

# Compassionism and the Design Studio in the Aftermath of 9/11

The events of 9/11 are dramatically reshaping society. The terrorist attacks in New York City and in Washington, DC, have been extensively examined in the media and addressed in the work of professionals and academicians across a broad spectrum of disciplines. The profession and discipline of architecture is reassessing its position in relation to these events. Architectural education, and the functions of the design studio in particular, are similarly subject to this process of reappraisal. A case study is presented of a studio project on the topic of transportable medical facilities for disaster mitigation. This work is discussed against a backdrop of societal constructs concerning the functions of compassionism in architecture in the aftermath of 9/11. The case study is but one example of the potential of the studio to emerge as a rapid-response vehicle to foster in the student a genuine attitude of social and civic engagement.

## Introduction

The design studio maintains its position at the center of nearly every professional architectural curriculum in the United States. The time, effort, and financial resources devoted to the studio by institutions, faculty, and students, and the amount of physical space required, is considerable. This expenditure of resources, unfortunately, too often pushes other courses to the margins relative to the design studio. For these reasons, it is no surprise that the studio model of instruction in architecture continues to stand apart from practically every other discipline.<sup>1</sup> This has been acknowledged time and again in prognoses on the state of architectural education, a fact reaffirmed most recently in *Building Community: A New Future for Architecture Education and Practice*, published in 1996 by the Carnegie Foundation for the Advancement of Teaching.<sup>2</sup>

All is not well in the semicloistered world of the design studio, however. Shortcomings are not difficult to discern and in the extreme may result in unsound educational pedagogy. Critical discourse in the discipline and profession of architecture tends to gloss over pedagogical intentions in the design studio. This can result in naive defensiveness on the part of faculty and administrators whenever the stu-

dio format of instruction falls under external scrutiny by outsiders. Tom Woolley has asserted that more than 70 percent of a student's time is spent on design and this, by default, gives rise to its function as the most important aspect of one's education.<sup>3</sup> To Woolley, central university administrations often find it hard to come to terms with the comparatively expensive space and resource requirements of design education. This, in comparison to lecture format courses for which students are packed into large lecture halls or entirely left on one's own to labor ignominiously at home or in the library. The defense of the studio system has been rather weak and ineffective, verging on:

smugness and complacency, extolling the virtues of the studio system while avoiding any real critical analysis of its strengths and weaknesses. In my experience (critical) questions are rarely asked of studio projects: Why this project? What are the educational objectives? What specific things do we expect students to learn with it? What criteria will be used to assess it? Are there other ways of learning about this? . . . Teaching in the studio tends to be largely intuitive . . . it is largely an amateur affair . . . learning by students is largely

through following role models, which can be a very hit and miss process. Far too much emphasis is placed on socialization and not enough on teaching or acquiring skills.<sup>4</sup>

Attempts over the years to rationalize the design process itself have typically met with broad dismissal by architects.<sup>5</sup> Many studio educators continue to argue for design education to remain a highly intuitive activity predicated upon intense, singular, self-exploration. Both views, even in the extreme, afford insight, however. Often, the client expects the architect to share the creative experience and to engage him/her, and in so doing demystify the design process. But the cumulative experience of students in the studio tends to make *them* defensive, unwilling, over a period of time, to open up their thought processes to external scrutiny, and therefore becoming disinterested in external realities.<sup>6</sup> Woolley calls for transparency in studio teaching insofar as this learned tendency to retreat must be reconciled with everything else the architect must learn and at once reconciled with the needs of the society.

Amos Rapoport advocates the establishment of valid alternatives to the singular dominance of the design studio, asserting that far too much emphasis

is placed on how to design and not on what to design, nor for whom to design.<sup>7</sup> Singularly formalist approaches to studio instruction, in his view, result in designers whose passion lies in the making of form alone. The final outcome may be devoid of connectivity with, or empathy toward, the constituency for whom one designs. The student may therefore emerge a passionate, highly adroit form maker while remaining misdirected, disinterested, or even contemptuous of external realities. Later, the practicing architect becomes adroit at the production of beautiful form irrespective of whether it is the wrong solution to the wrong problem.<sup>8</sup>

C. Richard Hatch, in *The Scope of Social Architecture*, conceptualized the teaching and practice of architecture as primarily a social medium, a medium for fostering the centrality of community, of place-making attuned to the needs of the marginalized and the disenfranchised.<sup>9</sup> In discussing Hatch's pedagogical position, Anthony Ward writes, "Hatch asserts . . . at its best, social architecture aims to create and develop critical consciousness."<sup>10</sup> This position, however, stood in diametric opposition to the dominating themes within architectural discourse in the 1990s, which increasingly sought to remove critical theory in architecture from the everyday social milieu of its time, thereby disconnecting it from the realm of moral imperative. Ward asserts the mere persistence of a topic referred to as "social architecture" pushed aside from a position of centrality in this discourse "is an indictment of the latter." He calls for transformative practices in architecture and in studio education as a means to reconnect both with moral and social imperatives.<sup>11</sup>

No facet of critical theory in architecture need stand aloof from the circumstances in which it must evolve.<sup>12</sup> By extension, the same argument can be made for sociocultural connectivity in the design studio. Thomas Dutton argues that critical pedagogy can offer a vital intellectual aperture for the teaching and practice of architecture.<sup>13</sup> Studio pedagogy, to him, is to be equated with far more resonant cultural and social concerns than simply what

may occur randomly in classroom teaching on a day-to-day basis. It involves "all those practices that define what is important to know, how it is to be known, and how this production of knowledge helps to construct social identities."<sup>14</sup> He adds "pedagogy is part of the process of shaping what people know and how they come to know it . . . any practice which intentionally tries to influence the production of meaning is a pedagogical practice. . . . If this constitutes an expanded conception of pedagogy, critical pedagogy recognizes that all forms of learning are enveloped in political processes."<sup>15</sup> Dutton cites the work of prominent educational theorists Roger Simon and Henry Giroux, among others, and their call for a moral imperative whereby, in a world of needless pain, critical pedagogy in education values social justice, democracy, equality, and emancipation. In the educational system itself, the aim of these theorists has been to break all forms of domination that have accompanied late capitalism and global capitalism.<sup>16</sup>

Ward cites examples of studios in which an openness toward social engagement, if not the avowed aim at the outset, has been a governing theme. This work includes numerous studio projects he has directed with Maori communities and community urban design studio projects for the cities of Otago and Auckland, both in New Zealand.<sup>17</sup> These efforts have generally been deemed a success, and indeed provide much for others to build upon. This stream of activity provides an especially fertile base to build upon in light of recent dramatic events in the United States. The seriousness of these events necessitates a full reappraisal of teaching pedagogy in the design studio. Hatch's rational transparency, an approach informed by taking cognizance of issues of immediate significance to the society, saturates the discussion that follows.

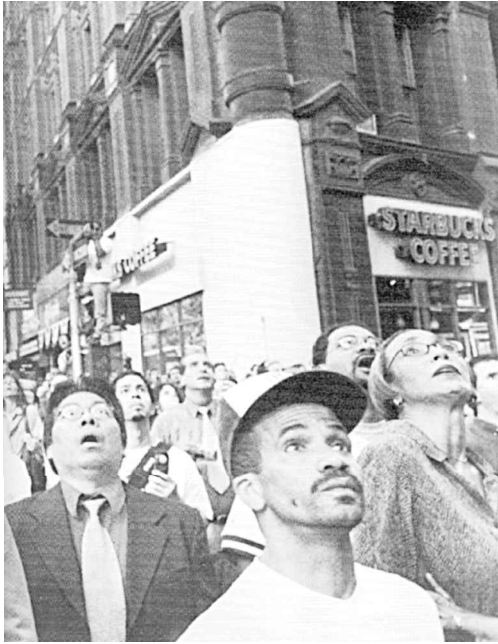
### **September 11, 2001**

September 11, 2001, stands apart as a pivotal day in the cultural, economic, and political landscape of America and of democracies worldwide. In the

immediate aftermath of the events of 9/11, our everyday lives would change, both in symbolic and in direct, tangible ways. The sheer devastation resulting from the acts themselves forced each of us to reexamine what we do and who we are. Tai Moses wrote,

As the ruins of the World Trade towers smoldered at the southern end of Manhattan and the breeze stirred the ashes of thousands of human beings, a new age of anxiety was born. If someone had slept through September 11 and awakened, Rip van Winkle-like today, he would open his eyes on an astonishing new landscape . . . this divided our world into two radically different eras. We watch wistfully as the pre-9/11 world drifts away . . . we will speak of it in the reverent tones reserved for the dead. Meanwhile, the post-9/11 era looms like an unmapped wilderness.<sup>18</sup>

Immediately, public attention became transfixed on the horror of the thousands of deaths, the monumental destruction of property — ramifications of the most devastating surprise attack to take place in history on American soil.<sup>19</sup> Signs of societal transformation abound in the wake of 9/11, challenging our sense of invulnerability, previously a hallmark of the American psyche. After 9/11, we looked at each other with new sets of eyes, asking new questions. Pundits wrote of a country having lost its innocence, at once overlooking the obvious fact that innocence is not a prerequisite quality in a superpower nation. The attacks on the West by Islamic extremists significantly reordered, if nothing else, the psychological dimensions of the global geopolitical landscape. Its impact will endure. For Americans, living in the richest nation in history, these events shove the nation into the glare of the international spotlight. America is in the not-so-painless process of reconsidering its most cherished values, daily routines, and lifestyles, many of which are viewed by observers both domestically and over-



1. Horror on the streets of New York City, September 11, 2001. (Reprinted from New York: September 11.)

seas as self-deluded.<sup>20</sup> As an undeniable determinant of cultural reappraisal, 9/11 penetrates to the core — and architecture can neither remain immune from, negate, nor isolate itself from the events of that day (Figure 1).

Architects in the United States, along with virtually everyone else, were compelled to ask, “How could anybody hate us so much?”<sup>21</sup> Throughout the booming 1990s, Americans, not unlike the retreatist predilections of critical discourse in architecture, had increasingly turned inward as more and more architectural firms in the United States, ironically, began to expend considerable energies on cultivating new economic opportunities surrounding the globalization of practice. Perhaps, in retrospect, this period was naive. The stark display of terrorism exhibited on 9/11 has driven home in full color the dangers of architects running the risk of attack for being motivated by self-centered, culturally autonomous economic determinants.

