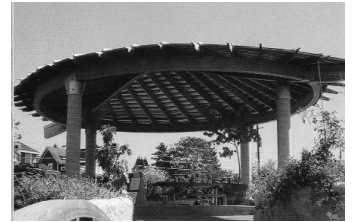


Questions / Issues

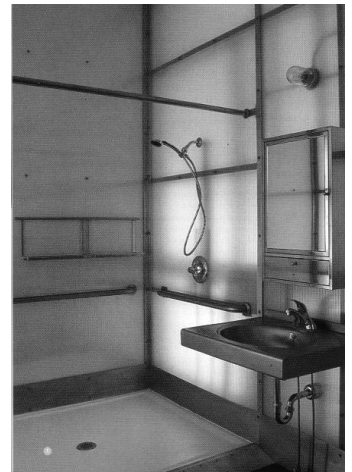
1) "Design-Construct" (method of learning) vs. "Design-Build" (method of delivery) ?

- U. Kansas and other program with Construction Management or Construction Technology programs clearly also emphasize the "Design-Build" project delivery method. Should we? Relation to engagement of larger construction profession fostered by Cornerstones?
- Should Design-Construct be part of an architecture program? Why? The tradition of architecture as a fine art, in part representational, as consciously distinct from the actual making. Most of our work is about communicating, abstracting, and representing ideas to other people who implement them. In an ever-more technical and specialized world, is it vain to try to "do it all"? (Rhetorical ?s)
- Three basic types of existing Design/Build institutions: 1) University based Design/Build-Construct programs; 2) University based Community Design Centers, with students internships or independent study type work; 3) Independent Community Design Centers or Design/Build programs



2) What does "Design-Construct" bring to our program?

- Hands-on, rudimentary construction and materials experiences
- Intro. to the complexity and synthetic nature of the design and construction process, the influence of many factors on outcome, changing things in mid-stream, etc.
- Scheduling and time management skills, working as a group, weather delays, material delays (drying time, arrival on site, etc.)
- Value of time, money, materials, waste, etc.
- Possible interaction of profession practice and academy, dealing with subcontractors, community groups, community planning professionals. Working with and like professionals.
- A type of pedagogy, apprenticeship, equalizing professor-student interaction
- Understanding of real constraints such as site, client, budget, materials, schedule, codes, ADA, systems & technologies. (depends on project type)
- Construction documents vs. ordinary studio design process (analogical)
- Understanding that construction and technology is not something you add to, or subcontract out of the architectural design process, but a fundamental part of making buildings; the unity of architecture and engineering
- Collaborative learning and making, architecture as a communal art. Competitive or consensus (U. Wash.) approach to group design projects.
- Service learning; community outreach and awareness, social service, giving back (depends on project type).
- ?

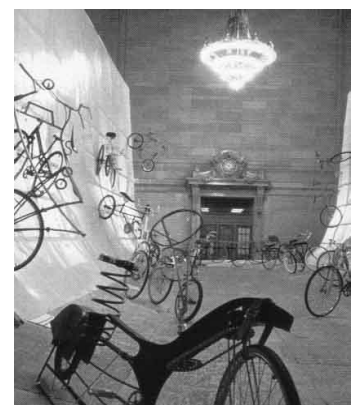


3) Design-Construct in Graduate vs. Undergraduate education:

- Issues of maturity, responsibility, time management and time availability for busy undergrad with many courses vs. more total-immersion possibilities
- Yale's 1st year grad program vs. 5th yr thesis projects at Rural studio

4) Studio or Elective? Independent non-profit Center?

- Required for all students in the year? Difficulty and expense of creating a construction opportunity for 40-60 students?
- Optional studio experience? Who "gets to" take Design-Construct studio?
- Elective course? Time constraints of 9 unit course?
- Summer studio?
- "Separate semester," like study abroad, with multiple course & credit?
- Vertical or integrated studio for multiple grades?
- Working with or setting up independent non-profit to coordinate projects (CDC's Habitat). Students do independent study or internships (volunteer or paid).
- Ethics of required construction? Ethics of course credit or pay for hard work?



