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Separate and Together: The General Hospital and the Twentieth-Century City

Annmarie Adams and David Theodore

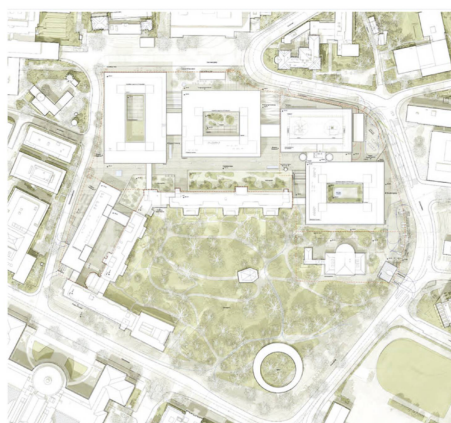
"Our project is more of an urban intervention than a hospital," said Basel-based architect Emanuel Christ. He was talking to an online audience in August 2020 about Kernareal USZ, his firm Christ & Gantenbein's conceptual design for University Hospital Zurich. ^{fig.1a,b} The first two of five planned buildings are set to open in 2027 as part of a master plan for the city's downtown university district. "It's an urban intervention that happens to be a hospital, not a hospital that's an urban intervention." ¹ Christ draws an attractive image but, like many architectural propositions in the modern hospital era, such comments raise a complex question about the integrity of healthcare architecture: where exactly is the threshold between city and hospital? ²

The Zurich hospital architects want us to understand their project as less like a hospital and more like a city: "we are not building a hospital!" insists Christ's partner, Christoph Gantenbein. "Of course there are operating theaters and similar facilities. But in terms of quantity, that's a small part. There



are also patient rooms, offices, laboratories, restaurants, and shops. So we didn't develop a building, but a neighborhood." ³ It makes sense to conceive of the hospital as an intervention in an urban district that just happens to house a hospital when set against the multiple activities that make up hospital life. Cities and hospitals tend to grow in similar ways: in planned and unplanned spurts that create layered, overlapping structures and activities. Even though we live in the midst of a movement towards patient- or family-centered

care, hospitals today are not focused on the patient, and, consequently, the patient room is not the key element in hospital architecture.



Reflection on the ideal relationship of the general hospital and the city has created a long-standing discourse involving architects, planners, and medical authorities. They debate whether hospital life and medical care thrive best when tightly coupled to city life or through keeping city and hospital physically distinct. Christ & Gantenbein's desire to fuse a 330-bed healthcare institution with its surroundings illustrates one pole of this debate on separation versus integration. "It's the opposite of the Forbidden City," says Christ,

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¹ Zoom meeting of Annmarie Adams, Emanuel Christ, and Irina Davidovici, *gfa Invites*, August 19, 2020. See Zurich University Hospital, <https://www.christgantenbein.com/projects/zurich-university-hospital-usz> (accessed March 17, 2021).

² This paper draws from David Theodore, "The Hospital City ca. 1970," American Association for the History of Medicine annual meeting, Los Angeles, CA, May 10–13, 2018. We are grateful to Cigdem Talu for assistance.

³ This is a rough equivalent from Google Translate of the following source: <https://architekturbasel.ch/christ-gantenbein-und-herzog-de-meuron-basler-bauen-zuerich/> (accessed March 17, 2021).

fig.1 a, b Visualization and site plan by Christ & Gantenbein, University Hospital Zurich
Source: <https://afasiaarchzine.com/2019/03/christ-gantenbein-48/christ-gantenbein-university-hospital-extension-zurich-afasia-4-2/> (accessed April 8, 2021)

4 Zoom meeting, Adams, Christ, and Davidovici, August 19, 2020.

5 Hermann H. Field, "Application of Comprehensive Planning to the Urban Teaching Medical Center," Part Two, *Hospitals* 39, no. 22 (November 16, 1965), 67–72, here 72.

6 Linda Luxon, "Infrastructure: The Key to Healthcare Improvement," *Future Hospital Journal* 2, no. 1 (February 2015), 4–7.