Post-9/11, the profession undoubtedly continues to view globalization in somewhat soft focus, romanticist terms, although now with a far stronger dose of realism, caution, and circumspection. It is now unjustified to casually dismiss out of hand the view of those who may view the building of buildings in far-away cultures as being in some measure an imperialistic act, an act of cultural hegemony. The fundamental question at this point is not

whether or not architectural practitioners are justified to engage in such pursuits in and of themselves, but whether future architects will be educated to be equipped to think, act, and build in a sensitive, compassionate manner. Now, the quest to build the tallest or most lavish high-rise office tower in Malaysia or Manhattan is subject to reassessment, as well as, for that matter, whether anything at all should be built on the hallowed site of Ground Zero in New York City.<sup>22</sup>

### Searching the Soul of Architecture

The events on 9/11 functioned as a national flashpoint.<sup>23</sup> Americans retrenched in the weeks and months following the attacks, defiantly displaying the flag while traveling less, spending less on entertainment, pulling back on purchases of consumer goods, and disinvesting in the stock market.<sup>24</sup> Correspondingly, the threat of bioterrorism metastasized in the public psyche, fueled by the anthrax episodes that forged an indelible imprint on everyday habitual life in the civic realm.<sup>25</sup> Airports, office buildings, laboratories, shopping malls, schools, prisons, post offices, sports facilities, and hospitals were but a few of the civic places where long-standing design assumptions were rendered obsolete, literally, overnight.<sup>26</sup>

As an entire nation questions itself, is the architectural design studio to be considered a part of the “problem,” or a part of whatever “solutions” may unfold? Is the studio and studio teaching pedagogy in some way an expression of the negative side of these large-scale events? Regardless, the temptation must be cast aside to simplistically reduce the core issues to an either/or diatribe of a position of political apathy versus blatant, even garish, visual displays of patriotism, such as flag apparel. For the architectural student, at the very least, matters surrounding the nature of the inner-directed versus outward-directed predilections in one’s own work must now be brought out into the open.

As architects search for ways to build more meaningfully in a post-9/11 world, architectural educators are embarking upon parallel lines of inquiry in a search for ways to teach more meaningfully. Pre-9/11, in the case of Islamic extremism, it might have been logical for the student to ask, “Is western architecture viewed in isolation from western society in the minds of those who harbor intense hatred of the West (America in particular), or, does architectural activity and political ideology covary?” The answer is now obvious: buildings can be viewed contemptuously, detested as raw symbols of political and cultural ideology. Post-9/11, new questions swirl in the air: Do studio projects set in such locales as Egypt, Bombay, or Shanghai export an architectural cosmology of a striated, egocentric, even repressive nature to non-western cultures? For projects in domestic settings, the questions are equally vexing. Am I giving back to my community and to society? Am I critically engaged? Am I demonstrating civic leadership through my work and actions?

### A Transportable Medical Care Center

Studio educators advocating *transformative* pedagogies have attempted to broaden the manifold of social concern in architecture.<sup>27</sup> Studios concerned with social engagement have generally been of three types: type 1 — studios that literally take the studio out into the community, type 2 — studios that strive to bring the community into the studio experience to the maximum extent, and type 3 — studios that attain a balance between type 1 and type 2. All three variants within this typology are outward directed, with the first based off campus to the extent possible, the second based largely on campus, and the third representing a combination of experiences on and off campus.

In type 1 studios the client is frequently interacted with — that is, consulted — on his/her (or the organization’s) turf. In the case of type 2 pedagogies, the client frequently comes to the studio at

predetermined intervals for the critiquing of students' work. In the third studio variant, a combination of both strategies occurs. Above and beyond matters of pedagogical directionality, the intentions are nearly always socially focused, based on a salient issue in the community, such as affordable housing, urban design, recreational space, reuse of historic buildings, schools, and so on. A local church approaches the university seeking input and guidance on the design of a childcare center. The local chapter of Habitat for Humanity seeks the help of students for the building of new homes in inner urban neighborhoods. A neighborhood group of business merchants seeks new ideas to reinvigorate declining revenues along a deteriorated commercial strip. The student work may, one hopes, ultimately have some impact on these real clients with their real needs. The students feel respected and valued, the client receives useful information, and the value of the architect/architecture is reaffirmed.

Regardless of whether the studio is taken out to the problem, the problem is brought to the studio, or a combination of both occurs, each represents a transformative pedagogy. In practice, many approaches have been implemented at various times for various reasons. Now, with 9/11 adding much gravity, timeliness — rapid response — ascends to a position of considerable importance. Rapidity of response requires three qualities: engendering in the student the merits of social engagement, instilling an appreciation for the merits of teamwork in order to produce much "output" in a relatively short period of time, and instilling in the student a high level of care, concern, and quality control regarding the immediate usefulness (utility) of the output (product).

Beyond 9/11, complex global geopolitical and population issues loom larger than ever before in recorded history. The world's 6.1 billion population increases by nearly 9,000 people each hour. Several worldwide population institutes estimate that, by 2050, between 9 and 9.5 billion people will be living on the planet. The population of the United

States by 2050 alone will have surpassed 400 million.<sup>28</sup> By 2000, capital expenditures in architecture for health in the United States alone surpassed \$17.6 billion.<sup>29</sup> Populations most in need of global architectural intervention will include communities ravaged by HIV/AIDS, malaria, tuberculosis, plagues such as the virulent Ebola virus in Africa, and yellow fever.

The profound pain, misery, and severe dislocation caused by natural disasters, including earthquakes, floods, and hurricanes, is becoming more widespread. Global population increases as new settlements are built in places where they should not, such as in low-lying coastal zones, earthquake-prone regions, and in the midst of notorious "hurricane alleys." The aftermath of industrial disasters can be especially devastating in communities with high concentrations of chemical and nuclear energy plants. Meanwhile, conventional military warfare continues to devastate communities in the Middle East and elsewhere around the globe. Populations equally in need of rapid-response architectural intervention now may be in Chicago, Omaha, Osaka, Sao Paulo, or in Bangladesh.<sup>30</sup> Rapid-response architecture for deployment in disaster mitigation contexts requires a high degree of immersion, teamwork, and amenity.<sup>31</sup>

In the fall of 2001, in the aftermath of 9/11, a rapid-response studio was initiated at Tulane University. The brief called for a prototype 18,000-square-foot, adaptable, fully transportable health-care facility. Non-site specificity was essential: "kit of parts" proposals were to be responsive to at least four site variants: linear urban street, open field, shoreline, and open paved site.<sup>32</sup> The work of three two-person student teams is presented: team 1 (Bridgette Cabarrus and Marcella Casas), team 2 (Scott M. Simon and Mabel Nazario), and team 3 (Carrie Walker and Kenyon C. Zimmerman). This work is representative of nine teams in all (two students per team) in this fourth- and fifth-year elective platform studio.<sup>33</sup>

In studios on the topic of social engagement,

students often get to interact with real clients who critique their work at key intervals (and in fact this author has directed a number of studios with "clients" serving as invaluable adjunctive resources, beginning with a hospice studio taught twenty years ago). It was not logistically possible to duplicate this scenario in the present studio, although the sheer weight of the events of 9/11 and intensive waves of subsequent media coverage provided a great amount of essential information. There was no "client" readily available on such short notice to critique the work of the students at key intervals whether in the studio or beyond the campus. The intense media coverage of the caregivers, the victims, and numerous accounts of the vast ramifications of the tragedy to a large extent filled this potential void.

In the days that followed 9/11, local experts who would have otherwise volunteered their time to assist with the studio in a hands-on manner were themselves working overtime to develop their own disaster mitigation plans. With this said, this should not be misconstrued to infer that a nonclient format was preferable versus having had actual specialists serving as consultants. It therefore became necessary to take additional measures to transport the students out into the community in order to attain interaction, insight, and feedback. This information was taken back into the studio setting and subsequently tested, reiteratively. As a result, the studio most closely resembled type 2 within the pedagogical typology of social engagement in studio instruction.

The first two weeks centered on investigations of compassion as a construct. The nine teams presented case studies of conditions faced in the aftermath of a sudden, catastrophic loss or traumatically dislocational event: sudden disruption to one's physical and emotional equilibrium in the aftermath of attack, disease, an industrial accident, or natural disaster.<sup>34</sup> Environmental stress and coping behaviors were reviewed, including research on environmental stress, learned helplessness syndrome, epi-

sodes of mass violence, and antisocial behavioral patterns such as rioting in the aftermath of sudden loss. The profound need for persons and groups to make sense of their immediate condition was examined, that is, the craving of families to reclaim a lost or severely damaged home.<sup>35</sup> Well-being, health status, and basic shelter was discussed with recent examples of architectural intervention ranging from Hurricane Floyd in South Florida (1992), to the Kobe earthquake in Japan (1995), to the Ebola pandemic in Africa (1998), and to 9/11. The pedagogical objective was *to create a flexible, adaptable healing environment empathetically responsive to diverse cultural and geographic contexts*.<sup>36</sup>

The first field trip, a one-day empathic model workshop, centered on instilling an appreciation for the myriad challenges faced in coping with a sudden loss in one's repertoire of sensory and physical abilities. The original intent of this teaching appliance, developed in the late 1970s at the University of Michigan, was to simulate the loss of sensory capabilities experienced by the aged: simulated loss of hearing, vision, olfactory abilities, physical mobility, and tactile sensory ability. Nearly every student

reported that their simulated, abrupt loss of mobility, sense of touch, eyesight, and/or hearing genuinely affected them. This was particularly the case for those outfitted with multiple sensory loss appliances, such as wheelchair confinement crossed with partial blindness. At the workshop's conclusion five hours later, they had become advocates of the empathic model as a very useful way to sensitize architects. This occurred against the backdrop of the media's monumental, generally compassionate 24/7 coverage of the terrorist attacks. The many stories about the thousands of victims, their families, and the survivors functioned as moving testaments to the power of the human spirit, and thus inspired the student teams.<sup>37</sup>

