MAKING CONNECTIONS
University buildings: Where people and places meet

AMERICA'S TOP ARCHITECTURE SCHOOLS
2010 RANKINGS AND ANALYSIS
Harvard NW Science Building

CANBRIDGE, MASSACHUSETTS | Skidmore, Owings & Merrill

A new laboratory building aims to find its own voice on a historic campus. By Aleksandr Bierig

BUILDING AT HARVARD IS FAULTY WITH COMPLICATION. Historic works of architecture by H.H. Richardson, Le Corbusier, and Walter Gropius are down the street. When one tries to keep to these standards, the world at large déserts it wafuls in 2009. Inside Fair article pointed to recent construction – estimated at 6.2 million square foot and $3.6 billion since 2009 – as an example of the university's profligate spending. And the neighbors, the faculty, and the students all have to be appeased. If that weren't enough, when Craig Hartman, FAIA, head of Skidmore, Owings & Merrill's San Francisco office, designed his first university lab building for Harvard, he also had to deal with the outsized personality of the president, Lawrence Summers (who resigned in 2006 after a number of missteps, including his controversial comments on women in science, and is now director of President Obama's National Economic Council). “He was a very, very challenging person,” recalls Hartman, who apparently seems an uneven match for Summers's famed bluster. Summers's taste tended toward a Georgian aesthetic, but then he saw the movie My Architect, a film about Louis Kahn by his son, Nathaniel. “After that,” says Hartman, “when I talked about wood, when I talked about brick, it was a home run.” Such decisions were brought to the table, and concerns of history and culture were balanced with the extraordinary technical requirements of a contemporary science building.

The process began in 2002, when Harvard commissioned Philip Enquist, FAIA, partner in charge of urban design and planning for SOM China, to design a master plan for the northeast corner of campus. That area consists of a haphazard mix of buildings, among them a 1962 lab by Minoru Yamasaki and a museum designed by Henry Greenough and George Shill in 1921. After the scheme's completion, the university decided to pursue the construction of two new buildings at the edge of the site. Nanzenmi Cooper, assistant dean for campus design and planning, worked with a faculty committee to select Hartman for the project, arguing that “you can always get an expert to join the team, but if you hit on the architecture, that's no going back.” Hartman began by meeting with the residential community that borders the site to the north. While the master plan had called for a series of small buildings to connect to the neighborhood, Hartman and the faculty felt that dynamically scaled structures would be insufficient for its resident scientists. Proposing instead to set the building back from the street, he offered the neighbors a generous landscape and convivial community members to support the project. It was determined early on that the most efficient use of space would be to combine the proposed buildings – one for the Department of Engineering and Applied Sciences and the other for Organismic and Evolutionary Biology – into a single structure. To accommodate those functions, as well as to provide storage space for university collections, the four-story building twists and turns through the tangled campus fabric, never seeming as large as its 125,000 square footage suggests, partly because it cannot be perceived all at once. Accordingly, the overall organization of the building is complex. Most of the physical science labs run along the north and west brick elevations, next to

1. Called the “Hub,” this suspended glass cube acts as a hinge for the circulation of the building, offering space for encounter and discussion.
2. Students and faculty are drawn into the building corner framed by sustainably harvested Pecue wood.
3. The east facade is punctuated with large, double-height “living rooms” that provide informal group spaces.
MECHANICAL SPINE
A cantilevered steel frame holds the mechanical requirements for the labs.

LABS AND OFFICES
Physical labs are shown in red, computational labs in blue, and communal spaces in green.

GROUND LEVEL
The arrows show how the building engages both interior routes and its surroundings.

BASEMENT LEVEL
An event space and classrooms are beneath the south yard, with labs and storage throughout.

1. The South Yard, designed by Michael Van Valkenburgh, features 12 skylights that also act as benches.
2. The north and west brick facades give a contrasting exterior expression for the physical science labs.
3. The building connects to an existing 1972 lab on its southeast corner.
4. The main south entry is open and inviting, reacting to the insular nature of much of the campus.
ARCHITECT: Skidmore, Owings & Merrill. Co-design partners: CEI/OMA; design partners: Carie Byles, AIA, project manager; Phillip Enquist, FIAIA, campus planning and design director; Ruth Bennett, AIA, technical director; Leo Chen, AIA, senior design architect; David Frey, AIA, project architect; Mike Temple, AIA, design architect. 

CONSULTANTS: SBE; ECI, Whitney Consulting Engineers; Sketch; SPF; Planners Collaborative (landscape); Michael Van Valkenburgh Associates (landscape).

