The Hospital and the City

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Healthcare has occupied a paradoxical position in the American city. Healthcare is a central part of American society, and a not-insignificant proportion of the country's annual construction expenditures. Yet the hospital – the facility most commonly identified with healthcare in America - has occupied a curious place apart from the very society it serves. To be sure, this can be traced to society's ambivalence about the place of the sick. But it has also been in no small part by intention, as the medical profession sought to reinforce and maintain its privileged place within American society.

With the radical changes the healthcare industry has undergone in the last 20 years, the isolation of the hospital has begun to break down. These developments have been accompanied by philosophical changes that view healthcare in a more holistic manner. New technological advances will only accelerate this trend, and may ultimately lead back to a model in which healthcare is once again dispersed throughout the city and integrated with the community.

The hospital in the american city

The tension between the impulse to embrace or segregate the sick from society is mirrored in the changing design of healthcare facilities and the evolving relationship between the hospital and the city. In many ways, the changes in organization and technology may bring the place of the healthcare in the American city full circle. For most members of early American society, the treatment of illness was an inextricable part of residential life. As Charles Rosenberg noted, "when respectable persons or members of society fell ill, they would be treated at home" (Rosenberg, 1987). It was only with the rise of an urban working class that specialized facilities emerged. However, these early hospitals were invariably located in marginal areas a suitable distance from residential neighborhoods.

In the latter half of the 19th century, rising confidence in the medical profession led to a transformation in the social standing of the hospital. During this period the pavilion hospital emerged. Modeled on French and British military field hospitals, the first pavilion hospitals such as Philadelphia Hospital completed in 1752 (Figure 1), and New York Hospital completed in 1791, were made up of a series of small attached structures where patients were separated by gender and type of disease. The size and arrangement of these structures allowed each ward to have visual contact with open space. Urbanistically, this arrangement allowed the hospital to be aligned with the street grid while the discreet size of each pavilion made them compatible in scale with the neighboring urban fabric. The pavilion hospital's clear organization according to Beaux Arts planning principles and classical architecture reflected its emerging status as the primary locus of health-

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Drawing of Philadelphia Hospital.

care in America.

Despite their newfound social and architectural prominence though, physically, hospitals remained at the periphery of the city due to deeply-seated cultural associations linking hospitals with contagious diseases. Access to the city center was typically via streetcar. Boston City Hospital built in 1873, for example, was constructed in a marshy industrial section of the city after being rejected by virtually every residential community in central Boston (Goldin, 1994).

In the early 20th century, two developments converged to erode the dominance of the pavilion hospital typology. The first factor was the development of the X-ray and anesthesia, that transformed the public perception of the hospital from a place associated with disease and death to a progressive institution of healing that could actually help save lives. These advances had a great impact on hospital form as the increasingly central role of equipment and machinery necessitated expanded diagnostic and treatment areas. This eventually led to a successor to the pavilion hospital, known as the "tower and podium" model. As the name implies, this model organized hospital functions into two components: a two- to three-storey podium housing diagnostic and treatment facilities, atop which were located towers which were designed primarily in response to the internal needs of the patient rooms.

The second factor was the rise of the modern movement in architecture. Hospital designers in this period began to experiment with different plan configurations such as chevrons and cruciforms in order to optimize the internal planning of patient rooms. The new planning approach broke the hospital from the surrounding city grid and also physically and symbolically reinforced the hospital's detachment from society. This created better views and light for patients, but tended to leave them isolated, far above and removed from the natural environment or contact with the community. The modern movement also led architects to turn away from Beaux Arts planning principles, relying instead on modernist site design devices such as broad green setbacks to express civic importance. Thus aloofness itself and the architectural expression of technology became primary means of projecting the prestige and status of the hospital. Mirroring the increasing power and attendant social and economic segregation of physicians from society at large, "community hospitals became symbols of prestige for small communities, and yet separate and apart from the very communities they served." (Rosenberg, 1987).