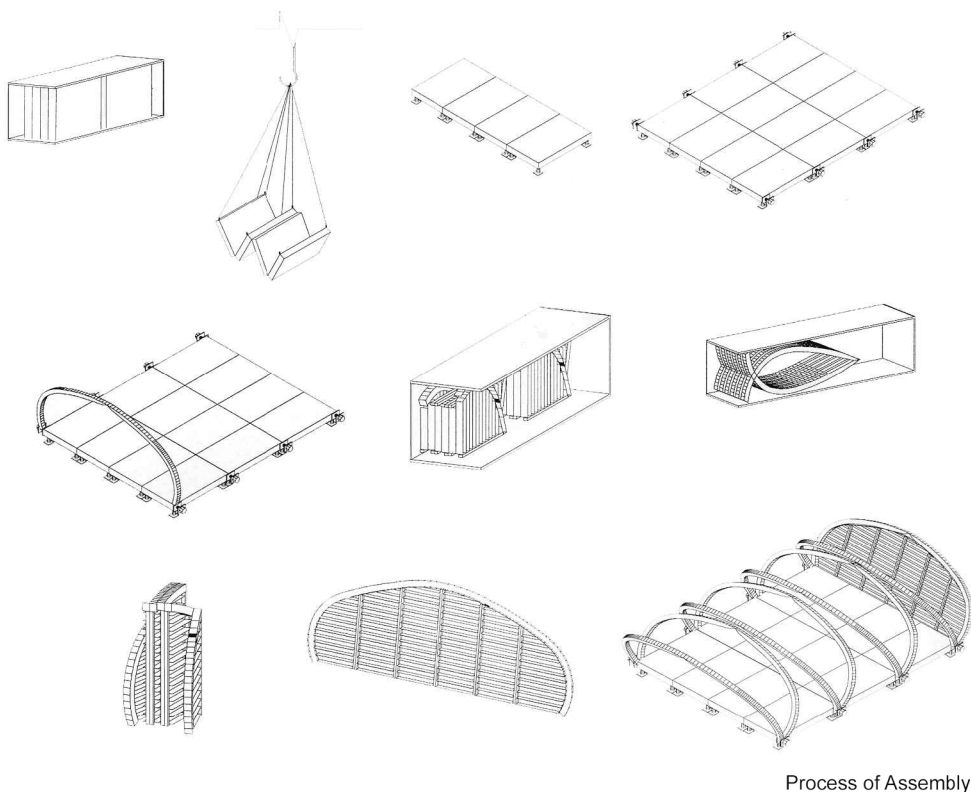
The teams embarked on a search for spatial metaphors expressive of the spiritual dimensions of healing. The five basic platonic volumes — the tetrahedron, octahedron, cube, dodecahedron, and the icosahedron — were studied.<sup>38</sup> The ancient art of tent making was examined, which led to the review of the twentieth-century work of Buckminster Fuller and Frei Otto, the Airstream trailer, and lightweight portable buildings including case studies with fabric

roof systems. The M.A.S.H. tent structures of the Korean War and the Vietnam War were studied. The physicality of molecular minerals and principles of fractal geometry were examined for their relevance.<sup>39</sup> The goal of rapidity of response called for a charrette-like schedule, and the fast tracking of these explorations was therefore a high priority.

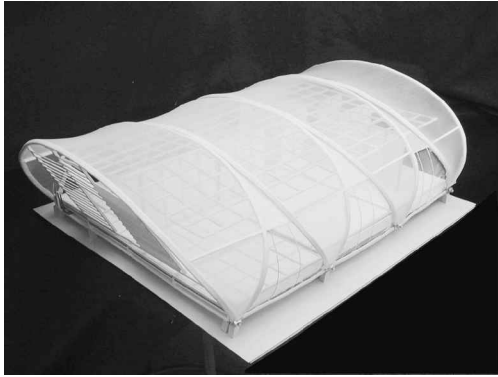
Team 1 developed a transformational prototype in response to the unpredictable nature of disaster mitigation situations. The siting of the modules (as many as twenty on a single site or as few as two) provide outdoor space for triage in the event that many hundreds of victims must be evaluated or decontaminated at once. In triage, rapid decisions must be made such as immediate assessment of those in need of airlifting to an offsite medical center versus those who can be cared for onsite. To accommodate the potential of many hundreds of patients simultaneously in need of triage, one or more modules are configurable as large open-air pavilions, adjacent to the main arrival-intake entrance and staging areas.

These units are interconnected to diagnostic and treatment modules, including surgical modules, via accordion-like tubular circulation and supply corridors. A fabric membrane applied to an exoskeleton frame is connected to a base platform. This occurs in a manner in which each module's anatomical components such as electrical and HVAC systems are supplied from the underside of floor panels inset in a steel grid. The translucent skin is composed of a three-ply nylon membrane with an interstitial layer to moderate indoor-outdoor air temperature differentials. Assemblage is shown step by step, in a procedure diagrammed in Figure 2. Here, the container *Type A* becomes the platform for the module; the structural rib elements are then assembled in pairs and locked together. Next, the skin membrane is applied. End panels are fabricated of steel and equipped with operable louvers that double as means of egress (Figure 3). The plan of an inpatient semiprivate ward illustrates this proposal's considerable dexterity insofar as interior partitions can be added or subtracted as care needs dictate, with modules linked to one another via the unfolding and sliding of the wall panels (Figures 4, 5, and 6). The modules respond to site, topography, microclimate, and medical equipment requirements. The number of modules is variable, depending on need and siting constraints. Many aspects of this proposal, including the triage open-air overflow space, provide diagnostic and stabilization for many more persons at once compared to an emergency department in a conventional hospital. Many aspects of

2. Deployment sequence, Case Study 1.



Process of Assembly

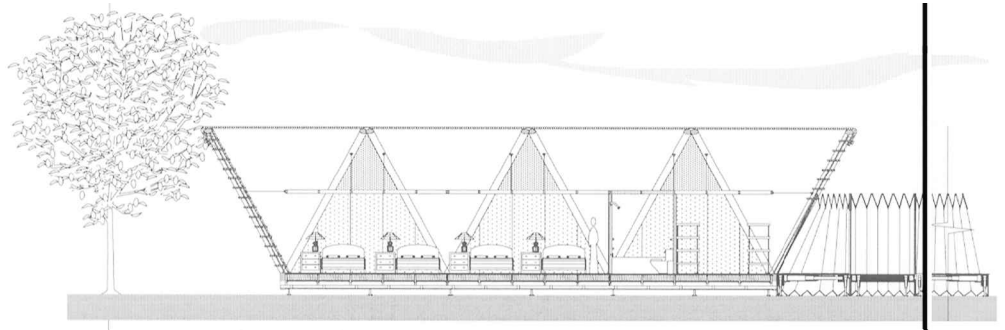


3. Model of transportable medical care module, Case Study 1.

this team’s proposal were adapted from tent hospitals designed and deployed in twentieth-century modern military warfare. Human scale was achieved as well as a flexible siting concept, together with clearly articulated staff and patient circulation patterns.

Team 2 developed a modular system whereby the pattern of the basic 10-by-10-by-30-foot steel shipping container is replicated and reappropriated as a “bookend,” becoming a key architectural element. The use of the module’s shipping container as an architectural element arose out of practical consideration for a system that would require minimal time, effort, cost, and labor to assemble. A large measure of this proposal’s compassion is expressed in its concern for the severe logistical limitations posed with respect to its transport to the site, and the constructors’ limitations of time and resources.

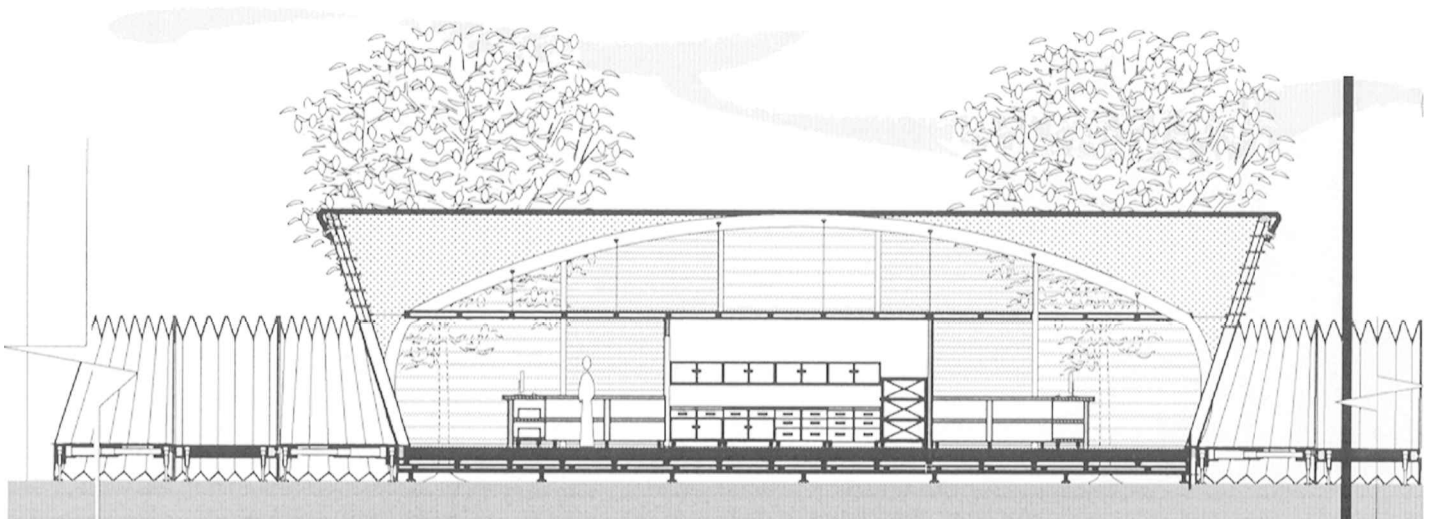
4. Section through inpatient ward, Case Study 1.



A relatively high level of self-sufficiency and structural autonomy is expressed in this system as a result. Its considerable spatial dexterity enables the system to accommodate general medical tech support, HVAC, and electrical systems. These are housed in an interstitial plenum beneath a prefabricated floor plate system. These plates fold out from their passive state during shipment to become active elements. Wall panels fold, lock and unlock, clip in, and slide from side to side to allow for various uses and permutations.

Individual modules are covered by a lightweight retractable fabric roof, activated by a pair of parallel pulleys on a track system; this roof can be pulled from end to end and locked into place by four workers, two per side. A clear plastic membrane sheathes the space between the fabric roof and the top of the module on all sides, providing a source of daylight and natural ventilation. Daylighting and ventilation levels are variable through the addition/subtraction of the lightweight steel prefabricated wall panels (Figures 7 and 8). These modules,

5. Section through surgical suite and connecting “accordion” supply-circulation elements, Case Study 1.





6. Perspective of triage-assessment unit, Case Study 1.

as in the case of the previous proposal, are reconfigurable due to unforeseen site conditions likely to be encountered in the field. Options for configuration range from radial to linear (Figure 9). The merits of this system center on a significant degree of autonomy in terms of its transport, assembly, and disassembly.

Redeployable medical facilities pose architectural challenges, not the least of which is the matter of portability. Transportable, prefabricated structures are of two basic types: those transported to and “installed” on a permanent site, and those that are reusable (re-installable) on multiple sites.<sup>40</sup> Motor coaches and prefabricated fixed-site buildings are typically dismissed outright — the architectural equivalent of fast food — as contaminated, impure. To British architect-educator Jonathan Hill, the term *contamination* describes an unfortunate condescension on the part of architects whereby the user/occupant in a newly completed work of architecture is viewed as having a debasing effect on the space. In his view, the user/occupant is too often held in contempt for his/her contaminating effect on the building through the simple act of engaging in everyday inhabitation. Although Hill was referring primarily to fixed-site architecture, this negative attitude becomes compounded exponentially in the case of prefabricated architecture. The factory-built

aesthetic, combined with the stigma of so-called contamination through inhabitation, diminishes its potential for appraisal as a serious work of architecture.<sup>41</sup> Team 3’s proposal challenges this dismissive attitude while embracing the principles of social engagement and rapidity of response.