- 5) Which year in undergraduate education? What will Design-Construct add to our education? (See #2)
- 1st year -- part of shop materials and form experimentation
 - 2nd Year -- part of "Materials & Assembly," the introduction of structures and nature of materials (Carleton).
Expansion of shop skills to include small structures or pieces of construction
 - 3rd year -- opportunity for small pavilions in natural site, work in the parks (U. Wash., U. Houston), or more experimental, hand-on work in structures (Cranbrook bridge)
 - 4th year -- clear lessons in building systems, codes, scheduling, construction documents
 - 5th Year, Thesis, Elective -- most mature students, with most experience, etc.
- 6) Types of Projects and Lessons Learned? (cf Vivian's email)
- More theoretical, sculpturally or artistically inspired, explorations in materials, assembly methods, site conditions, questioning the program and function, etc.
 - Technical, code-specific, pre-set typological projects? E.g. 1100sf, 3-bedroom, house for low-income, on flat, suburban site for minimum costs and standard wall-sections.
 - Craft vs. assembly? Attention to detail, precision, design poetics, custom made work, vs. assembly of pre-fabricated or off-the-shelf products, with obvious pedagogical differences about our construction industry, the role of the architects and designer in the construction process, etc.
 - Pedagogical advantages of repeating the program and type over several years to learn from mistakes.
 - Duration: 1 week charette? Three week project? Half semester? Whole semester? Multiple semester per student? Multiple semester projects for various teams of students? Annually or every three years?
 - Role of innovation: Experimental technologies or systems? Recycling materials? Salvaged materials? Adaptive reuse of materials? Green building systems? Role of building performance?
 - Booths for Spring Carnival?
 - Inter-disciplinary collaborations within CMU? Collaborations within CFA: working with Industrial designers; set designs for drama? Center for Arts in Society? Funding possibilities?
 - Collaborating with Prof. Larry Cartwright of CivE annual Spring semester Design/Build elective for seniors (currently works with sculptors, MechE s, and one senior architecture student)
 - Working with Pittsburgh non-profits such as CDC s, Habitat for Humanity?
 - Combining the Design/Build with "Summer Abroad," building actual structures in Third World countries (Bangladesh, Peru, etc.)
 - Campus projects and clients vs. off-campus projects. Transportation? Liability?
 - Urban Lab tie-ins?
 - Promoting existing programs that accept visitors; Yestemorrow or Rural Studio?
 - ?
- 7) Funding? Staff?
- Inter-relatedness of project type, pedagogy and funding amounts and sources...
 - Department? University? CAS/CFA?
 - Students individually?
 - Writing grants? Easier with social service aspect?
 - Non-profits?
 - Banks & other lenders?
 - Full-time, dedicated staff/faculty?
 - Working with construction, design/build, or architecture firms as internships?
 - ?

Case Studies / Other Programs (See bibliography below for references)

Auburn University, Rural Studio, 1993-present (Info: 3, 4, 7, 8)

- Founded by Sam Mockbee & Dennis K. Ruth (CMU lec. April 2001)
- Method to improve living conditions in Alabama's Hale County. Helps a real community. Part of "land-grant" university institutional setting.
- Context-based learning forces students to leave campus environment, interact with real clients, "Share the sweat." Raises student social awareness and ethical consciousness.
- Develop new materials and technologies to help poor live in dignity
- Rural nature of studio allows great flexibility, no permits, zoning, etc. An "Urban Studio" is being developed to see if similar ideas can be implemented in Birmingham, but it's much more difficult.
- Staff of 8, budget \$400,000-450,000 annual, split between staff/faculty & project expenses (70% grants, 30% university). Major grant from Alabama Power Foundation helped launch it. Grant funding in creating is difficult because so much money goes to operating expenses (salaries).
- Two main opportunities for students, both by application only: 1) 2nd year studio, one each semester; 2) thesis project. Third opportunity for inter-disciplinary students to work on project. Considering expanding to allow visiting students. 30-40 students annually, 4-7 projects.
- 2nd year studio is annual sequence of studios, each sequence completes a house. Fall semester studio emphasizes schematic design and design development; Spring semester emphasize construction documents and construction. Construction often continues into summer (no real winters in Alabama). House recipients selected through local dept. of Human Resources and finalized by student team. Each house approx. \$20-25,000, funded by clients and grants. Mostly for materials, some for consultants & tools.