After World War II, the hospital often became subsumed by the motley assortment of structures, such as medical office buildings (MOBs) that sprung-up around them. These buildings, which housed the physicians' offices, were located for the convenience of physicians making rounds on their hospitalized patients. They led in turn, to the development of ancillary facilities, such as pharmacies and medical equipment suppliers. At their worst, the areas around hospitals degenerated into what urban designer John Kriken described as, "MOB ghettos" - districts dominated by a collection of uncoordinated and often conflicting structures, a situation that further isolated the hospital from the surrounding community.

Recent architectural responses to changes in the healthcare industry

In the early 1970s, rising healthcare costs and

cuts in federal funding to healthcare programs for the indigent and elderly began to erode the symbiotic relationship between hospitals and traditional health-insurance carriers. This development also threatened the prestige the medical profession and the hospital acquired in the post-war period. The resulting efforts to contain healthcare costs had far-reaching changes in the planning and design of healthcare facilities. The most important of these, the health maintenance organization, or HMO, capped reimbursements rates for participating doctors. This gave physicians – for the first time – financial incentives not to hospitalize patients. With competition within the marketplace intensifying, HMOs began purchasing hospitals to gain control of their costs and transforming them to increase their marketing potential.

The first manifestations of this new era in healthcare were efforts to make hospitals more hospitable and responsive to patients' rather than doctors' needs. Some designers appropriated domestic scale and imagery to help hospitals shed their institutional image, a trend which Steven Verderber and David Fine called "the new residentialism" in their recent survey of healthcare architecture (Verderber and Fine).

More controversial were several projects in the early 1980s, such as Medical City Dallas, that introduced the mall into hospital planning. The largest such project to date, Dartmouth-Hitchcock Medical Center in Lebanon, New Hampshire, designed by Shepley Bulfinch Richardson and Abbott, opened in 1992. Dartmouth-Hitchcock's triple-height galleria serves as the pedestrian circulation spine for the entire complex of inpatient and outpatient facilities and is lined with ground-floor amenities such as retail shops and restaurants. A skylight running the length of the spine acts as an orienting device and floods the entire space with natural light. (Verderber and Fine). Many observers have criticized the "medical mall" as a sign of the commercialization and consumerization of medicine (Sloane). However the mall gave the hospital the hierarchical organization and spatial form at the scale of the city that it had not had since the pavilion type. The mall also helped eliminate the isolation of hospitalized patients by encouraging them out of their rooms to observe activity in the mall.

Yet another trend was to integrate wellness functions such as health clubs with the traditional medical treatment program.

Among the most ambitious of these projects was Celebration Health, which opened in 1998 in the much-publicized Florida new town of the same name. Designed by Robert A.M. Stern Architects and NBBJ, Celebration Health used a "Mediterranean" vocabulary that they claimed was a regional vernacular, to denote its civic status (Dunlop). Despite the rhetoric of integration surrounding the project however, Celebration Health, surrounded by broad green lawns and parking lots, remains urbanistically isolated from the community, undermined ultimately by the same corporate policies which favor standardized, reproducible campus plans and large suburban or exurban "greenfield" sites. This is especially ironic given the efforts of Celebration's developers, the Disney Company, to promote the new town as a pedestrian-friendly, neo-traditional community.

Toward a new relationship between the hospital and the city

The changes buffeting the hospital in some ways parallel those that the university has been undergoing. Information technology and increasingly blurred boundaries between the university's traditional mission as a not-for-profit institution and profit-making initiatives in higher education have eroded the conventional idea of the university. In 1997, The Economist declared, "The old idea of the university as a cohesive institution that can draw a neat perimeter around its intellectual capital is dying." But if, to paraphrase The Economist, the hospital is better conceived of as a trimmed-down core surrounded by a cloud of relationships, then how might this "peri-hospital cloud" look like?

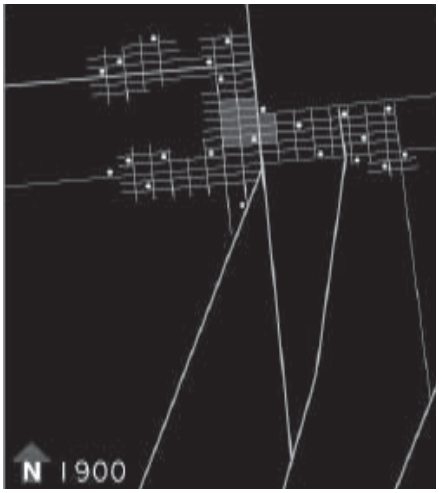
The recent changes in healthcare have made the hospital's relationship with the city less discreet and more enmeshed with the urban fabric around it. The growing ambiguity of the hospital as an institution may not only break down hospitals' isolation from the community but also give designers impetus to reconceive its role within the city.