7 Lisa Smith, et al., "The Impact of Hospital Visiting Hour Policies on Pediatric and Adult Patients and Their Visitors," *Joanna Briggs Institute Library of Systematic Reviews* 7, no. 2 (2009), 38–79.

8 R. A. Kearns and J. R. Barnett, "To Boldly Go? Place, Metaphor, and the Marketing of Auckland's Starship Hospital," *Environment and Planning D: Society and Space* 17, no. 2 (April 1999), 201–26.

9 We are indebted to excellent work by others on hospital architecture, especially by Adrian Forty, Philip Goad, Jeanne Kisacky, Cameron Logan, David C. Sloane, Christine Stevenson, Leslie Topp, Stephen Verderber, Julie Willis, and Carla Yanni.

10 Annmarie Adams, "Modernism and Medicine: The Hospitals of Stevens and Lee, 1916–1932," *Journal of the Society of Architectural Historians* 58, no. 1 (March 1999), 42–61; David Theodore, "Sound Medicine: Studying the Acoustic Environment of the Modern Hospital, 1870–1970," *Journal of Architecture* 23, no. 6 (2018), 986–1002.

11 Rajendra Kale, "Parking-Centered Health Care," *Canadian Medical Association Journal* 184, no. 1 (January 10, 2012), 11; Annmarie Adams, et al., "Kids in the Atrium: Comparing Architectural Intentions and Children's Experiences in a Pediatric Hospital Lobby," *Social Science & Medicine* 70, no. 5 (March 2010), 658–67; David Theodore, "Feeling Foreign: What Happens When a Hospital Looks Just Like a Shopping Mall," in Giovanni Borasi, ed., *Journeys: How Travelling Fruit, Ideas and Buildings Rearrange our Environment* (Montreal: Canadian Centre for Architecture, 2010), 215–21.

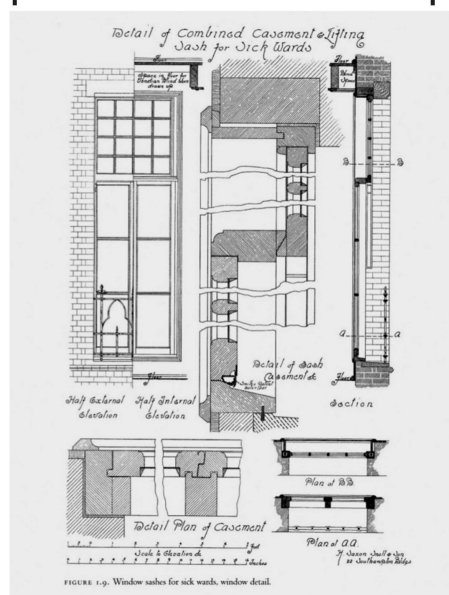
evoking the exclusivity of Beijing's famous imperial residence to emphasize the openness and visibility of his firm's plans for the hospital site in central Zurich. ⁴ In 1965, influential hospital planner Hermann H. Field wrote that "one of the most obvious violations in design is the usual disregard by the hospital of its surroundings. Few building types have so consistently developed at variance with everything around them." ⁵ Integrating hospitals in city centers, planners claimed, expedites links to transportation, technology, and expertise. ⁶ Easy access to hospitals means more visitors for patients. ⁷ And most importantly, placing hospitals downtown connected to other buildings makes them part of everyday life and can even normalize sickness. ⁸ If hospital and city overlap, that is, going for medical treatment becomes like going to the bank, or akin to how city dwellers might go to a university hospital to attend a public lecture.