Univ. of Washington, Howard Wright Design/Build Studio, 1994-pres. (3, 8)

- Led by Steve Badanes, founding partner of Jersey Devil Design-Build firm, (lecturing at CMU Jan. 13, 2003)
- Staff of 2, budget \$40,000
- One of several design-build courses available to students. Elective course, 10-15 students/quarter, 2 projects/year, each completed in quarter (11 weeks). One of 4 vertical "wild-card" studios open to both undergrad and grad students (others are study abroad, Design/Build Mexico, furniture studio). Grad students accepted if they have completed all requirements; undergrads only if they are dual majors in Architecture and Construction Technology.
- Design/build for communities in Seattle area, partnership with non-profits, construction funding through Seattle Department of Neighborhoods grants and local business. Usually small park structures, playground furniture, small additions, typically \$2-5,000 plus materials donations. Client groups maintain insurance and hold university harmless.
- Community outreach/service, and communication to real clients.
- Consensus, collaborative method: design work in studio time in rotating groups using consensus method, with facilitator and written "group memory," synthesized into single design. No competition method, never vote; all voices equal, results in shared responsibility.
- Site & program organized by instructor before studio. First studio is presentation by community leader of needs. Consensus design presented to community. Client provides budget for materials, students to site analysis & plan, design, working drawings, materials procurement, fabrication, scheduling.



University of Kansas, Studio 804, 1995-pres. (5, 8)

- Studio designs and builds an affordable, ADA compliant home each Spring, focused on sustainable building delivery and progressive architectural design practice. Clients not picked by agency until after completion. After completion sold to qualifying resident in cooperation with 5 local lending agencies.
- Students in final semester of 3.5-yr. M.Arch. Spring studio preceded by Fall course focusing on codes, zoning, site, environmental issues.
- Independent non-profit, own board of directors, budget & commercial liability. Client is "tenants to Homeowners" non-profit dedicated to providing affordable housing. Led by Prof. Dan Rockhill, professor and owner of local Design-Build firm.
- Spring projects begin with 2-week design charette; then construction begins on pre-determined site. Particular emphasis in process on new and innovative materials, used in new ways to reduce cost and enhance design quality, especially recycled and salvaged materials.
- Each project thoroughly documented and published after completion.
- Each house approx. \$70-80,000, mostly to materials, tools, sub-contractors when necessary. 1/3rd of budget donated materials and services. E.g. 1998 house budgeted at \$62,000. Actual material costs were \$54,800, tools etc. \$6,400. Sold for \$75,000, resulting in \$14,000 profit, for future projects.

Yale University, Yale Building Project, 1967-pres. (8, 9)

- The oldest continuous Design-Build program in the country, founded by Charles Moore in 1960s as social outreach program
- 1st year project, meant as a way to "discover" architecture. Required part of graduate education. Build one house/year with a local non-profit. Preceded by course "Materials in Architecture" and "Architecture Design Studio" which includes design for the Building Project), then followed by "Housing Studio."
- 40 students start Spring semester, 14-week project. First 5 weeks is design competition and presentation to faculty, inspectors, clients. Four teams of 10 students prepare construction docs and do all construction, teams work on project in tandem. 10 students complete the project over summer as paid interns, often work with client family.
- 1990-95 the Project worked with Habitat for Humanity. 1996-pres. worked with Neighborhood Housing Services. Houses 12-1400sf, \$50-60,000. Funds supplied by Yale and New Haven community groups, 3-yr grant from HUD.
- Parallel "Urban Design Workshop" university based community design workshop, focused on providing community design and planning services, but occasionally for building as well.
- cf. The Yale Building Project: a Resource Manual. School has Graham Grant to help other schools set up similar programs (U. Texas, Ohio State, Virginia).