1. Planning for Medical Districts

The new organizational models such as managed care and investor-owned hospitals present an opportunity to plan the areas around the community hospitals in a comprehensive, coordinated manner as functions handled in the traditional hospital devolve into an array of smaller facilities. If the hospital is seen less as a discreet building and more as a district of related facilities, the design and planning of medical facilities can be approached much as a problem of urban planning and design. This will place innovative programming and land use planning, image and open space alongside the issues which medical planners have traditionally been preoccupied with such as building circulation, access and functional adjacencies. Ultimately, blurred boundaries between the hospital and its surrounding community may provide an opportunity for the public sector to partner with hospitals in addressing issues affecting local residents. Medical facilities could, for example, jointly develop parking structures for the use of both the facility and the public at large.

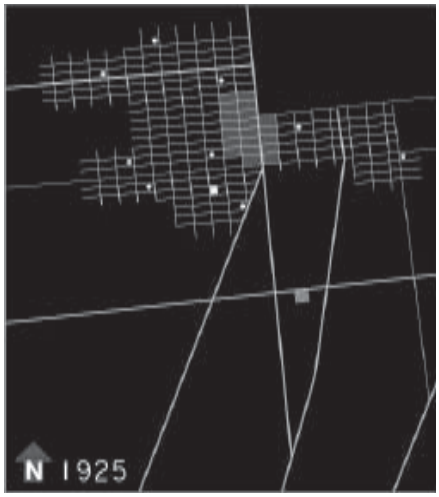
In approaching medical facilities as components of a larger, but defined urban system, open space will become an indispensable organizing principle in the new medical districts. This will not only enhance the efficiency of the hospital's external environment (Brookes), but also provide hospitals with close links to meaningful open space to aid patient recovery.

Two examples illustrate the evolution of the hospital in America and approaches toward its increasingly difficult relationship to the city. The first is the Alta Bates Medical Center in Berkeley, California. As the city grew to overtake this building, the hospital was typically scattered throughout residential neighborhoods (Figures above). Alta Bates moved to its present location outside central Berkeley in 1908, still housed in a rather modest, residentially-scaled wood-framed building (Figures above). Constructed a pavilion-type structure to accommodate the increase in residents (Figures above). After a series of additions, Alta Bates assumed a tower-and-podium configuration with the construction in the late 1960s and early 1970s of six-storey patient towers (Figure next page). The new towers, made few gestures in terms of scale or style to the surrounding neighborhood and



Map of Berkeley hospitals c. 1900.

Nurse Alta Bates' original boarding house, Berkeley, California, c. 1904.



Map of Berkeley hospitals c. 1925.

Alta Bates Sanitorium c. 1925.

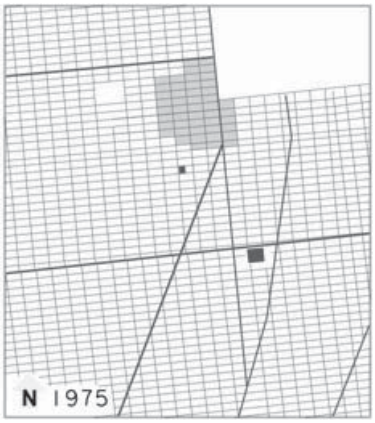
Map of Berkeley hospitals c. 1950.

Alta Bates Hospital c. 1950.

indeed, its brutalist concrete exterior seemed to float above the two- and three-story wood-framed houses around it.