In this paper we explore the relationships between modern hospital architecture and the twentieth-century city. In urban general hospitals in Europe, North America, and Australia, design has kept the hospital and city both separate and integrated. ⁹ On the one hand, good architecture can help hold undesirable aspects of urban life at bay, working alongside security agents and surveillance technologies to keep people and crime out of hospitals. Likewise, highly sophisticated ventilation systems and wall sections can separate hospital air from city air and hospital sounds from city sounds. ¹⁰ On the other hand, architects also fashion networks of tunnels, bridges, atria, and parking lots to connect hospital life back to the city, deliberately imbricating city streets and hospital walls. Such architectural connectors entice citizens to visit the hospital. If bad food and expensive parking can keep people away from hospital sites and segregate hospital activities from downtown, then hospital lobbies, especially those with atria, can look and function like shopping malls, attracting non-medical visitors and encouraging them to linger and consume, creating familiar surroundings for suburban dwellers. ¹¹

Yet architects also deploy many arguments for keeping hospitals separate from the city. As do other

institutions where people both work and sleep, hospitals look inward and benefit from distinct architectural boundaries.¹² Since the nineteenth century, architects have organized mental asylums, prisons, military barracks, boarding schools, universities, holiday retreats, and hospitals behind gated walls, as campuses, or as sculptural towers – sometimes all three. A twentieth-century example of separation in remarkably pure form is Tony Garnier's Hôpital Grange-Blanche (1913–1933, now Hôpital Edouard Herriot), arranged on the east edge of Lyon as distributed barracks strictly isolated from each other (discussed in more detail below).¹³ And even as Christ & Gantenbein's plans progress, authorities are simultaneously planning "an almost autonomous hospital for highly specialized medicine," independent from its surroundings, the historic buildings of ETH Zurich and the University of Zurich, and the university hospital's larger institutional footprint.¹⁴

In short, throughout the last 120 years, architects and administrators have proposed designs that both separate hospitals and cities and bring them together. These dual impulses have accompanied the modern hospital since its invention at the end of the



nineteenth century. At the time, hospital planners looked to build away from the congestion and pollution of the industrializing city; the desire to maximize clean, natural ventilation permeated every design decision.¹⁵ **fig.2** With the propagation of the pavilion plan, a type that flourished well into the 1930s, hospital architects and planners sometimes seized vast sites on the edges of cities. Pavilion-plan hospitals were contained by walls which marked the all-important boundary between sickness and the city. They comprised

multiple separate pavilions linked by covered walkways, tunnels, or bridges. Inside, architects stipulated open or so-called Nightingale wards, typically occupied by thirty-two to thirty-six patients. To prevent or reduce the spread of infection, patient beds were separated by strong drafts of fresh air brought in through windows and ventilation systems.¹⁶

While hospitals are often physically removed from the city, they are also planned like the city, with functional zoning for personnel and modern transportation systems for supplies. Early city-inspired hospitals were self-contained communities, with food, laundry, and other services managed on-site. These

¹² Charles Rosenberg, "Inward Vision & Outward Glance: The Shaping of the American Hospital, 1880–1914," *Bulletin of the History of Medicine* 53, no. 3 (Fall 1979), 346–91.

¹³ For an influential sociology of such custodial institutions, see Erving Goffman, *Asylums: Essays on the Social Situation of Mental Patients and Other Inmates* (Harmondsworth: Penguin, 1961).

¹⁴ "University Hospital Zurich, New Building Campus MITTE1," <https://www.dres.ch/en-CH/projects/university-hospital-zurich-new-building-campus-mitte1/> (accessed March 17, 2021).

fig.2 Large-scale window details
Source: Henry Saxon Snell, *Charitable and Parochial Establishments* (London: B.T. Batsford, 1881), 103

¹⁵ Annmarie Adams, *Medicine by Design: The Architect and the Modern Hospital* (Minneapolis: University of Minnesota Press, 2007), 9–14.

¹⁶ Annmarie Adams, "Architecture that Breathes," *Harvard Design Magazine* 40 (Spring and Summer 2015), 14–19.

17 Annmarie Adams, "Rooms of Their Own: The Nurses' Residences at Montréal's Royal Victoria Hospital," *Material History Review* 40 (Fall 1994), 29–41.

18 Clare Hickman, *Therapeutic Landscapes: A History of English Hospital Gardens Since 1800* (Manchester: Manchester University Press, 2013).

