Introduction

To the well-known saying that "dirt is only matter in the wrong place," may be added another, that disease, and death itself, is but life in the wrong place.

— American Architect and Building News, 1882

Hospital: An institution or establishment for the care of the sick or wounded, or of those who require medical treatment.

— Oxford English Dictionary

That a hospital—as an institution providing care to sick and injured persons—should be designed to promote the health of its inhabitants is a foregone conclusion. How, exactly, a building design might be expected to facilitate cure or suppress illness is more elusive, and it is the focus of this book.

From the mid-nineteenth to the mid-twentieth century, American hospital designers experimented with a number of competing strategies for the role the building design was to play in the health of its occupants. Designers debated whether the hospital building was a therapy in itself, providing a surrounding that would somehow keep persons in close proximity from sharing their ailments and perhaps even actively instill greater health in its occupants, or whether it was a tool that would organize the activities, materials, and events within the building into an efficient, controlled, therapeutic process.

Over time the questions and the preferred answers changed, reflecting altered medical, social, urban, and architectural circumstances. Mid-nineteenth-century hospital designers overwhelmingly privileged the building's therapeutic potential over its ability to facilitate medical treatments. Mid-twentieth-century hospital designers overwhelmingly privileged the building's potential to facilitate medical actions and interactions over its intrinsic healthiness. This shift from considering the hospital as a therapy to considering it as a tool accompanied drastic institutional transformations. From the last resort of the impoverished urban unwell, hospitals became the first resort of all classes of ailing citizens. From neutral containers of general care, they became active locations in the development of specialized scientific medicine. From charitable institutions organized on

an almost familial structure, they became complex organizations modeled on current business structures. From closed institutions into which sick people flowed, they became open institutions out of which health flowed. These multiple, complicated transformations were built into American hospitals as their facilities shifted from low-rise, decentralized pavilion wards to centralized, "modern" high-rises.[1]

Architectural decisions also influenced these transformations. Where a hospital was located in relation to the city, to other hospitals, and to specific neighborhoods affected its patient load and characteristics as directly as the composition of its medical staff. What facilities a hospital contained and how they were arranged could turn it from a warehouse for the sick poor into a location for cutting-edge medicine attracting all classes. The sizes of its inpatient rooms—whether wards (large rooms that housed a number of patients) or single-patient rooms—determined the number of people that could be treated and the extent to which each patient could be isolated from the others, and even delineated who paid for care.

These transformations are relevant today as designers struggle to develop new hospital buildings that are efficient and attractive, and decide which buildings from earlier time periods are worth saving and which are destined only for demolition. The truth is, however, that we know very little in detail about how and why American hospitals shifted from pavilions to high-rises in the crucial period between the end of the Civil War and the beginning of World War II.[2] Many historians of hospital design intentionally avoid this difficult period, ending their discussion at the mid-nineteenth century or beginning it after the mid-twentieth century.[3]

Works that do cover the decades between the 1870s and 1940s often do so in a few pages (or even just a few paragraphs), and touch on the same sequence of examples, moving directly from the internationally famous pavilions of the Johns Hopkins Hospital in Baltimore (1875–1885) to the mature high-rises of the 1930s such as the Columbia-Presbyterian Medical Center in New York City by James Gamble Rogers (1929), the New York Hospital–Cornell Medical Center in New York City by Coolidge Shepley Bulfinch and Abbott (1932), or the Beaujon Hospital in Clichy, France, by Jean Walter (1935). In between these two extremes are given at best a handful of intermediate examples, such as Albert J. Ochsner's 1905 call for vertical hospital design, Arnold Brunner's collaboration with S. S. Goldwater on the new Mount Sinai Hospital in New York City (1901), Goldwater's ideal ward design for cities (1910), or William Henman's Royal Victoria Hospital in Belfast (1903). The detailed sequence of transformation of hospital design between the 1870s and 1930s has become so lost to history that in 1976 Peter Stone could confidently (if erroneously) state that "there had been

little literature on the general problem of hospital design since Florence Nightingale's 1863 book *Notes on Hospitals*."[4]