SIZE: 50,000 square feet

COMPLETION DATE: September 2006

SOURCES

EXTERIOR CLADDING: Pilkington Brothers (insulated Insulon low-E glass; metal; glass curtain walls); Imperial Moehl Marley (ceramic). 

ROOFING: Surefill (electromechanical membrane).

WINDOWS: Pilkington (clear low-E glass on interior; Solar-10, 30, 40 glass system).

INTERIOR FINISHES: Armstrong Hardwood, USG Interiors, MBI ceiling; Life Science Products, Leither USA (resin, plastic); WeatherFab (metal/ceramic); Daltile, American Olean; (floor and wall tiles); Armstrong Flooring; Johnsonite (resilient flooring); Shaw Carpet; Woodstock Systems (acoustic treatments); Amana Systems (fiber-optic treatment).

FURNISHINGS: Bedrock (furniture); Perren (office seating); Steelcase (office furniture); Paul Bray Designs (several 50-seat offices).

CONVEYANCE: Some elevators.

a massive mechanical spine constructed with a double-loaded ladder-frame system that provides a large interior air well for the heavy masonry-clad wall of the school. With respect to the latter, SOM worked with engineers GPR to develop a 40-foot-wide bridge that provides flexibility for a range of uses. Across from the “well” area on the upper floors, the architects allowed the computational labs and offices to remain a tighter, more flexible quality. These rooms on the south and east sides are framed in glass—transparent to the hallways, and clear with operable windows toward the exterior. Here, the monochromatic processional offices is punctuated by a series of “calm rooms”—informal double-height meeting spaces.

Larger spaces, a ground level cafe, and an underground event area also encourage an environment of openness and collaboration, as opposed to the often over-crowded nature of science buildings. This idea is carried over to the exterior planning, as well. From the central campus, one approaches a generous courtyard with twelve large, square, brick-height boxes. Designed by landscape architect Michael Van Valkenburgh, the town doubles as a green roof over the event space—the boxes are as skylights for the room below. Steeking the open and closed communal spaces directly on top of another characterizes the building’s structural strategies—more than the square footage is under-ground, and spaces with more flexibility, like circulation corridors and stairwells, are engineered to create opportunities for encounter and collaboration.

All of this is very far from Louis Kahn’s innovative design for the new Richard Medical Library of the University of Pennsylvania. There, Kahn conceived the building organization by proposing the idea of “served” and “served” spaces—parallel corridors for mechanical equipment and circulation serving interior bays that ended up being too small and too difficult to control temperatur. Perhaps in part due to that history, SOM’s contribution seems less integral than Kahn’s, as the architecture only needed to wrap around a technically overdetermined whole.

Because of the interior programming, the design of this architecture was pushed further and further out until everything jammed into a single surface. It’s not that the building doesn’t achieve its intentions—the wood and brick lines a sensitive edge. Yet the north and west facades face as if they belonged to another structure. They refer to a sort of generic “Harvard brick building,” while at the same time they demonstrate their contructural role with unapologetic fenestration. Ultimately, the gesture is neither calculated nor horrific. On the opposite facade, SOM’s desire to express “human” materials led to placing wood beneath glass—a seemingly elegant solution that actually required a complex system of venting so the wood wouldn’t be damaged under humid stress—shaping that even small gestures were subject to severe technical demands. On both sides, Modernism’s spidery simplicity, which was conceived partly as the rejection of ornament, acts as a front (Julian Leopold) for the complex and interwoven contingencies of modern science.

In this way, the building begins to express the kind of architecture in the present. Hartman continues to celebrate the desire for a building to reflect its own time, as most of the structures at Harvard have done. His achievement may not have the power and clarity seen in the works of nearly “masters,” but the complexity of our moment precludes such hierarchies. Hartman’s architectural decisions—weaving the building into its surroundings, creating space for collaboration—are hardware victories in this context. Modern lab buildings are not so much works of architecture as they are machines.

PERSPECTIVES: Architectural Record 11/09

1. As seen looking west through a double-height “living room,” spaces were designed to be flexible and open to the outside.
2. The interior stair case of the “knot” turns circulation space into a dramatic social collector.
3. The underground event space is the most striking of the three, as its external walls are twelve large windows and sur-rounded on three sides by lecture rooms.
4. A view from the laboratory corridor shows the flexibility and repetition nature of the space. The left wall is directly connected to the mechanical space that runs through the center of the structure.