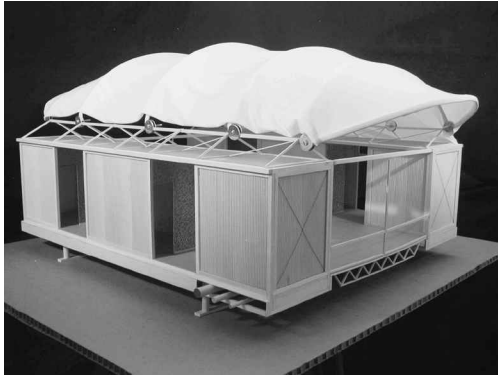
This proposal is transported to the site on an eighteen-wheel trailer truck. The truck then morphs into a medical care clinic. The procedure is not unlike that of a traveling stage set of a globe-trotting rock band such as U2 where the stage apparatus is integrated into the means of transport. The expandability of these modules in vertical and horizontal directions starkly contrasts the static nature of the typical prefabricated mobile home, however, as well as the typical mobile truck-based medicoach mobile health clinics used in many rural parts of the United States. In the latter, the narrowness of the unit tends to constrict usage and this nearly always results in too little staff workspace, storage, patient comfort, or patient confidentiality. To overcome this deficiency a pair of mobile units are staged in an interlocking, horizontally and vertically expandable/contractible *parti*. Upon activation, they are transformed into a single unit comprising in large part the truck chassis and the transport container, which double as the structural system. These units expand vertically to a height of

two full levels, if necessary. The second level is accessed via “high-boy” fork lifts and clip-on steel stair elements. Accommodations for universal access are provided in the form of ramps and mechanical lifts. The second level is raised and locked into place vis-à-vis the pneumatic lift trucks, which double as vertical transport.

This serialized process of arrival, assembly, and activation is illustrated in Figures 10 through 18. A single unit can function autonomously, or many units can be connected to one another on a single site. Each module takes on a specialized role in this scenario. In disaster mitigation situations in which multiple truck-clinic units are deployed to a single site, individual modules are transformed into one part of a larger whole and adaptable as needs dictate. Individual modules can be deployed for triage, decontamination units, surgical units, or short-term patient housing. This proposal merges tectonic dexterity and portability with vehicular transport found in the ubiquitous everyday environment.

This proposal also facilitates ease of delivery and setup in the densely populated inner urban neighborhoods of cities. The capability to service these communities is a key strength of this proposal. It is the residents of these neighborhoods who tend to not have their own means of transportation, and who are often left out in disproportion-

7. Model of typical container-clinic module, Case Study 2.

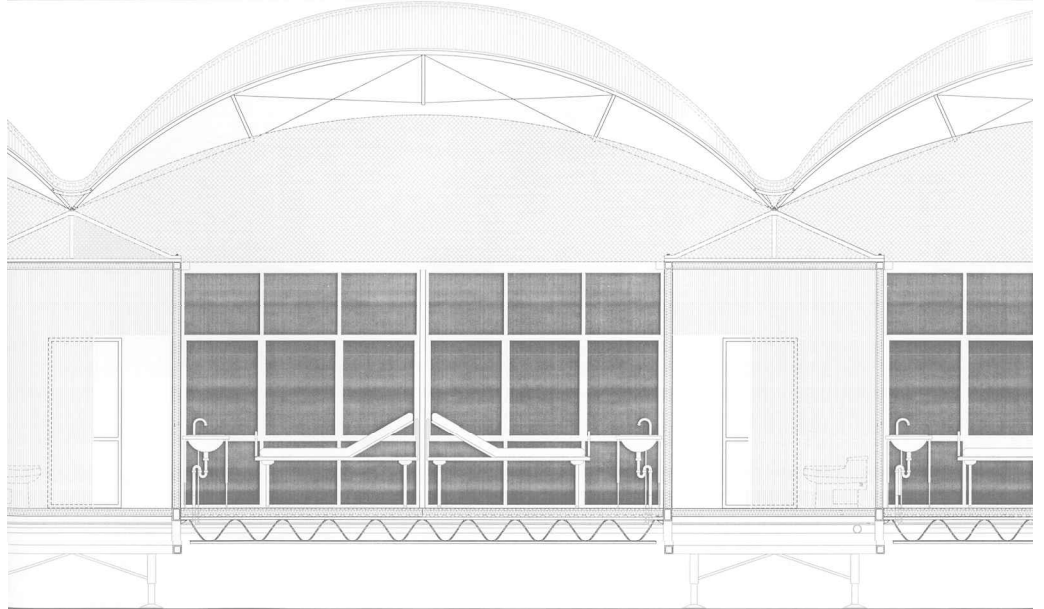


ate numbers in emergencies, such as in the case of rapid-pace hurricane emergency evacuations. In densely built neighborhoods, the units can be trucked to a staging area and quickly deployed on city streets, in narrow vacant lots, in schoolyards, and parking lots. This semi-autonomous dispersal is premised on self-containment and allows for effective deployment, that is, a sole unit on a site, in a pattern replicated on numerous sites. Therefore, the provision of care is not limited to sites where, for example, ten units must be interconnected to one another in an “all or nothing” scenario.

The scatter-site concept therefore supports deployment of independent entities throughout a community where one is set up perhaps a few blocks apart from the next. In this scenario, a lattice-work or matrix of truck-clinics can be established on short notice with some perhaps providing only triage and diagnostic care, others only immunizations, another only decontamination, and yet another for surgery or for the treatment of cuts, bruises, and related posttrauma conditions. Those patients in need of comprehensive posttrauma care would be transported to safe-house specialized treatment sites for more-intensive care, including surgery.

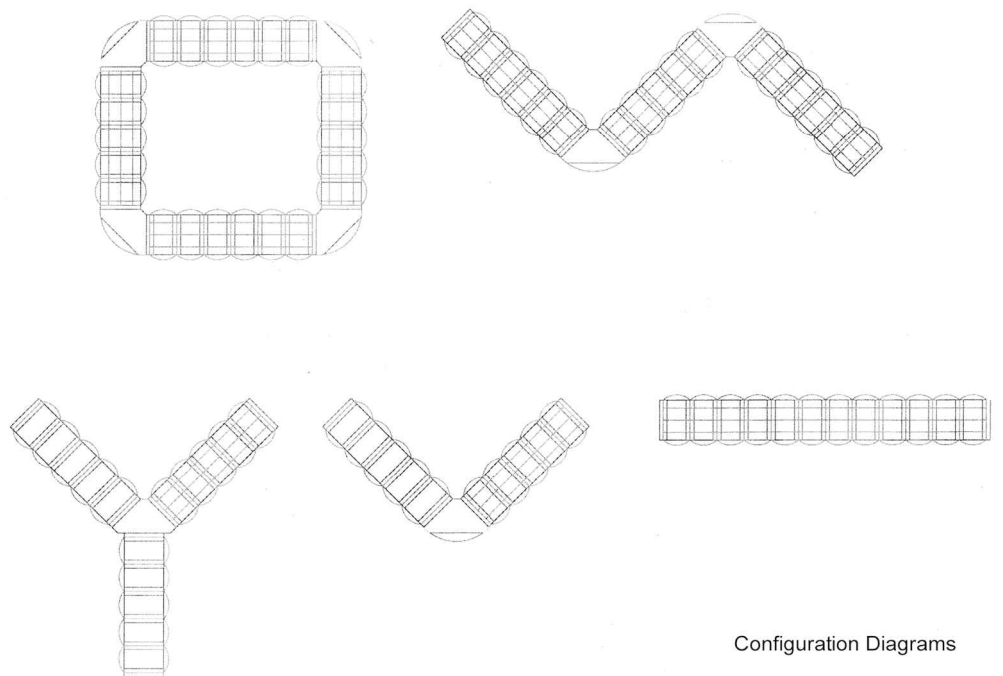
Le Corbusier recognized the architectural significance of a key historical precursor to these three proposals. One of the earliest transportable building types, the primitive temple, was little more than a nomadic structure consisting of poles and fabric, easily erectable, transportable across the desert to the next place of worship.<sup>42</sup> To him, this embodied the very essence of architecture: “There is no such thing as a primitive man; there are only primitive means.”<sup>43</sup> These proposals represent only one of many possible strategies to express engagement in