A few recent works have begun to fill this gap, but each still reveals only a small piece of a much larger story. Jeremy Taylor examines hospital design up to 1914, but he focuses on the transformation of the pavilion-ward type in Britain, not on the development of high-rise, centralized, modern hospital structures. Sven-Olov Wallenstein presents a number of hospitals between the 1900s to the 1930s, but his examples are mostly sanatoria (a specialized type of hospital with design requirements that reduced their height and their centralization) and are chosen for their "modernist" design and designers rather than for their representation as epitomes of hospital planning and function. David Charles Sloane and Beverlie Conant Sloane correlate shifts in the practices and experiences of patients, doctors, and benefactors to the architectural shifts of hospitals from a "home" to a medical workshop to a vertical hospital, but only as a brief prelude to an extended discussion of the transformations of the last half of the twentieth century. In numerous publications, Annmarie Adams has focused on hospital design in the decades between the 1900s and 1940s, but in order "to understand hospital buildings as artifacts of material culture" she has structured her work as a series of thematic essays "rather than a chronology of hospital design." This approach, which studies buildings as historical records in and of themselves, has allowed her to develop a deep knowledge of the social, cultural, and political issues enmeshed in a few hospital designs, but not a broad overview of hospital design in these transitional decades.[5] Her focus on works by hospital architect Edward F. Stevens also limits the story she tells. Stevens was an influential and gifted designer who worked on hospital projects across the globe, but his body of work remained consistently low-rise in comparison to other contemporary practitioners like York and Sawyer or James Gamble Rogers, who pioneered in high-rise hospital designs.

This dearth of a basic historical examination of a crucial developmental period in hospital design inevitably leads to distortions, even misunderstandings of relevant influences, essential chronologies, and critical sequences of change. The architectural history of "aseptic" finishes provides a graphic example. It is typical for modern historians (and practitioners) to assume that "hospital" finishes—hard, impermeable surfaces in hospital white, with rounded corners, no cracks, and no projections—developed in the 1890s and 1900s as a consequence of new aseptic goals of creating germ-free conditions. It is not so straightforward. Hospital finishes were well-established by the first half of the nineteenth century. The materials of choice, however, changed over the years. In the 1850s hard-polished, seam-

lessly joined varnished wood (which could be intentionally destroyed and replaced for ultimate purification) was popular; in the "antiseptic" designs of the 1880s marble, marble mosaics, and enameled plaster were popular; and in the "aseptic" designs of the 1900s glass, ceramic tile, and metal were popular. Clearly, hospital finishes were not a consequence of asepsis; they were an exaggeration, even a refinement, of an already existing spatial strategy. There is as much evidence to support the argument that these preexisting hygienic hospital finishes influenced the development of germ theory and antiseptic and aseptic practices as there is to support the reverse. This reveals a historical dilemma—a vacillation between whether to consider medicine and culture as an influence on hospital design or hospital design as an influence on medicine and culture.

Many historians have explained the physical transformation of the hospital by treating building form as the consequence of social and medical transformation. John D. Thompson and Grace Goldin, who wrote the most comprehensive available history of hospital design, examine hospitals from antiquity to the twentieth century as a record of social change; they focus on the design of patient spaces as a representation of "the way people were thinking about group housing for the sick at that time and place." More focused considerations of the hospital between the nineteenth and twentieth centuries have emphasized the correlation of medical change to architectural change. According to Henry E. Sigerist regarding the late nineteenth-century hospital, "while the driving forces in the previous periods were social forces, it was the progress of medicine and surgery which now called for a new type of hospital." Lindsay Prior even goes so far as to describe hospital plans as "archaeological records which encapsulate and imprison within themselves a genealogy of medical knowledge." Following this approach, the late nineteenth-century developments of germ theory, antisepsis, and asepsis are frequently posed as critical influences on the early twentieth-century transformations of hospital design.[6]