Neighbors, angered at the intrusion of such a large and insensitively-designed structure in their neighborhood began to demand more input into future hospital expansion. In the late 1970s the hospital dramatically increased outpatient services in order to lower healthcare costs. This move spurred the construction of several medical office buildings in the neighborhood. The traffic, parking and land-use conflicts these developments created grew bitter, resulting in an atmosphere of mutual suspicion that has not only tied the hands of Alta Bates to make changes to its external physical plant, but *internal* changes as well. The erosion of the thin line between respectful distance and mutual distrust between this community hospital and its neighbors in many ways epitomized the collapse of the postwar model of hospital development.

In the wake of the ensuing litigation between neighborhood residents and the hospital, Skidmore, Owings & Merrill (SOM) was asked to devise a plan giving the hospital the flexibility to respond to changes in healthcare while being responsive to the concerns of the neigh-



Map of Berkeley hospitals c. 1975.

Alta Bates Patient Tower c. 1975.

borhood. SOM's master plan proposed shared parking facilities, a more rational separation of emergency, staff and visitor access and effective separation of residential and medical-related land uses. This allowed the hospital to undertake a much-needed expansion to its emergency department while helping to repair some of the structural planning problems that hindered its relations with the neighborhood.

The second example, the Texas Medical Center (TMC), illustrates the problematic nature of growth at a larger scale. TMC was founded in 1945 with an endowment from Texas oil magnate M.D. Anderson. Anderson dreamed of developing an entire city devoted to the progress of medicine on a large parcel of land south of Houston. TMC's original master plan was rarely followed however, and the medical center developed over the ensuing 40 years with a minimum of coordination or long-term planning. By 1998, TMC had grown from one medical school and two teaching hospitals into the world's largest medical complex with two medical schools and ten acute-care hospitals. The 674-acre campus and 30 allied member institutions house over 6,000 inpatient beds occupying nearly 21 million square feet of space and over 100 buildings. Its privately operated central plant and 12 miles of private streets handle a daily influx of 50,000 employees, 20,000 students and over 17,000 patients and visitors.

The years of uncoordinated building created problems with access, parking, and land use that approached an urban-scale crisis (p. 103). The campus's confusing internal grid of private streets had few direct connections with the surrounding public street system making wayfinding difficult for patients and visitors. Unfortunate siting of multistory parking garages blocked many key view corridors through the campus, exacerbating this problem. By 1998 TMC resembled an island cut off from the urban fabric around it. More immediately, TMC's plans to expand its research facilities, which it saw as a key to its continued preeminence were stymied by the limited options for expansion or increasing access to its campus.

SOM's master plan for the Texas Medical Center in Houston, completed in 1999 (SOM), addressed the medical center at an urban scale and provided a framework to guide the future development of this "city of health". SOM gave order to TMC's land by organizing the areas surrounding the central campus into subdistricts based on major land use categories such as medical treatment, academic, housing, retail, and biotechnology. Support and retail zones with links to teaching and treatment areas to the east, and to proposed light rail stations to the west, were identified as part of an effort to establish land-use adjacencies that will ensure flexibility for future growth. The master plan also reinforced the concept of a central core of academic uses ringed with patient-care facilities that maintain a more public face at the campus

Aerial photograph of Texas Medical Center c. 1996 with the city of Houston in the background.

periphery. Expanded research facilities, which will ultimately contain two million square feet will be developed collaboratively by the constituents as a central part of this core.

In an effort to integrate TMC with a larger regional vision for the city of Houston, SOM recommended a coordinated strategy of transit access and open-space improvements. Existing relationships with the city at large were clarified and reinforced by reopening or realigning streets, relocating parking closer to major roads, and linking a new central campus "green" with a system of open-space corridors. The internal circulation system will be connected to downtown Houston and the surrounding region with a light rail line running along the eastern edge of the campus. Together, these initiatives were designed to improve access, circulation patterns, and visual orientation for patients, visitors and staff.

2. Implications of New Technology

Perhaps the most intriguing factor affecting the place of the hospital in the city will be the impact of technology, and especially the Internet. In the last five years alone, these advances have already altered the way hospitals work and relate to the community around them.