8. Partial section through post operative holding area, Case Study 2.



Module Transverse Section

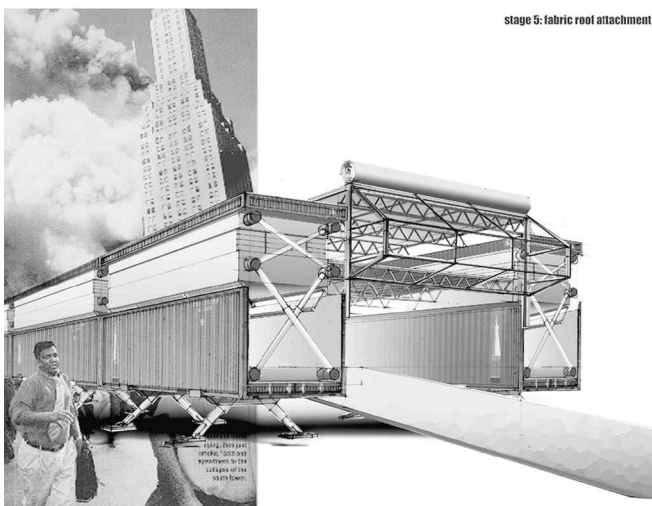
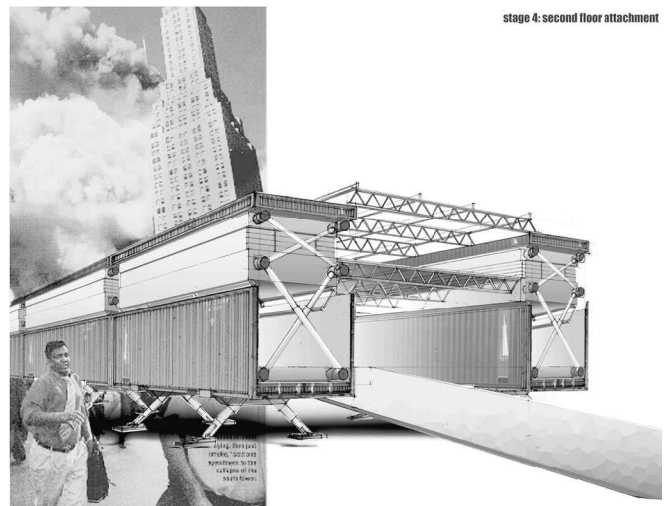
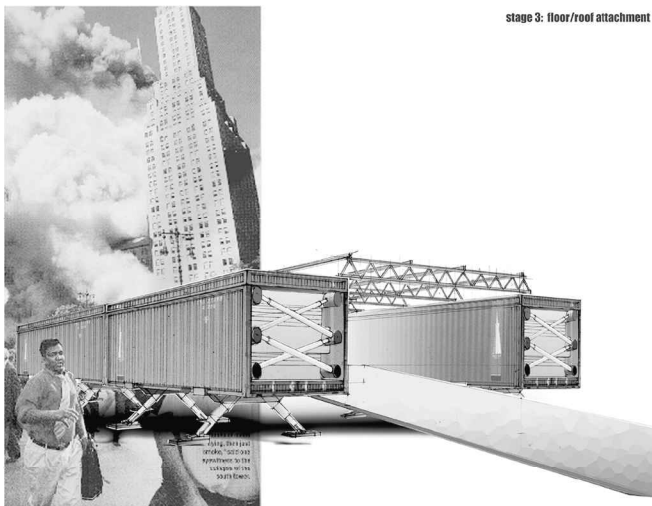
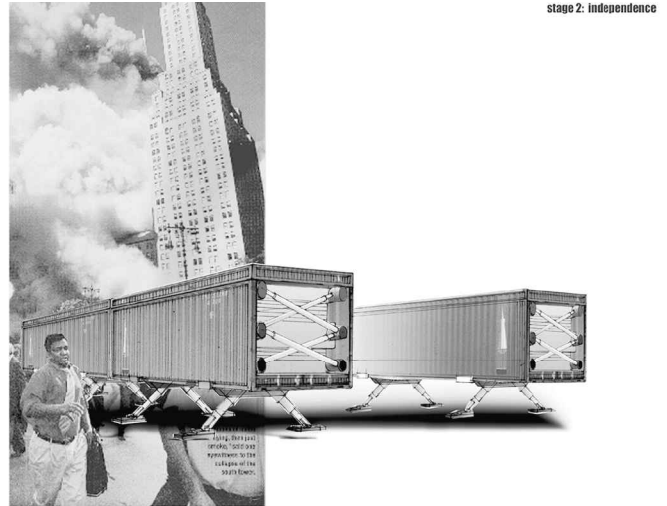
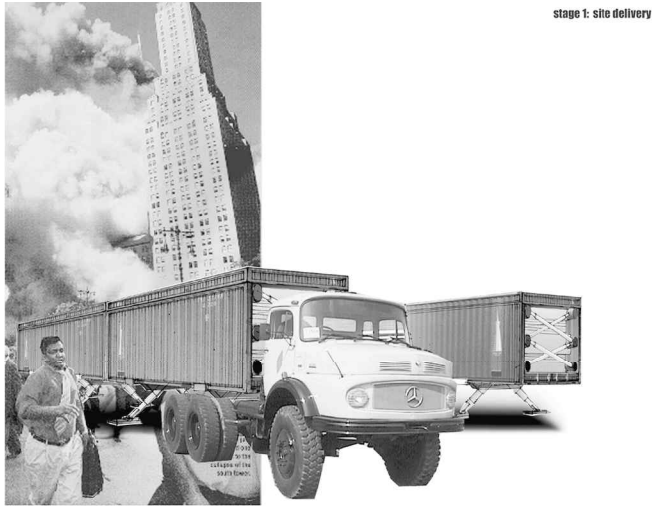
9. Siting options, Case Study 2.



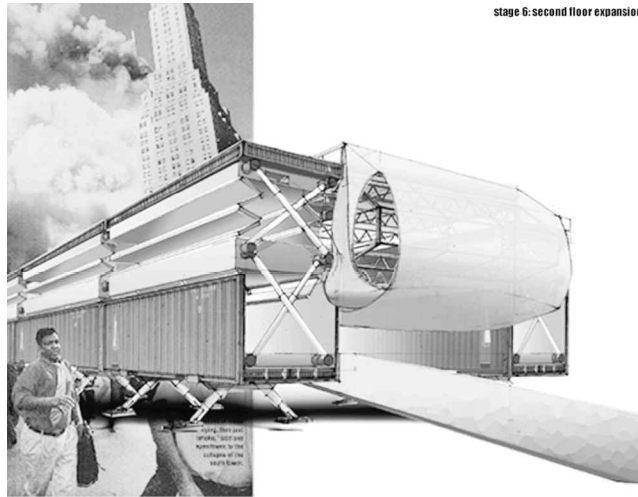
Configuration Diagrams



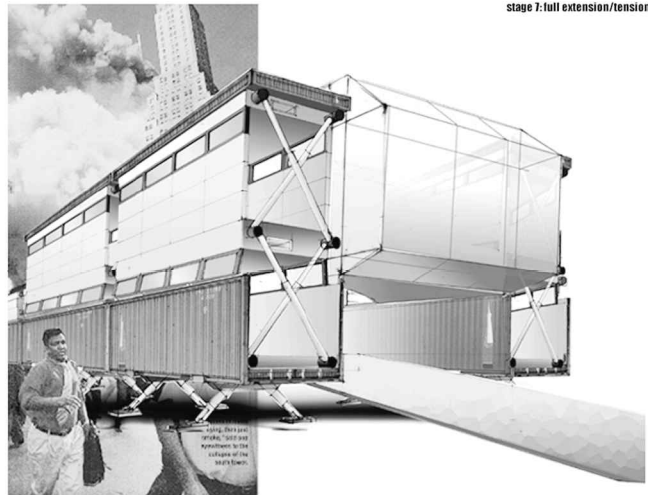
10-14. Phased deployment of bionic truck-hospital, stages one through five, Case Study 3.



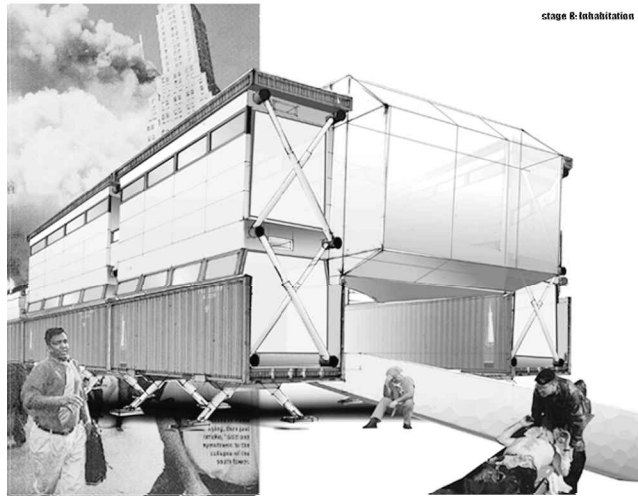
15–18. Phased deployment. Bionic truck-hospital, stages six through nine, Case Study 3.



stage 6: second floor expansion



stage 7: full extension/tension



stage 8: inhabitation



stage 9: attachment

a rapid-response studio format,<sup>44</sup> although British architect Robert Kronenburg states

(There are) compelling arguments for the study of the current state of movable buildings . . . portable buildings, because of their dynamic nature, have the ability to play an active role in saving lives. Disaster relief activities are an obvious role. . . . The lack of shelter in a post-disaster situation can lead to loss of life from exposure and disease that can be in excess of that caused by the disaster itself. It is essential that people . . . are helped within a very short period, 48 hours or less, if that help is to be effective. Temporary shelter which is reusable

is a core requirement . . . but equally important, and more so in the long term, is an appropriate level of facilities for medical, administrative, and rebuilding centres, which can be deployed immediately and help nurture such activities during the reconstruction period. There is no doubt that well designed, appropriately used and deployable disaster relief facilities can save lives. However, the vast majority of movable structures (are) . . . for a completely different range of circumstances and functions rather than fine tuned specific responses . . . (this) could result in a new ecologically aware design strategy — the design of buildings that “tread lightly on the earth” and

still convey the sense of identity and community that is necessary for an established, responsible society.<sup>45</sup>

Transportability, rapid deployment, and social responsiveness call for *lightness*. The metaphysics of lightness denote a subtraction of weight in the abstract, and the defiance of gravity in the face of the darkest, heaviest, most impossible situations. Italian author Italo Calvino advocates lightness as the preferred method for the designer in the New Millennium.<sup>46</sup> In fact, it could be said that *lightness* evolved to become a metaphor for the entire studio experience itself.

As for the student teams' impressions at the conclusion of the project, after eight weeks of work, the course evaluations, informal feedback, and feedback from other students throughout the school indicated no small show of support for what had been accomplished in a relatively short time. Marcela Casas wrote, "Seldom do studio projects involve topics directly related to reality. At the start, very few of us understood how architecture might address such a tragic situation. The events of September 11 made the entire class aware of the magnitude of the challenge. We were challenged because design studios usually center on formal, material, and site issues. But now these assumptions seemed irrelevant on their own. Reality forced us to design a single structure equally useful in both poor and wealthy nations. This project reminded us of how broader issues are too often easily left out of studio projects."

### On the Post-9/11 Studio

In the aftermath of 9/11, architectural educators are justified to reappraise design studio pedagogy because the studio continues to maintain a position of centrality and prominence in schools in the United States, as well as in schools in many nations around the globe. Rapid response implies a proactive, anticipatory stance — the willingness to address a pressing external issue. Rapidity of response has emerged as a principal underlying theme of the digital age. A century ago, society was characterized by relatively long periods of equilibrium punctuated by relatively brief periods of radical change and upheaval — or *punctuated equilibrium*. The current digital age, in sharp contrast, is characterized by relatively long periods of dramatic change punctuated by brief periods of constancy. This latter cultural state is defined as *punctuated chaos* — constant upheaval marked by brief respites.<sup>47</sup> In light of this, architecture schools appear to be afraid to break out of static, time-tested, normative (conservative) studio teaching formats.<sup>48</sup>

This need for reappraisal on the grounds of attaining greater connectivity with societal concerns through the studio now appears to be on the radar screen of the American Institute of Architecture Students (AIAS).<sup>49</sup> Recent evidence suggests that recent graduates continue to hold the studio in high regard in terms of its critical role in providing unique knowledge and skill sets. They see these as setting the architect apart from all other professionals, although social engagement is not listed as being of priority in the larger scheme of things.<sup>50</sup> Nonetheless, the designation of one or more design

studios per semester or quarter as rapid-response vehicles can help to foster societal engagement. Topics are limited only by the imagination, ranging from the immediate local community to issues of global concern. An anticipatory stance on the part of architectural administrators is prerequisite: this involves curricular flexibility and flexibility with respect to the distribution of fiscal resources. Also, real clients can and should be called upon to provide feedback and serve as hosts to students, when in the field away from the campus. It should not be the aim of studios on the subject of social concerns to be aloof from or "heroically dismissive" of direct interaction with those for whom one is designing. This would be highly ironic and obviously self-defeating.