19 Edward Fletcher Stevens, *The American Hospital of the Twentieth Century*, 2nd, rev. ed. (New York: Dodge, 1928), 15.

20 Architects of Stevens' generation traveled widely, acquiring expertise by visiting hospitals that showcased design informed by medical theories. See Cameron Logan and Julie Willis, "International Travel as Medical Research: Architecture and the Modern Hospital," *Health and History* 12, no. 2 (2010), 116–33.

21 For a general history of the pavilion plan, see Jeremy Taylor, *The Architect and the Pavilion Hospital: Dialogue and Design Creativity in England, 1850–1914* (London: Leicester University Press, 1997).

fig. 3 Train for patient transport, Longue Pointe Asylum, Montreal, QC, 1911, VIEW-11277
Photographer: Wm. Notman & Son/Source: McCord Museum, Montreal

hospitals had gates, driveways, and centralized, carefully monitored entrances, alerting citizens to the distinctiveness of the hospital grounds. Patients and supplies were wheeled through hospitals, still iconic of hospital life today. Particularly large institutions might even have had interior trains. ^{fig. 3} Nurses, doctors in training, and hospital staff lived on-site, in accommodation embedded in hospital pavilions or in specially designed residences. ¹⁷ Multi-purpose, non-medical spaces echoed those in city centers. Hospitals featured religious rooms, chapels, temples, and synagogues, and had elaborate theaters and other rooms for entertainment. Simultaneously, hospital landscapes simulated nature-based places, featuring picturesque ornamental gardens, and wooded areas, designed with special pathways for patients. Sports fields provided opportunities for exercise, team building, and leisure. Long walks, the enjoyment of gardens and flowers, team sports, and even holiday-centered parades were seen as curative — that is, it was therapeutic to get patients out of bed to socialize and exercise within a strictly monitored landscape modeled on non-medical rural and recreational precedents. ¹⁸

The pavilion-plan hospital looked beyond itself. "An outlook that while distant from industries may still remind the patient that he is part of the world's life and activity," said Edward Fletcher Stevens, hospital architect and expert, in the 1928 edition of his influential book, *The American Hospital of the Twentieth Century*. ¹⁹ Roof-top terraces, fresh-air balconies, and patient-room windows provided carefully choreographed views of sky, lawns, gardens, woods, people, and buildings outside. These views outward from hospital interiors connected hospital activities with the seasons, climate, daylight, and stars. Hospital architecture was not so much, then, about shutting off the city as it was about linking the hospital with larger systems of time and place, and about engaging patients' senses with their surroundings, even to their places in the larger universe. ²⁰

The pavilion plan established an orderly, healthy city that countered the congestion and unhygienic crowding common in rapid urbanization. ²¹ Hôpital Grange-Blanche is a good example. The plan of Garnier's hospital is composed of repeating, U-shaped, south-facing pavilions, each accommodating a medical specialty, connected underground by a network of tunnels. ^{fig. 4} The hospital was organized as a rational, grid-based city, an idealization held aloft by Garnier's stark vision of urban order. Its power derived from its adjacency to the disorderly, industrializing city: a bold vision of what a city could be next to what a city really was.

Changes in urbanism and changes in medicine itself quickly influenced the relations of city and hospital. The pace of urbanization



fig. 4 Plan of Hôpital Grange-Blanche, Lyon, France, by Tony Garnier, 1913–1933
Source: Catherine Femand, *Les Hôpitaux et les Cliniques: Architecture de la Santé* (Paris: Le Moniteur, 2000), 26

22 Annmarie Adams, "Surgery and Architecture: Spaces for Operating," in Thomas Schlich, ed., *Palgrave Handbook of the History of Surgery* (London: Palgrave Macmillan, 2018), 261–81, here 266.