University of North Carolina, Charlotte (8)

- Alternative to traditional fourth year or graduate studio, fall semester
- Design & construct from ground-up an 1100sf, 3-bedroom, wood frame house. Do all work except plumbing, electrical, HVAC.
- Works with local neighborhood community orgs, Habitat for Humanity
- Process: 1) Study type, visit Habitat for Humanity, individual design charette; 2) Students team paired with faculty or professional in one-day design charette, critique, revised over a weekend, then one scheme is chosen. Design not too simple, but on-going, through construction process. 3) Building project begins in third week, 5 days/week, 1:00pm - dark. All students keep individual log and sketches of whole process (1/3 of grade, critical!); group technical drawings shared through computer.
- Also, since 1985, all 2nd year students have actual building project: e.g. gazebo, stage sets, childrens play park, utilize masonry, wood, steel.
- Profound understanding of how design influences all aspects of construction.

SCI-Arc, "Blue Soup Outreach," 1992-pres. (8)

- Staff of 2.5 full-time; \$140,000 annual budget (½ grants + ½ tuition & income); 2-3 projects/year, 120 students/year, in 5 seminar courses, 3 studios
- Mission of SCI-Arc "To test the limits of architecture in order to transform existing conditions into the designs of the future."
- Blue Soup provides multi-disciplinary design services to LA communities, including: 1) Design/Build, 2) Research, Design, Planning; 3) Community Teaching; 4) Publication, Documentation. Recent shift from community service to community collaboration.
- Also "8x8x8" Studio to design "squatter s huts," learn framing techniques.

Taliesin / F.L. Wright School of Architecture (6)

- School founded 1932 by FLW, as an "apprenticeship" system of learning architecture, complete life immersion at Taliesin, "learn-by-doing."
- Students create independent projects and work with members of Taliesin Architects

Cranbrook, Dept. of Architecture (3)

- Cranbrook founded 1925 with idea of applying Arts & Crafts on large scale, using artisans discipline as inspiration for individual creativity and life-long learning.
- Beginning 1993 a series of projects along a new campus road: bridge (Dan Hoffman), entry canopy & guardhouse (J. Pallasmaa). 2-year process, 8 students/year, work only on the design/build project. Intense focus on details, according to Ruskin's advice.
- cf. Hoffman, Dan, Architecture Studio (Rizzoli, 1994)

Carleton University, "1:1 Studio" (5)

- "Building as speculation" experimental works, a mode of operation of architectural inquiry, from a range of courses and studios at Carleton.

Clemson University (3)

- Counterpart to "analogic" nature of traditional studio and architecture education. Real project: construct a machine, game, tool kit, gadget or construction or other work that is its own ultimate manifestation (NOT a model of something else). Must embody an architectural position or theoretical ground. It must actually work; though it can be abstract/theoretical, or pragmatic/real. Students pay for own project, approx. \$1000/student.
- Also design/build studios where students help professors in his design/build project.

Catholic University, School of Architecture (8)

- Since 1993 students build small, transportable vacation cabin, and sell it at end of semester. Must fit on trailer (14'x10'x50'), 450sf max. interior to qualify as transportable modular home.
- 14 students, competition style, with some design-mixing at end. 2 months of design-development (Jan.15-Mar.22). Construction on campus. June 5 auction house. Cost \$33,800 + \$9,000 donated materials, resulted in \$18,000 profit.
- Also: "Spirit of Place, Spirit of Design" studio: Syllabus starts with sculptural metaphor, ends with completed architectural structure on remote site. All teams 9-12 students, all projects 10 days. Design in Spring semester, build in Summer. Real clients, costs, etc. British Columbia, Santa Barbara, Peru, Kathmandu, Greece. www.spiritofplace-design.com; cf. Travis Price Architects

Bowling Green, College of Technology, "Constructing Knowledge" studio (10)

- 2nd year, three-week problem, teams of 15 students, each divided into four groups: 1) design; 2) drafting documentation; 3) research, acquisition; 4) construction. Constant interaction of groups informing each other: emphasis on experimentation and collaboration. Emphasis on 1:1 sculptural "drawing," making the actual drawing, experimenting.
- Later expanded to full-semester course, so students experience more than one team.