Some will level the criticism that *compassionism* is little more than a new term to describe a pedagogical approach that has been kicking around architecture schools for the past thirty years. This is true to some extent. Semantics aside, however, studios that over the years have built bridges with the community have usually been described as being focused on social "responsibility." Compassionate engagement requires a spirit of social conviction combined with the sense of urgency. It is far more concrete than the related, unspecific term *corporate responsibility* as it has been used with respect to the public outcry for the end of administrative malfeasance in corporate America. Compassionism has been defined in this discussion as a broad construct with two main streams of activity and inquiry: environmental compassion and architectural compassion. It encompasses social, political, aesthetic, environmental, economic, technological, and broad cultural forces. It is paradigmatically centered on the dimension of caring in environmental design, caring as a design determinant in addressing global problems of greater intractability than ever before in history.

The case for compassionism in post-9/11 society is at present being examined in nearly every walk of life, and in particular in American corporate culture following the hedonistic, greed-driven dynamics of Wall Street during the 1990s, and the recent wave of corporate meltdowns. In a recent article in the *Harvard Business Review*, Jane E. Dutton, et al., in summarizing a 1998–2001 research study on corporate culture jointly sponsored by the University of Michigan and the University of British Columbia, articulated four indicators of an organization's capacity for compassion. These relate to the philosophy toward, treatment of, and overall engagement of an organization's constituencies. These attributes are defined as *compassion compe-*

*tencies*: the scope (the breadth of resources provided by the organization in times of urgent need); the scale (measurement processes put in place by the organization to assess the volume of resources needed and actually received by victims in times of crisis); the speed of response (the ability of the parent organization to act quickly, decisively, and effectively); and the degree of specialization (appropriate measurement protocols undertaken by the organization to ascertain the degree to which it tailors its resources to those in greatest need of assistance).<sup>51</sup>

With the machinery of cultural reappraisal in full swing in corporate America for the first time in over a century, human concern for others is being viewed as the seed of newfound compassionism in the workplace:

As a colleague of ours once remarked, there is always grief somewhere in the room. One person may be feeling personal pain due to a death in the family. Another may find personality conflicts in the workplace unbearable. Still another may be watching a colleague struggle with a serious illness and not know how to help. You can't eliminate such suffering, nor can you ask people to check their emotions at the door. But you can use your leadership to begin the healing process. Through your presence you can model behaviors that set the stage for the process of making meaning out of terrible events. And through your actions you can empower people to find their own ways to support one another during painful times. This is a kind of leadership we wish we would never have to use, yet it is vital if we are to nourish the very humanity that can make people — and organizations — great.<sup>52</sup>

At this broad scale, politics and compassion are tightly interwoven. When an architect whines that nobody respects him/her, this is usually the same person who has next to nothing to do with the political process in one's local community. Disengagement eventually leads to "why bother?"<sup>53</sup> In their 1996 report, *Service to the Nation*, Ernest Boyer and Lee Mitgang's Goal Seven, called for architecture schools to establish a climate of external engagement, to clarify to the public the benefits of architecture in direct relation to the common good, to promote the creation of new knowledge, and to stress the critical importance of a high level of ethical professional behavior. At the time (1996), Boyer and Mitgang were left with little option but to soberly conclude that the public's perception of

the architectural profession remained “one of abstraction and elitism.”<sup>54</sup>

The reality of the so-called contaminating effects of the act of human inhabitation in buildings portends an uphill battle ahead.<sup>55</sup> Twenty-two years ago, Alexander Tzonis and Liane Lefaiver sarcastically described architects who “presume they can roam freely in the realm of mental constructs, disassociating themselves from the external world of unpleasanties, by turning inward for approval to the closed world of peers or of the office drawing board, where everything becomes possible.”<sup>56</sup> In stark contrast, the compassionate architect must be agile, willing to perform in an atmosphere of at times utter spontaneity, improvisation, and, if need be, highly “contaminated” circumstances in order to meaningfully engage. Worse, the case for compassionism runs the risk of falling prey to what Manfredo Tafuri asserts is the possibility of a precipitous fall into a mode of unseemly discourse where class-based criticism is injected into contemporary architectural discourse, serving little more than reinforcing socially delimiting, restrictive, polemical polarities.<sup>57</sup> Fredrick Jamison responds rather fatalistically, asserting that basically nothing new can be done insofar as architecture cannot serve a “liberated society” within “the massive being of late capitalism” unless the system itself is radically reworked.<sup>58</sup> As for the role of formalism as a free-standing construct in post-9/11 discourse, a *passionate* building, according to Charles Jencks (1995) has been defined as a building whose formal language need signify little more than a momentary, temporal, if fleeting, cultural shift in values.<sup>59</sup>

It is hoped that critical discourse in architecture will, at the very least, cease to espouse retreat:

Unlike modernist art that sought transcendence by attempting an autonomy from the contamination of social life . . . early twentieth-century modern and avant-garde practices in architecture were defined by the constraint of architecture actually being an



instrument of use, integral to daily life experience and the structures of society . . . (it) is not only a compositional language . . . It is subject to multiple and diverse forces . . . conscious withdrawal was never a strategy for modern architecture in its own time, and it offers no critical response to architecture’s social dilemmas today. . . .<sup>60</sup>

It is reasonable to assume the events of 9/11 will have at least some transformative bearing on critical discourse in architecture. Before 9/11, however, internal challenges to the “recovery” of discourse in the field remained formidable. In the 1990s, American capitalism and popular culture advanced in its quest for global domination through the expansion of increasingly powerful transnational capital markets, the Internet, and the mass media (that is, CNN). In the post-Cold War era, economic and cultural hegemony, when viewed within the broader context of modernist/postmodernist discourse, exponentially increased its global reach. A culture of resistance through retreat, refusing to engage the struggle for social movements and without any constructive alternative strategy, has no place in a struggle to define an antihegemonistic social agenda in architecture. Moreover, anyone who, according to Dutton and Mann, does not

locate oneself “on the global social battlefield — as a strategist, that is, not a *map drawer* but a . . . generator of structures for knowledge for social action” will be among the first casualties of the hegemonic American global ruling class.<sup>62</sup>

Much has been written of America having been blindsided by the events of 9/11:

In the wake of September 11 there erupted something more primal and reflexive than criticism: a kind of left-wing fundamentalism, a negative faith in America the ugly . . . Soon enough, however, old reflexes and tomes cropped up here and there . . . smugness, acrimony, even *schadenfreude*, accompanied by the notion that the attacks were, well, rooted in America’s own crimes of commission and omission.”<sup>63</sup>

Complacency is equally unjustified in the political arena, the corporate boardroom, the entertainment industry, the art world, in organized religion, or in architectural education. A decade ago an outcry in the media occurred on the plight of the homeless in the United States (Figure 19).<sup>64</sup> Soon, as media interest waned, so too did the frequency of design studios offered on this topic in U.S. architecture schools.

## Revisionism and Accountability

This discussion, it is hoped, will not be misconstrued as a diatribe for any one pedagogical approach or studio project. There are many ways to attain connectivity with salient social issues of the moment.<sup>65</sup> In times of uncertainty, practitioners, educators, and laypersons share in the collective responsibility to take stock. Post-9/11 revisionism appears to be taking center stage in postmodern architectural discourse,<sup>66</sup> including calls for a “terror proof” architecture, and even an outright ban on the construction of all tall buildings altogether.<sup>67</sup>

Jonathan Dimbleby, the British broadcaster and writer, at the Annual RIBA Lecture address given in April 2002 in London, spoke of whether architects collectively or individually are as “aware of their daunting responsibility to the future as they might be.” He challenged architects to not squander the opportunity to have a positive impact on the shaping of the everyday habitual landscape:

Surely, it is the architect, listening to the voices of the community, exchanging ideas and exploring values with those communities who, in the future will make the difference between social re-integration and social disintegration. And surely, it is not good enough to accept that he who pays the piper calls the tune.<sup>68</sup>

Although it may not be an attainable goal to establish an international architectural counterpart to the Hippocratic oath (as Dimbleby suggested later in his RIBA address), it may be desirable to set up clear performance criteria to which “architects of repute would pledge their collective allegiance, and from which, in practice, they would not depart.”<sup>69</sup> In this respect, compassionate engagement is a *both/and*, not either/or proposition as it can ideally fuse empathy and caring with the formal concerns of education in design. Boyer and Mitgang called for meaningful engagement, a *modus operandi* presumably based on all of the above working in concert, in order for the architect to better serve the

nation and the global community in the coming years.<sup>70</sup> But, before this can occur in the schools and the profession on a sustainable basis, a logical starting point is to reassess pedagogy. In the aftermath of 9/11, the design studio can continue to prosper if it expresses a renewed spirit of innovation, spontaneity, *lightness*, and unfettered, open inquiry. Fortunately, the design studio is not dead as a medium for learning. It remains uniquely attuned to instilling principles of leadership and meaningful civic engagement — values at the core of the reflective architect.

## Acknowledgments

The author is indebted to the anonymous reviewer who provided outstanding support and assistance in the development of the manuscript.

### Notes

1. Thomas Dutton, “Design and Studio Pedagogy,” *Journal of Architectural Education* 41/1 (1987): 16–25.
2. Ernest L. Boyer and Lee D. Mitgang, *Building Community: A New Future for Architecture Education and Practice* (Princeton: The Carnegie Foundation for the Advancement of Teaching, 1996). The authors cite strikingly similar themes found in earlier reports produced on the state of architectural education during the twentieth century. A notable example, also cited by Dutton (1987), was produced by the Deans of the Consortium of Eastern Schools of Architecture, “The Challenge to Schools of Architecture,” *Architecture Education Study, Vol. 1: The Papers of The Andrew Mellon Foundation and the Consortium of Eastern Schools of Architecture* (Cambridge: MIT Laboratory of Architecture and Planning, 1981).
3. Tom Woolley, “Why Studio?” *The Architects Journal* 193 (Mar. 20, 1991): 46–49.
4. *Ibid.*, p. 48.
5. Geoffrey Broadbent and Andrew Ward, *Design Methods in Architecture* (London: Lund Humphries, 1969). Also see Lionel March and Philip Steadman, *The Geometry of Environment: An Introduction to Spatial Organization in Design* (London: RIBA Publications, 1971).
6. Woolley, p. 48.
7. Amos Rapoport, “Architectural Education — There is an Urgent Need to Reduce or Eliminate the Dominance of the Studio,” *Architectural Record* 172 (Oct. 1984): 100, 103.
8. *Ibid.*, p. 103.
9. C. Richard Hatch, ed., *The Scope of Total Architecture* (New York: Van Nostrand Reinhold, 1984).
10. Anthony Ward, “The Suppression of the Social in Design: Architecture as War,” in Thomas Dutton and Lian Hurst Mann, eds., *Reconstructing Architecture: Critical Discourses and Social Practices* (Minneapolis: University of Minnesota Press, 1996): pp. 27–70.

11. *Ibid.*, p. 28.

12. Dana Cuff, *Architecture: The Story of Practice* (Cambridge: The MIT Press, 1992).

13. Thomas Dutton, “Cultural Studies and Critical Pedagogy: Cultural Pedagogy and Architecture,” in Dutton and Mann, *Reconstructing Architecture*, pp. 158–201.