23 Judith Walzer Leavitt, *Brought to Bed: Childbearing in America 1750–1950* (New York: Oxford University Press, 1986).

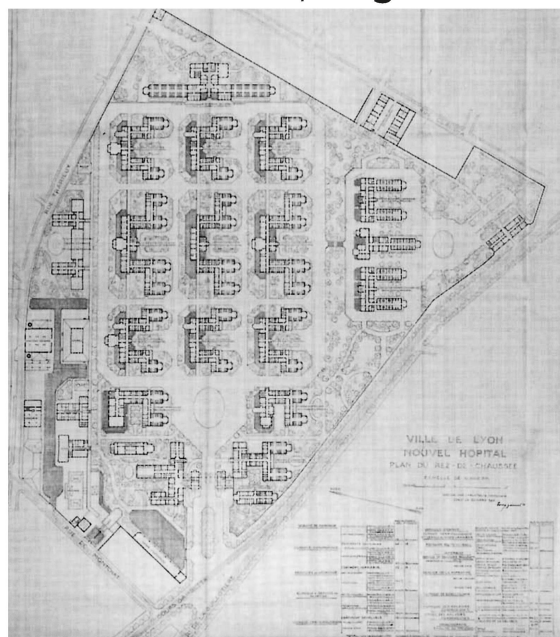
24 Jonathan Hughes, "Hospital City," *Architectural History* 40 (1997), 266–88.

25 Lord Llewelyn-Davies, "Facilities and Equipment for Health Services: Needed Research," *Milbank Memorial Fund Quarterly* 44, no. 3, Supplement (July 1966), 249–72, here 264.

26 Joy Knoblauch, "The Work of Diagrams: From Factory to Hospital in Postwar America," *Manifest* 1 (October 2013), 154–63; Alistair Fair, "Modernization of Our Hospital System: The National Health Service, the Hospital Plan, and the 'Harness' Programme, 1962–77," *Twentieth Century British History* 29, no. 4 (December 2018), 547–75.

and industrialization meant that hospitals set up far from the urban core eventually became surrounded by the growing city. Crowding and densification meant hospitals adjoined other building types, such as office buildings. When around the First World War hospitals began to boast surgery and trauma care, surgical theaters became visible on hospital exteriors, advertising the institution's modernity through massing and form.²² By the advent of a hospital building boom after the Second World War, general hospitals dealt primarily with chronic disease, not contagious disease, obviating the need for separating the sick from city life. Throughout the nineteenth and twentieth centuries, hospitals rejected patients with infectious diseases. One of the reasons for the development of specialist hospitals, such as tuberculosis sanatoriums, was to safeguard patients in the hospital from other conditions. At the same time, the general hospital became the primary location for birth and death, not just for the urban poor but for all citizens.²³ These new medical issues meant that hospitals should be built close to where people worked (and accidents occurred).

In the postwar period, hospital authorities searched for new ways to integrate the institution into the city. Influential planners, architects, and consultants advocated parallels between hospital planning and urban planning.²⁴ Lord Richard Llewelyn-Davies, who planned both hospitals and cities in postwar England, argued that "the structure of the health service from the doctor up to the regional medical center should be considered a major element in the arrangements of cities."²⁵ The impetus for designing that interface was a new infusion of state funding into healthcare systems across the West. The idea was that providing access to hospital medicine was fundamental to modern government, so a first response was increasing the number of hospitals outside cities. Both the Hill-Burton Act of 1946 in the United States and the founding of the National Health Service in Great Britain two years later led to an era of self-conscious hospital design.²⁶ The accessibility of health services came to be gauged through the number of hospital beds in particular regions; the Hill-Burton Act famously settled on the ratio of four and a half beds per thousand inhabitants.



Auto-mobility was key. Twentieth-century hospital designers took on the challenge of integrating car culture into hospital life. The cover of *Modern Hospital* in 1966 featured the “Drive-in Hospital,” a competition-winning design concept for the University of Cologne Medical Center, a few minutes’ drive from the city center. ^{fig.5} It is a diagrammatic drawing of the proposed vertical relationships between the city and hospital activities, showing an underground reception area for automobiles and ambulances. The dependence on the automobile is important enough to call it a drive-in, but the architects were not suggesting that patients were treated without leaving their cars. It was merely a way to celebrate that hospital planners were incorporating the patterns of car use in the city—going to the hospital could be promoted as an everyday experience like ordering a hamburger at a drive-in restaurant.