Internet-based medical records software and digital radiographic systems currently in operation have fundamentally changed long-held tenets of hospital planning. Pictorial Archival Computer (PAC) systems for example, currently allow remote digital capturing of radiological images that can be transmitted and viewed anywhere with an Internet link. For the first time since the invention of the X-ray, radiology studies can be performed outside of the traditional podium-based radiology de-

partment. Mobile treatment units are also having a impact on hospital planning. Because of the high cost and constantly changing pace of medical technology, many hospitals have taken to leasing specialized machines like MRI units and lithotripters housed in trailers.

These innovations may help return some measure of control to hospitalized patients and also help bring hospital-based services closer to the community. One of the largest problems facing urban hospitals in the next ten years is expansion without the prolonged closure of vital clinical services. Due to dwindling amounts of developable land and the obsolescence of existing facilities, many urban hospitals are beginning to find that after years of largely unfettered expansion, plans for future growth cannot be phased at their present location. With the cost of outright relocation prohibitive and the expense of operating duplicate facilities financially unfeasible, most institutions have few options.

Using new technologies, regional hospitals, or what Robert Guinn called "primary facilities" that have outgrown their current sites, can expand though, by decanting certain services into smaller satellite facilities distributed throughout the community (Guinn). This will allow regional hospitals to be transformed gradually into "Intensive Care Centers" that house emergency services, ICUs, step-down units as well as in-patient surgery and imaging services. The satellite facilities would be programmed to complement the Intensive Care Centers, delivering lower-acuity medical services that stress health maintenance and patient education in a community based setting.

The smaller scale and local focus of the satellite facilities will allow them to establish closer ties in the neighborhoods they serve. Weaving together public and private sector medical and community programming can help raise awareness of health maintenance and medical treatment issues by bringing healthcare and wellness activities into the daily life within the community.

Guinn's primary and satellite-facility model could thus be taken one step further, reorganizing the traditional medical center program into four basic programmatic modules:

1. The heart of the satellite facility would be *the Health Maintenance Center*. The center would house spaces such as a community center and a fitness center that could be used by medically-oriented services such as the primary care clinic, physical therapy department, and 24-hour urgent care center, as well as by the neighborhood.
2. Outpatient diagnostic and treatment would be housed in a *Diagnostic and Treatment Center*. It would include a pre- and post-procedure care unit as well as a Special Procedure Unit (which capitalizes on PAC systems by combining the imaging and surgery departments). Most intriguing would be a "medport," a vehicular docking station attached to the Special Procedures Unit that can accommodate a number of mobile diagnostic or treatment units, offering the prospect of a "drive-in" clinic.
3. The Recovery Care Center which houses a traditional post procedure care facility could also be programmed to include facilities such as a franchise hotel, with on-call nursing, and facilities for adult and child day care, sick-child care, long-term care, and hospice care. This center could be used by patients' families, hospital employees, and the surrounding neighborhood as well.
4. Finally, an *Ancillary Support Facility* will incorporate an augmented pharmacy with optometry services, medical equipment sales and leasing operations and expanded commercial retail operations to appeal to a broader market.

Conclusion

As medicine – and society – moves toward a more holistic view of the patient, designers can follow suit by incorporating more holistic master planning and landscape concepts into their thinking on medical facilities. This more

comprehensive approach, together with the managed care revolution, and advances in information technology present a unique opportunity for architects and urban designers to recast the hospital's role within the city and re-envision how healthcare services can be organized within the community. Equally as important, it may help breakdown institutional, physical and social barriers between patients and the world around them

Incorporating urban design into the planning of healthcare facilities can open up opportunities to build shared facilities, and develop coordinated approaches to transportation and vehicular access. By including associated uses, medical facility-based districts may provide health facilities with the basis of a more symbiotic relationship with their neighborhoods. On a larger scale, just as technology districts have evolved into "Cities of science", larger medical centers like the Texas Medical Center, may similarly evolve into "cities of healing". In conjunction with related industries like biotechnology, they may even, like districts based on information technologies, become generators of economic growth.

Much work remains to be done to develop a conceptual framework for the planning and design of healthcare facilities. Unlike the American college campus, medical facilities have failed to develop a planning tradition of their own. This new approach may offer healthcare facilities the opportunity to achieve the level of cultural and social significance commensurate with their importance in our society and provide settings conducive to a more holistic vision of health and healing.

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