Other historians have reversed that explanation and examined the consequences of changing hospital design on medical practices. Michel Foucault, for example, discusses how the arrangement of patients into a "clinic" altered the eighteenth-century French doctor's understanding of disease. In her own work and in collaborative work with historians of technology and medical practitioners, Adams traces "the dynamic relationship of architecture and medicine," concluding that at times hospital design "actually slowed medical innovation."[7]

Should architecture be studied as a reflection of sociocultural transformations and aspirations? As a tool? Or as a force in molding and shaping it? As a therapy? At stake in the response to this question is not only what

stories can be told of past buildings but how practitioners can understand their role in designing new buildings.

Many studies examine the history of building designs biographically, as the products of the designer's aspirations. This approach illuminates the intentions of designers (whether architects, clients, contractors, or political agencies) and demonstrates design as a conscious action with sociocultural as well as physical consequences. Many of these stories are triumphant tales of progress that create a sense of professional optimism: Designers create the buildings; the buildings shape the society. By studying what has been built, designers create better designs and better designs create better societies. This progression did not (and has not) happened. In fact, the second half of the twentieth century witnessed severe and disillusioning rifts between design intentions and lived realities.

Within the last few decades, buildings have been increasingly studied with the goal of tracing the hidden sociocultural influence of buildings on inhabitants, particularly in terms of "control." Wallenstein, like Foucault before him, looks to hospitals of the past as revelatory of biopolitics—which considers buildings active expressions of (increasingly medicalized) political power structures and controls. Adams examines the gendered nature of designs for the housing of nurses and medical interns and considers the ways in which social categories are reiterated in building partitions (e.g., private patients on upper floors and charity patients on lower floors). Thomas Schlich looks at modern operating room design as revelatory of the culture of control deployed in and by scientific modernity. J. T. H. Connor promotes the study of buildings as material culture, looking at the object itself to tell its history and its importance.[8] These approaches—which look to mute buildings as active influences in shaping actions and society—give voice to the physical artifact. The implicit expectation is that these studies will also empower socially self-aware and culturally critical designers to make informed choices about what to design and how to live in what is designed.

Examining buildings as reflections of personal intentions assigns to the designer the power to shape society without offering any strategies for assessing the actual results of design. Examining buildings as influential artifacts in themselves considers buildings as mechanisms for social suasion, but renders the process of their design mute, almost purposeless, making designers into powerless tools of hidden agendas beyond their control.

I believe that intentions matter. I also believe that design success has to be measured by real consequences, intended and unintended. Every design choice reflects a moment of human existence but it also alters human existence. To reveal this interaction, I examine the history of hospital design in