Other:

Southern Polytechnic State University, Construction Studio (3)

- 20 students/year, 4th year studio
- Found materials and "dumpster diving." Often homeless shelters. Also portable theater

Woodbury University, "Tectonics & Hoarding" Studio, Winter 1994 only (3)

- 4th year design/build studio courtyard installation. Intended to find alternatives to the dominant ideology that buildings are to be designed from a single idea. Akin to Levi-Strauss *bricoleur*; or Rowe/Koetter's Collage City

University of Michigan, Design/Build Studios (3)

- One-time studios, early design education. 14 1st year students designed accessible housing for Penland School of Crafts; 14 2nd year students designed a Girl Scout camp.

Harvard University, GSD, "(Infra)-structural Landscapes: A Mail Slot System" (5)

- Student Forum sponsored competition to redesign GSD mailboxes

University of Houston, Hines School of Architecture, Graduate Design/Build Studio, 1990-pres. (10)

- Playground, Heavy Timber Storage Barn, bandstand, indoor exhibit spaces, shade shelter, outdoor classrooms, outdoor reading theater.
- www.arch.uh.edu/gallery

Temple University, "Ethereal Theater" Design/Build Project (5)

-- Six-week project for Philadelphia Fringe Festival

University of Oregon, Design/Build Studio(s) (3)

-- Several scales for design/build: 1) Furniture designs by Interior Architecture; 2) Site projects by Landscape Architecture; 3) Continuous architecture

University of Oklahoma, Design-Build course, 1995-pres.

-- Funded largely through HUD's Community Redevelopment program

University of Detroit, Mercy, "Detroit Collaborative Design Center," 1995-pres. (8)

-- Year-round non-profit physically located within School of Architecture dedicated to searching and (re) searching of architectural design and neighborhood development. Work with non-profit community development organizations to promote quality design.

Montana State & Kent State (7)

-- Teams of students in 4th year create actual set of construction documents for set building type (E.g. office building), work with local practicing engineers, etc.

Arizona State University, "Integral Studio" (7)

-- Integrate faculty research, student studio, community needs.

-- Studio as master design. Grants for execution over \$1,000,000 from city...

Related Programs

"Yesterday-tomorrow" Design-Build School, Warren, Vermont, 1980-present (3)

-- Founded as summer camp for non-architects. Focus on vernacular design. Also for undergraduates?

-- Special summer course for Design/Builders or faculty wanting to start design/build programs

-- cf. Yesterday-tomorrow Course Catalogue (Warren, 1995)

"Experiences in Design-Build: the Expanding Dimensions of Practice and Education" (10, L. Lee)

-- AIA / ACSA joint conference, Atlanta, Feb. 2002

-- Address the challenges practitioners & academics face in embracing Design-Build Method of delivery.

AIA "Walking Workshops"

-- To heighten awareness of specifications in the design process by examining existing buildings in their environments

NCARB Prize for Creative Integration of Practice and Education in the Studio, 2002 (7, L. Lee)

-- Based on Building Community: A New Future for Architectural Education & Practice

Design Corps (8)

-- Independent non-profit design service, migrant worker housing, etc.

-- Director + 5 architecture school interns. Budget \$103,000, funding through various federal subsidy programs for low-income housing.

National Endowment for the Arts "University-Community Design Partnerships" (8)

-- Summarized in J. Pearson, Jason, University-Community Design Partnerships (2002)

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5) "Design Work," special issue of JAE (Feb. 2002): 161-193

6) Frank Lloyd Wright School of Architecture catalogue

7) NCARB Prize for Creative Integration of Practice and Education in the Studio (2002)

8) Pearson, Jason, University-Community Design Partnerships. Innovations in Practice (Princeton 2002)

9) The Yale Building Project: a Resource Manual (?)

10) Misc. materials from "Experiences in Design-Build: the Expanding Dimensions of Practice and Education," AIA / ACSA joint conference, Atlanta, Feb. 2002