14. *Ibid.*, p. 171. Also see David Sholle, “Authority on the Left: Critical Pedagogy, Postmodernism, and Vital Strategies,” *Cultural Studies* 6/2 (May 1992): 272–273.

15. *Ibid.*, p. 172. Also see Henry A. Giroux and Roger Simon, *Popular Culture, Schooling, and Everyday Life* (New York: Bergin and Garvey, 1989), p. 230.

16. *Ibid.*, p. 172.

17. Ward, in Dutton and Mann, *Reconstructing Architecture*, pp. 59–64.

18. Tai Moses, “Before and After: September 11,” *AlterNet.Org* (Dec. 3, 2001): 1–4.

19. As has been extensively documented in the international media, a team of nineteen Middle Eastern extremists hijacked four commercial jetliners on the morning of September 11, 2001. Soon after takeoff, two of the jetliners slammed into the twin towers of the World Trade Center in New York, reducing the twin towers to a funeral pyre of toxic ash and rubble. A third civilian passenger jet, transformed into suicide bomber, slammed into a field in Pennsylvania. A fourth hijacked jetliner was crashed into the Pentagon in Washington, DC. At this writing, more than 3,000 persons are dead. Immediately, a sense of profound violation rocked the nation. The initial shock evolved in the days that followed into a mood of uncertainty combined with outrage and visual displays of patriotism everywhere.

20. Robert Fulford, “From Delusions to Destruction: How September 11 Called into Question the Attitudes by Which Our Society Lives,” *The National Post* (Oct. 6, 2001): 1–5. Also see A.C. Thompson, “War Without End,” *The Nation* (Dec. 2, 2001): 15–21; and Doug Henwood, “Terrorism and Globalization,” *The Nation* (Nov. 21, 2001): 26–33.

21. Roger Cohn, “Editor’s Note,” *Mother Jones* (Nov./Dec. 2001): 6.

22. Nicole Gelinias, “New York Grieves for a Maimed Skyline,” *The Times-Picayune* (Sept. 9, 2001): A-18; and James Glanz and Eric Lipton, “New York Excavation Job Has No Model,” *The Times-Picayune* (Sept. 27, 2001): A-12. A raft of 9/11 books have appeared as well, including Jackie Waldman, ed., *The Courage to Give: The Triumph of the Human Spirit* (Denver: Fine Communications, 2001).

23. Fulford, *Ibid.*, p. 1 (online article). Fulford attributes this to the fact that for many years Americans have been denying reality: “For many reasons, some of them quite benign, we have been playing elaborate games with the truth, as if we were joining unconsciously in a plot to help each other avoid seeing the reality of the world we live in. When I say ‘we,’ I mean all of us, including me. In the early 1990s, after the nuclear threat of the Cold War receded, something unexpected happened among us, something we neither anticipated nor knew how to deal with. There fell upon us . . . a plague of conformity . . . it became our (America’s) habit to purchase social peace at any price — including the price of truth.” Similarly, architects and architectural educators need to address the parallels of this myopic perspective in their own work.

24. *Ibid.*, p. 4.

25. There are many ways to register the impact of September 11, 2001, on American society: the rise and fall of the stock market, the flags displayed everywhere, a newfound fear of travel, the unease when opening

an unexpected letter possibly tainted with anthrax. From Hollywood to Madison Avenue, the collective American response was profound. Chronicling the event and the search for expression paralleled the efforts of artists, musicians, writers, community activists, and the professional athlete. See Giorgio Baravalle and Cari Modine, eds., *New York September Eleven Two Thousand One* (New York: de.MO, 2001). The National Football League canceled its games for the first time in history on the Sunday immediately following the event. Artists, and photographers in particular, sought to “make sense” of the event. See Magnum Photographers’ *New York: September 11* (New York: Magnum Photographers, 2001) and *Life Magazine’s One Nation: America Remembers September 11, 2001* (New York: Life Magazine, 2001). Rock stars staged high-profile benefits for the thousands of victims and their families. Journalists, social scientists, and public health experts documented rapidly unfolding events in the subsequent days and months. Numerous books appeared by the end of the year on various facets of the tragedy. See *September 11, 2001* (St. Petersburg, Florida: The Poynter Institute, 2001) and *September 11: A Testimony* (New York: Reuters, 2001).

26. Anyone who has been in an airport or public building since 9/11 can testify to this. The airport terminal as a building type is undergoing total reappraisal in terms of sequencing, security, privacy, and internal circulation.

27. Dutton, 1987, p. 16.

28. World Health Organization. *District Health Facilities: Guidelines for Development and Operations* (Geneva: WHO, 1998). Also, World Health Organization, *Global Water Supply and Sanitation Assessment 2000 Report* (Geneva: WHO, 2000). Although this is a substantial sum, it pales in comparison to global annual expenditures for healthcare. Architects, working internationally with care providers and related philanthropic organizations including the World Health Organization, the United Nations International Rescue Committee, the International Red Cross, and Doctors Without Borders, will be relied upon much more to provide innovative design responses for the earth’s population in the coming decades. A key advocacy group at the international level is the Union of International Architects’ Public Health Work Programme Group, based in Berlin.

29. C.L. Crosswell, “Building New Strategies: Construction Firms Coping with Array of Fiscal and Corporate Challenges,” *Modern Healthcare* 31 (2001): 23–36.

30. The care provided is centered on immunizations, biological warfare decontamination and treatment, infectious disease, trauma, prenatal and infant nutritional care, hydration treatment, burn treatment, surgery, telemedicine, and public health education.

31. In October 2000, the American Institute of Architects Academy of Architecture for Health, at its annual meeting in Vancouver, British Columbia, sponsored a three-and-a-half-day student design charrette. Five teams of students participated, representing the University of British Columbia, UCLA, the University of Tokyo, the University of Oregon, and the National Technical Institute in Mexico City. Each team received a \$5,000 grant to cover travel and living expenses. The Steris Corporation funds this program each year. At the conclusion, the results are presented to a review team of practicing architects and academician-practitioners. This particular charrette topic captured the imagination of the Academy’s membership. The review was attended by more than one hundred practitioners.

32. Keith Evan Green, “The Art of the Machine,” preamble to the *Beyond 2000 International Charette*, Vancouver, British Columbia (Oct. 2000). The competition brief read, in part, “What is the character of the mobile medical hospital of the future? . . . Recognizing the changing conditions of healthcare . . . architects must not merely refine existing models (but) must re-envision a new type . . . recasting its essential characteristics—mobility, utility, and economy—in ways that cultivate the therapeutic and technological promise of architecture” (p. 2).

33. The project brief consisted of public arrival and waiting areas, admissions, triage and decontamination units, diagnostic support, and treatment spaces. Inpatient care spaces included a mixture of *microwards* and semiprivate recovery rooms. Required support services consisted of HVAC mechanical spaces, staff break areas, “virtual surgery” apparatus for telesurgical equipment and supply storage, a repair shop, biohazardous waste holding, and central building support. As mentioned, the proposals had to be reconfigurable in response to unforeseen site conditions.

34. Joel Blau, *The Visible Poor: Homelessness in the United States* (New York: Oxford University Press, 1992).

35. Stephen Kaplan and Rachel Kaplan, *Cognition and Environment: Functioning in an Uncertain World* (New York: Praeger, 1982), pp. 71–173. Concepts examined centered on environmental evaluation, preference, cognitive chaos, and the involuntary cognitive attentional demands placed upon persons relative to well-being, stress, coping behaviors, and principles of problem solving in highly uncertain settings.

36. Victor Papanek, *The Green Imperative: Natural Design for the Real World* (London: Thames and Hudson, 1995). Papanek’s concept of DFD (Design for Disassembly) was discussed. (1) The facility has to be transportable to virtually anywhere in the world vis-à-vis standardized shipping containers. These modules are typically 30 (or 40) by 8 by 8 feet in their dimensions. (2) Rapid response time for transport and assembly is essential. The facility must be assembled within twelve to twenty-four hours upon its arrival at the site and fully operational within six to eight hours thereafter. Support linkages must be established with local utilities, if available. Emergency backup power generation is required. (3) The facility must be adaptable to a variety of site and climatic contexts from open farmland and shorelines to urban settings such as parking lots and dense street grids such as those in lower Manhattan. (4) It must be operational in tropical and in temperate climates, with limited use in colder climes. (5) Semiskilled workers who travel with the hospital or can be quickly trained under watchful supervision must carry out assembly. (6) All medical equipment and support apparatus is portable, on wheels. (7) Reusable and hence sustainable building components, assembly procedures, and recycled materials are required, as is a natural ventilation system. (8) The hospital must be transportable by land, sea, or air. (9) The facility is to be operational for up to a year and in some cases longer. Students were encouraged to integrate the shipping module with the “building” to reduce the number of inactive containers stored on site during the facility’s lifespan. This would minimize potential hazards as a result of their unauthorized use as shelter. A certain number of containers would remain onsite at all times for equipment and supplies. See Nelda P. Wray, Thomas W. Weiss, Terri J. Menke, Paul J. Gregor, Carol M. Ashton, Carol E. Christian, and John C. Hollingsworth, “Evaluation of the VA Mobile Clinics Demonstration Project,” *Journal of Healthcare Management*, 44/2 (Mar./Apr. 1999): 133–147.

37. The workshop took place at the New Orleans Department of Veterans Affairs Medical Center. Students spent an afternoon in a restrictive, constricted state—wearing disability simulation appliances representative of physical conditions typically experienced by disaster victims. Some were in wheelchairs or walkers with legs constricted; others wore fogged glasses, earplugs, and/or had arms, legs, and/or their fingers tied together. One student, a paraplegic, shared invaluable insights with the group. The group also learned about the international modular shipping industry, touring the Nashville Avenue Port at the Port of New Orleans, the largest container terminal in the world. Next, the students toured a fully automated, recently built hospital emergency care department and interviewed the medical staff (Ochsner Foundation Hospital). Questions arose: “For whom are we designing?” Answer: Anyone, anywhere. “Should we design for a particular type of catastrophic event?” Answer: No. “What are the users’ most immediate needs?” Stabilization and assessment. “How long will patients stay at the facility?” Up to thirty days. Apart from acts of terrorism, the need for disaster preparedness strikes a chord in New Orleans, the setting for the studio. The city is at extreme risk of the effects of disaster in the form of a catastrophic category 5 hurricane. Although providing some protection, the city’s massive ring of levees would also trap any water that should penetrate inside this enormous “bowl.” Filling this “bowl” is the “worst potential scenario for a natural disaster in the United States,” according to federal emergency management officials with FEMA. The American Red Cross estimates death tolls from twenty-five thousand to one hundred thousand persons in New Orleans alone. See John McQuaid and Mark Schleifstein, “The Big One,” *The Times-Picayune*, (June 24, 2002): A-7. Also see Mary C. Comerio, *Disaster Hits Home: New Policy for Urban Housing Recovery* (Berkeley: University of California Press, 2000). Worse, New Orleans is a relatively poor city. See Theodore Steinberg, *Acts of God: The Unnatural History of Natural Disasters in America* (London: Oxford University Press, 2000). Steinberg demonstrates how economic decision making in the aftermath of disasters has often protected the wealthy class and commercial interests at the expense of the poor and minorities.