McMaster University Medical Centre, which opened in 1972 in Hamilton, Canada, illustrates the equivocation between integration and separation in hospital planning. McMaster’s move from hospital to health sciences center was a fundamental change in institutional self-imaging. Here the car was relegated to the parking



lot, yet the building nevertheless evokes the urban utopianism of the 1970s. ²⁷ ^{fig.6} Flexible and infinitely expandable, low-rise, and massive, the design by Craig, Zeidler & Strong was an architectural response to the issue of medical and technological change: we never know what is ahead. ²⁸ Instead of walls, gates, and separate pavilions for separate medical specialties, the Toronto-based architects engaged a long-span superstructure. The use of interstitial space, designating an entire floor to house mechanical equipment between patient

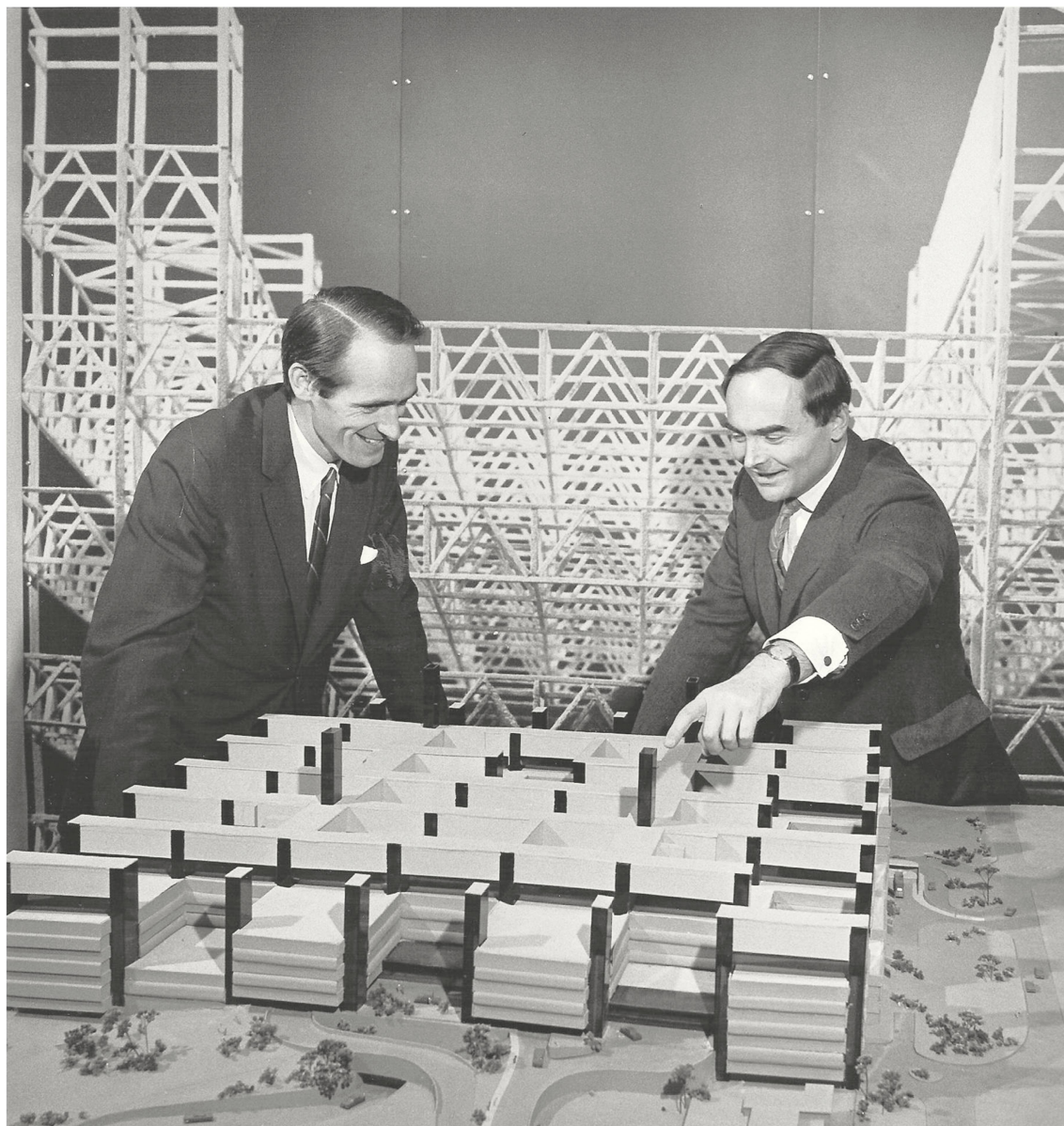
fig.5 Drive-in hospital designed by Heinle, Wischer und Partner, Freie Architekten Source: Cover of *Modern Hospital* 107 (December 1966)

