D Neuman, Charles L Bosk*

Department of Anesthesiology and Critical Care, University of Pennsylvania School of Medicine, Philadelphia, PA 19104, USA (MDN, CLB); Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA, USA (MDN, CLB); and Department of Sociology, University of Pennsylvania, Philadelphia, PA, USA (CB)
neumanm@mail.med.upenn.edu

MN received support from a career development award from the Foundation for Anesthesia Education and Research.

Further reading

- Le Corbusier. *The radiant city: elements of a doctrine of urbanism to be used as the basis of our machine-age civilization*, 2nd edn. Knight P, Levieux E, Coltman D, trans. New York: Orion Press, 1967
- Scott JC. *Seeing like a state*. New Haven: Yale University Press, 1998
- Hughes R. *The shock of the new*. 2nd edn. New York: McGraw-Hill, 1991
- Feinstein AR. *Clinical judgment*. Baltimore: Williams and Wilkins, 1967
- Feinstein AR. “Clinical judgment” revisited: the distraction of quantitative models. *Ann Intern Med* 1994; **120**: 799–805
- Boyd CM, Darer J, Boult C, Fried LP, Boult L, Wu AW. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: implications for pay for performance. *JAMA* 2005; **294**: 716–24
- Wachter RM, Flanders SA, Fee C, Pronovost PJ. Public reporting of antibiotic timing in patients with pneumonia: lessons from a flawed performance measure. *Ann Intern Med*. 2008; **149**: 29–32
- Latour B. *Science in action: how to follow scientists and engineers through society*. Cambridge, MA: Harvard University Press, 1998
- Bowker GC, Starr SL. *Sorting things out: classification and its consequences*. Cambridge, MA: MIT Press, 2000