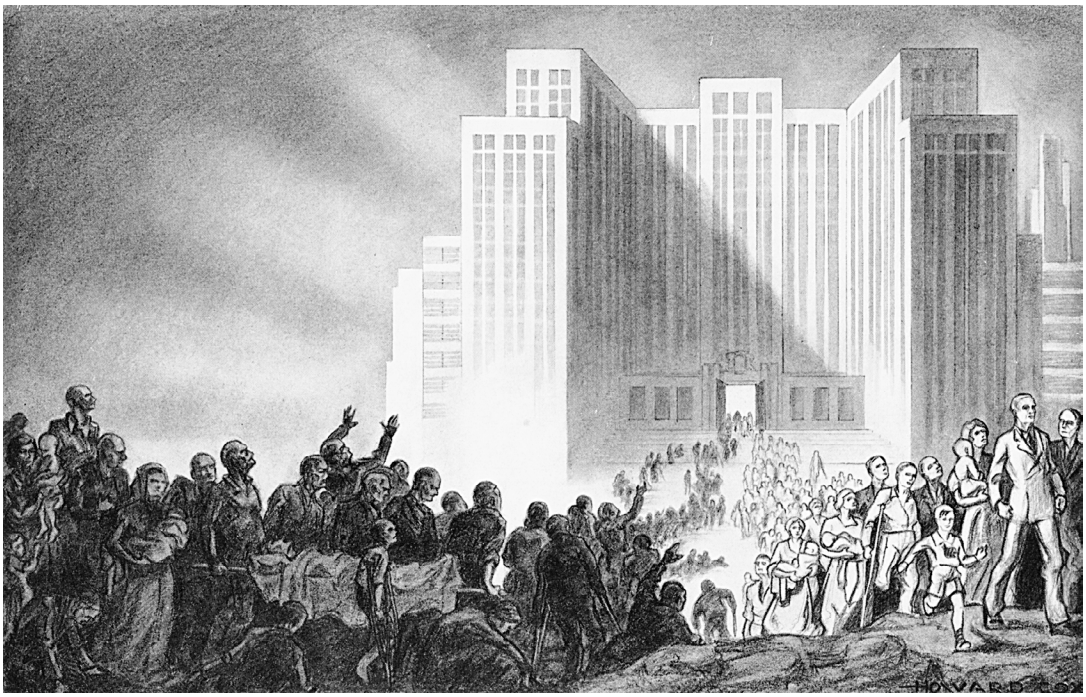

Figure I.1. "The Hospital of the Twentieth Century." This image depicts the optimism of the 1930s, when a visit to the modern hospital offered a voyage from darkness to light. The patients, in rags and ethnic clothing, crawl, hobble, and are carried into the hospital; they leave upright, vigorous, and dressed in modern middle-class American outfits.

the United States between the Civil War and World War II as both a reflection of its sociocultural milieu and a shape-giving force on its inhabitants. I examine how designer intentions structured a specific building type (one related to health), and at the same time how the resultant experiences in those buildings influenced later choices and possibilities of what occurred within them.

To the extent that I can, I use the concerns and goals of the designers of the time to establish the topics for discussion and the criteria for evaluating the resultant performance and influence of the buildings constructed. Discussions of hospital design deviated in a number of ways from mainstream architectural debates. While nineteenth-century and early twentieth-century architects and architectural publications focused on the various historic styles, contemporary discourses on hospital design downgraded the role of ornament and style to an unnecessary, perhaps even unhygienic addition. Hospital designers emphasized the plan over the facade and developed designs based on massing and circulation rather than decoration

and materials.[9] Air flow and air quality were critical aspects of hospital design; this made ventilation and the designed voids (not just the layout of the walls) topics of primary concern. Hospital design also required more than basic architectural expertise—and doctors, lay governors, and consultants as well as architects actively participated in hospital designs. Accordingly, this book presents a history of architecture that focuses on plans; examines ventilation, plumbing, and open spaces in extensive detail; and considers a variety of persons (not just architects) influential in design.

By examining hospital architecture as a "hygienic" rather than "aesthetic" object, this work reveals a fundamental shift not just in the physical form of the hospital buildings but in the basic understanding the designers had of the role the hospital environment would play in health and healing. Up to the late nineteenth century, persons involved in hospital design expected the hospital building, in itself, to participate in the social, moral, and even physiological cure of the inhabitants.[10] In the best light, this therapeutic design provided an orderly, sunlit, well-aired place in which the urban poor could be restored to health (and moral behavior); at worst it provided a relentlessly hygienic space that influenced nonconformist patients to obey new social and medical norms. By the early twentieth century hospital designers increasingly treated the hospital building as a functional backdrop to active medical interventions that were expected to generate a "normal" or healthy physiological condition in the patient. At best, this "modern" hospital design proved an efficient tool for facilitating current medical behaviors and practices; at worst, it provided a cold, off-putting, chaotic space that aggrandized doctors and procedures, fetishized germs, and dehumanized patients. The history of hospital design from the 1870s to the 1940s makes it clear that if the goal is to "design for health," then it is crucial to understand what kind of health is sought, and what role the physical surroundings are expected to play in its acquisition.