38. They are the only volumes with all-equal edges and interior angles. The purest volumetric expressions are the triangle, the square, and the pentagon. All other volumes are merely variants. In Plato’s *Timaeus*, he established in “Pythagorean” the four basic elements of the world are the earth, air, fire, and water. Tradition associates the cube with earth, the tetrahedron with fire, the octahedron with air, and the icosahedron with water. Plato cited a “certain fifth composition” used by the creator in the making of the universe. Thus, the dodecahedron came to be associated with this fifth element, aether (*prana*). The five regular polyhedra were known and worked with well before Plato’s time. See Robert Lawlor, “The Genesis of Cosmic Volumes,” in *Sacred Geometry: Philosophy and Practice* (London: Thames and Hudson, 1982), ch. 10. and Keith Critchlow, in *Islamic Patterns: An Analytical and Cosmological Approach* (New York: Schocken Books, 1976), presents convincing evidence that these were known to the Neolithic peoples of Britain one thousand years before Plato, as evidenced in numerous spherical stones kept in the Ashmolean Museum at Oxford. He speculates on the possible relationship between these stones and the construction of the great astronomical stone circles of the same epoch in Britain: “The study of the heavens is, after all, a spherical activity, needing an understanding of spherical coordinates. If the Neolithic inhabitants of Scotland had con-

structed Maes Howe before the pyramids were built by the ancient Egyptians, why could they not be studying the laws of three-dimensional coordinates? Is it not more than a coincidence that Plato as well as Ptolemy, Kepler and Al-Kindi attributed cosmic significance to these figures?" (p. 112).

39. These "solids" do not tangibly exist in nature. In their "perfect" form, they exist metaphysically only as pure creative ideation, made representable for the mind to grasp only through geometry. Thus, refraction photo-imagery is the closest visual approximation science can provide on the nature of atomic substance, and these images appear only as patterns of geometrized light-energy.

40. Stephen Verderber and David J. Fine, *Healthcare Architecture in an Era of Radical Transformation* (New Haven: Yale University Press, 2000). Most currently produced mobile facilities are variations on the vernacular of the ubiquitous motor home, that is, *medicoach* mobile clinics, buses, and clinic-on-wheels, based on 1950s-era precursors such as TB mobile units. The Atomedical Hospital of the early 1960s was a utopian response to this era of high-tech medicine and space travel. The *parti* was radial, with patients' beds placed in rooms around the perimeter and all staff diagnostic and support spaces at the center. It was one level in height and constructed entirely of stainless steel. A prototype was put on display at the 1963 New York World's Fair. From an economic standpoint, however, the Atomedical Hospital was a dismal failure, due to the refusal of building code officials to take a sympathetic stance towards its radical design. (See ch. 4 of Verderber and Fine, 2000.)

41. Jonathan Hill, "Contaminating Contemplation," in J. Hill, ed., *Occupying Architecture: Between the Architect and the User* (London: Routledge, 1998), pp. 77–97. This remains, in part, an explanation for the continued practice of the absence of building occupants or traces of human occupancy in the pages of most glossy architectural publications. Regardless, very few prefabricated buildings are published with or without people in the photographs. Many companies produce industrialized prefabricated clinics for transport to a site to be quickly assembled for permanent use in one place. These companies include Comark Building Systems of Texas, Porta-King Modular Wall Systems and Enclosures of Missouri, Mediumx of Seoul, Korea, and Rhino Portable Buildings of Auckland, New Zealand. Los Angeles Architect Jennifer Siegal's firm OMD (Office of Mobile Design) has developed nomadic prototypes, including the *Eco-Lab* mobile unit. However, structures such as these continue to be considered "contaminated" by some, on cultural if not aesthetic grounds, due to their premise of efficient, fast (food-like) consumption/use by the public at large. Also see A. Tolla and R. Lignano, *LOT/EK: Urban Scan* (New York: Princeton Architectural Press, 2002) for a review of how this firm has incorporated the modular steel shipping container into proposals for a restaurant, museum, and housing.

42. Le Corbusier, *Toward a New Architecture*, Frederick Etchells, trans. (New York: Holt, Rinehart and Winston, 1984), p. 70.

43. *Ibid.*, p. 4.

44. Green, pp. 5–6. Inspiration is drawn from the iconoclasm of Buckminster Fuller's Dymaxion house and car of the 1930s, Archigram's Plug-In City and Walking City visions of the 1960s, Michael Web's space-age capsules, the work of the Japanese Metabolists, and more

recently the nomadic huts designed by Holt Hinshaw Pfau Jones—extendable, variable, urban, and instantaneous.

45. Robert Kronenburg, *Houses in Motion: The Genesis, History and Development of the Portable Building* (London: Academy Editions, 1995), p. 11.

46. Italo Calvino, "Lightness," from *Six Memos for the Next Millennium* (Cambridge: Harvard University Press, 1988), p. 3.

47. Bill Gates, with Collins Hemingway, *Business @ the Speed of Thought* (New York: Warner Books, 1999), p. 411–412.

48. Thomas Fisher, "Revisiting the Discipline of Architecture," in Julia Robinson and Andrzej Piotrowski, eds., *The Discipline of Architecture* (Minneapolis: University of Minnesota Press, 2001), pp. 1–10. Studios at numerous schools have centered on housing for the marginalized, such as the homeless, the developmentally disabled, the elderly poor, single parent households, the mentally disabled, and the physically handicapped. In each case, the premise of engagement provides a proving ground for addressing various pressing social issues.

49. Aaron Koch, "Studio Culture in the Spotlight," *ACSA Newsletter* 31/5 (2002): 6–7.

50. This support for the design studio experience was reaffirmed in 2002 in a survey conducted and published online by the *archvoices.org* newsletter (published online June 6, 2002). The survey was on core skill sets considered most valuable in the work of the architect. The twelve most frequently cited skills (in order of mention) were visual literacy; spatial literacy; understanding and synthesizing many types of information; cultural history; sketching, drawing, and thinking in visual terms; comfort with ambiguity; working collaboratively in teams; creating multiple solutions; making models and changing scales; "Make it up and make it so (build it)"; presenting ideas, concepts, and solutions; and "Doing what it takes to make the deadline." Interestingly, virtually all the skills listed here fall within the purview of the design studio, although social engagement is not cited.

51. Jane E. Dutton, Peter J. Frost, Monica C. Worline, Jacoba M. Lilius, and Jason M. Kanov, "Leading in Times of Trauma," *Harvard Business Review* 80/1 (Jan. 2002) 55–61.

52. *Ibid.*, p. 61.

53. Stephen Verderber and David J. Fine (2000), pp. 349–351. Evidence by the end of the twentieth century signified the emergence of a full-blown *health culture*. The health culture represents a paradigmatic shift from a prior "culture" of sickness and disease characterizing the period up to the late twentieth century. This shift, based partly in compassion for others, is usually characterized by the mass media as "self-health," "sickness prevention," and "wellness." Regardless, such terms are euphemisms for this rapidly expanding postmodern health culture of narcissism.

54. Boyer and Mitgang, 1996, pp. 129–142. Five years after the Carnegie Report, Lee Mitgang, in a letter dated April 2001 to *archvoices.com*, wrote, "The large part of our report, connecting the profession to the pressing needs of society, is clearly one that will take years to take hold on a broad scale . . . the profession, as a whole, remains in my view a long distance from realizing its vast potential to reshape the environ-

ment in ways that would earn the nation's gratitude. That's the work of people, not reports."

55. Jonathan Hill, pp. 93–95.

56. Alexander Tzonis and Diane Lefaive, "The Narcissist Phase of Architecture," *The Harvard Architecture Review* 1 (spring 1980): 55. Their point is no less apropos today than in 1980 as the design studio continues to have a profound impact on the political "world view" of the student. As for studio culture itself in the aftermath of 9/11, success is predicated upon engaging in engagement—in effect, a studio without walls. This may be a major roadblock to the establishment of rapid-response studio pedagogy. Some will view such efforts as merely hit-and-run approaches, even undermining the potential of more meaningful long-term efforts.

57. Manfredo Tafuri, *Theories and History of Architecture*, Giorgio Vercchia, trans. (New York: Harper and Row, 1980), p. iii, as cited in Dutton and Mann (1996), p. 17.

58. Fredric Jamison, "Architecture and the Critique of Ideology," in Joan Oakman, ed., *Architecture, Criticism, Ideology* (Princeton: Princeton University Press, 1985), p. 87, as cited in Dutton and Mann, p. 17.

59. Charles Jencks, *The Architecture of the Jumping Universe* (London: Academy Editions, 1995), p. 21.

60. Dutton and Mann, p. 16.

61. *Ibid.*, p. 11.

62. *Ibid.*, pp. 19–20.

63. Todd Gitlin, "Blaming America First," *Mother Jones* (Jan./Feb. 2002): 22–25. This entire issue is devoted to 9/11. Also see in same issue Ian Frazier, "The Morning After," pp. 26–27, and Bill McKibben, "An End to Sweet Illusions," pp. 38–39.

64. Blau, 1992, pp. 68–78.

65. Stephen Verderber and Ben J. Refuerzo, "On the Construction of Research-based Design: A Community Health Center," *Journal of Architectural and Planning Research* 16/3 (1999): 225–241. Also see James M. Mayo, "Critical Reasoning for an Enlightened Architectural Practice," *Journal of Architectural Education* (summer 1988): 46–57.

66. Peter Davey, "Regionalism: Time to Review and Renew," *The Architects Journal* 1257 (Nov. 2001): 34–35. Critical regionalism is a case in point. A proposal launched by Kenneth Frampton and others some twenty years ago, this position is now under fire for its frequent "dreadful and disgusting" if unintentional expressions of cultural hegemonism in global architecture.

67. Blair Kamin, "Making Buildings Terror-Proof," *The Chicago Tribune* (Oct. 15, 2001): 5-1. James Howard Kunstler and Nikos A. Salingaros write, "We are convinced that the age of the skyscrapers is at an end. It must now be considered an experimental building typology that has failed . . . we predict that no new megatowers will be built, and existing ones are destined to be dismantled." ("The End of Tall Buildings," *Planetizen: The Planning and Development Network* (Sept. 17, 2001) <http://www.planetzen.com>).

68. Jonathan Dibleby, "Confessions of an Optimist," *RIBA Annual Lecture*, London (Apr. 30, 2002), ([www.architecture.com](http://www.architecture.com)).

69. *Ibid.*, p. 7.

70. Boyer and Mitgang, p. 133.