²⁷ Thomas Strickland, “Passive and Active: Public Spaces at the McMaster Health Sciences Centre, 1972,” in Sarah Schrank and Didem Ekici, eds., *Modern Architecture and the Body* (London: Routledge, 2016), 203–23.

²⁸ See John Weeks and Gordon Best, “Design Strategy for Flexible Health Science Facilities,” *Health Services Research* 5, no. 3 (Fall 1970), 263–84, and Daniel M. Abramson, *Obsolescence: An Architectural History* (Chicago: University of Chicago Press, 2016), 61–78.

floors, allowed floor layouts that were unrestricted by the placement of structure and mechanical equipment. Different medical specialties such as surgery, pathology, and obstetrics could occupy plug-in, interchangeable units. Like Garnier’s hospital from six decades earlier, it provided a stark contrast to the adjacent city but this time through its massive scale and integration of patient care, research, and teaching.

fig. 6 John Evans and architect Eberhard Zeidler with model for McMaster University Health Sciences Centre, 1969
 Photographer: Tom Boschler/Source: Health Sciences Archives, McMaster University, Hamilton



It is important for architects to attend to hospitals as complex urban questions: the technical difficulties are real, but it is not their medical functions that make them challenging design problems. We might all be tempted to think of the hospital as a place laser-focused on medical care.²⁹ But it is precisely the question of how they fit into cities—and even how they make cities better—that motivates hospital architecture. American planner Hermann H. Field went further, arguing that hospital design is critical to improving city life:

*"Furthermore, the day has passed when the institution can afford to be an island to itself with its back turned to its surrounding community. Fulfillment of its service, teaching and research goals will increasingly cast it in the role of partner in revitalizing our cities and making them healthier and better places to live in. Thus, the institutional planning process should not only be oriented inward, but equally to the complex interface area as it looks out from itself."*³⁰

²⁹ David Theodore, "Better Design, Better Hospitals," *Canadian Medical Association Journal* 188, no. 12 (September 2016), 902–3.

³⁰ Hermann H. Field, "Organizing the Planning Process," *Annals of the New York Academy of Sciences* 128, no. 2 (September 1965), 670–78, here 670.

This year, the relationships of hospital and city have been challenged by the need to use hospitals, and especially their intensive care facilities, to deal with the COVID-19 pandemic. While public health authorities suggest contagious patients should be separated from communities, separating hospital workers and visitors from the rest of the city has proven less viable. Overall, the pandemic raises questions about the efficacy of hospital buildings at all: personal protective equipment is more effective at arresting the spread of the coronavirus inside the hospital than traditional architectural modes of separating humans such as rooms, corridors, walls, doors, curtains, and ventilation.³¹ Now healthcare workers and visitors seal themselves off from patients with masks, shields, gowns, and shoe protectors, all specially designed to minimize contact and the sharing of droplets or air that might contain the deadly virus. The new protective space is medical clothing, not architecture. Medical and non-medical spaces, separate and together, are once again tested and contested.

³¹ Kasey Grewe, "Headlines Don't Capture the Horror We Saw: I Chronicled What COVID-19 Did to a Hospital; America Must Not Let Down its Guard," *Atlantic*, December 6, 2020, <https://www.theatlantic.com/ideas/archive/2020/12/new-york-doctors-know-how-bad-pandemic-can-get/617302/> (accessed December 12, 2020).