Structure and Limitations of This Book

This book is not a comprehensive survey of all hospital buildings in the United States; it is a first attempt to examine a broad variety of selected hospital structures across the United States up to the 1940s and see what conclusions can be drawn from them. I base my analysis and discussion on hospitals that were singled out in the literature of the time as models (whether negative or positive). This selectivity has inevitably left out many worthy hospitals and included many derivative ones. My focus is on new designs of entire hospital facilities and of critical new additions to existing facility designs. While many institutions began in preexisting buildings

converted to hospital use, the issues encountered in adapting houses or other building types to hospital use were far different from those encountered when designing a hospital from the ground up.

I have tried to develop a "national" coverage in that I examine hospitals from all states, but larger cities held far more hospitals than did smaller cities, so it is inevitably skewed toward greater representation of hospitals from urban areas of the country. The book has also been deeply influenced by the course of my research. In the early 1990s I set out to write my dissertation on the architectural history of American hospitals (all places, all times). Within a year I reduced the topic to hospitals in New York City, and soon thereafter, to the history of the buildings of the New York Hospital. In 2007 I began work on an architectural history of hospitals in New York City. In 2010, well into the work, I revised the scope to include American hospitals of all states. The project has thus come full circle, but its trajectory is influential. I know a lot about hospital buildings in America; I know the most about hospitals in New York City. I have tried to use the depth of the knowledge I have acquired about hospitals in one particular city as a means of illuminating what happened in other cities, but I have also struggled to keep the New York history from dominating the examples.

While hospitals were a European institution imported to America, this book is almost obsessively about American hospitals. Available histories of hospital design in Europe between the eighteenth and twentieth centuries reveal that the transformation of European hospital design occurred at a different pace and along a different formal trajectory than did the transformation of American hospital design. European hospitals stayed pavilion-ward longer; they also remained charitable in emphasis longer. At the same time, American hospitals underwent extensive transformations that were then exported to other areas of the globe. The goal of this book is to reveal the as yet unwritten history of hospitals in North America during a period of rapid and multiple transformations of the institution, the country, and medicine. Discussions of international hospital designs and issues that were influential on American design are included, as is a minimal discussion of the exportation of American plan hospital designs (particularly in the twentieth century) to other parts of the world. The study of the dissemination of hospital designs between various locales in the nineteenth and twentieth centuries would be the subject of a separate book.

I have limited my focused attention to the period between the 1870s and the 1940s, before the US involvement in World War II. This period saw an epochal shift in hospitals and hospital design. The period between the 1940s and the 1960s saw another sweeping shift, but along a different trajectory—it would require a separate focused study to do it justice. Each

chapter covers a different chronological period in American hospital design. Chapter 1 examines the initial cast of American hospitals to 1873, as hospital designers adopted European traditions and embraced the pavilion-ward standards of hospital design, but then struggled to adapt them to local conditions and necessities. After the economic panic of 1873, hospital construction slowed to a trickle, but as chapter 2 reveals, hospital designers then began to examine the possible implications of germ theory on hospital design. From the return of prosperity in 1878 to the next panic of 1897, chapter 3 examines the dilemma American hospital designers faced, between remaining faithful to the established pavilion-ward standard and adapting hospital buildings to the new requirements of asepsis, medical specialization, institutional efficiency, and urban integration. Between 1897 and 1917, the period discussed in chapter 4, intense reconsiderations of the urban and medical role of a hospital and its buildings supported an extensive range of hospital facility designs, from traditional, charitable pavilions to medicalized general hospitals in "stacked" pavilions to medical specialties housed in high-rise structures. Chapter 5 discusses how World War I hospital experiences merged with the new urban postwar culture and established efficient, "vertical" hospital design as the new ideal structure to house a new kind of hospital—a medical rather than a charitable institution. Chapter 6 reveals how, from the Great Depression to the beginning of World War II, economic challenges promoted efficient, economic, and flexible service over "healthy" design. The book concludes with a bibliographic essay, which serves as a broad guide to the secondary literature. The footnotes in the chapters provide the detailed primary and secondary bibliographic sources in support of specific points, topics, or issues, and should be used as a guide to more focused historical inquiries.