What's COOL in Steel

Always on the lookout for the latest and greatest happenings in the world of structural steel, *MSC*'s editorial staff has pulled together a list of our favorite folks, trends, structures, and more.

cool architect: Rem Koolhaas

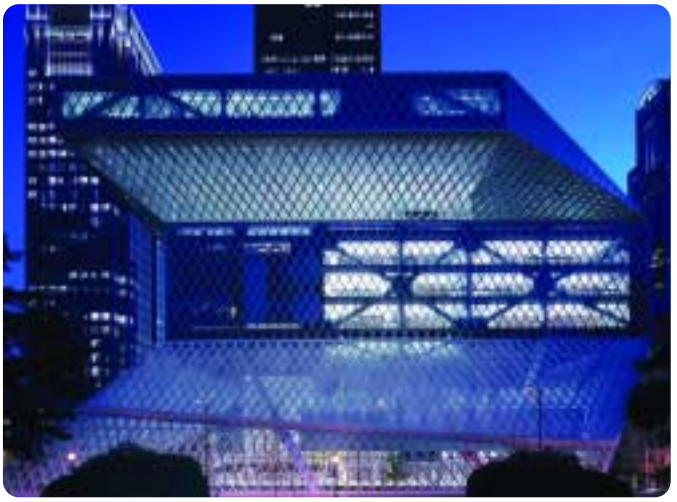
Photo courtesy Sanne Peper

Does architecture shape society, or does society shape architecture? This is one of the key questions that architect Rem Koolhaas has considered throughout his career, whether designing innovative spaces or examining the urban landscape. While the answer might not be clear, it is certain that Koolhaas is creating new spaces in cities around the globe that both affect and reflect the way people interact with the buildings around them.

Structural steel has helped Koolhaas make this happen. For his first two U.S. projects—Illinois Institute of Technology's McCormick Tribune Campus Center and Seattle's new Central Library—he chose steel to frame dramatic and innovative structures.

Koolhaas' design for the Seattle Central Library destroys the idea of a traditional dark, library, that is a cramped, silent maze of inaccessible and dusty books. Instead, the new library exemplifies visual lightness and user-friendliness. Its 11 floors span five main platforms and "in-between areas" that, from the outside, appear to float. The building's gathering spaces and easy-to-navigate collection redefine a library as a place not only for reading and research, but also for conversation and collaboration.

Koolhaas' IIT Student Center is also a building that responds to its occupants while redirecting their activities. Prior to the Student Center's construction, student spaces had been spread around the IIT campus in various buildings. Now, Koolhaas' new structure incorporates them into a unified whole. The 85,000-sq.-ft. single-story facility was built beneath Chicago's elevated train tracks, and includes student areas for dining, campus organizations and informal gatherings. A 530' x 60' tube built around the elevated train tracks lowers the noise volume of passing trains to less than 70 decibels inside of the building.



Seattle's new Central Library combines Koolhaas's architecture and Magnusson's structural engineering into a visually dynamic steel-framed structure. Photo courtesy LMN Architects.

cool engineer: Jon D. Magnusson, P.E.

For Jon Magnusson, chairman and CEO of Magnusson Klemencic Associates (formerly Skilling Ward Magnusson Barkshire), creativity in design is key—especially when it comes to steel. A licensed professional engineer in 23 states, Jon is responsible for the structure of many new steel-framed landmarks, including the Experience Music Project, Key Arena, Benaroya Hall, Safeco Field, Seahawks Stadium, and the new Seattle Central Library. His work also can be seen at the Hawaii Convention Center in Honolulu, where innovative exposed structure "tree columns" mirror local palm trees; the Guggenheim Hermitage Museum in Las Vegas, featuring Cor-Ten steel and a movable roof; and the Panama Museum of Biodiversity in Panama City, where steel design and modeling was performed entirely in CATIA 3-D. In the last five years alone, four of MKA's projects have received AISC Engineering Awards of Excellence.

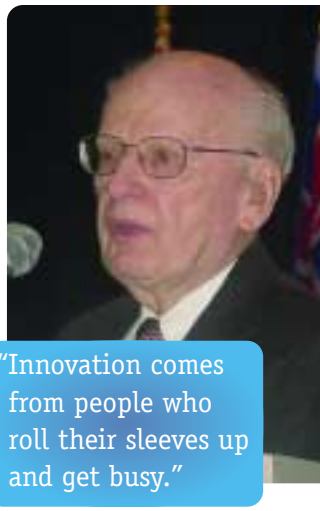
Following Sept. 11, 2001, Jon granted more than 100 media interviews to discuss the future of tall buildings, eloquently defending the viability of structural steel and tall buildings. He served on the American Society of Civil Engineers/FEMA national team to assess the WTC attacks and develop ways to make buildings most resistant to extreme overload conditions. He also has authored papers on building safety, blast protection, and the World Trade Center (check out the March 2003 issue of *Modern Steel Construction*).

Jon hopes the next generation is inspired by his model: In 2001, he established a high school mentoring program to expose students to architecture, construction, and engineering career opportunities. Known as ACE Mentoring—Seattle, the program this year had more than 60 participants and awarded a total of $21,000 in scholarship money.

cool guru: Omer Blodgett

Omer Blodgett, Sc.D., P.E. is a legend in the structural steel and welding communities. A self-described life-long student, the 86-year-old design consultant, welder and educator has inspired engineers and students around the world with his knowledge of welded design and insightful lessons.

At the 2004 NASCC in Long Beach, CA in March, Blodgett received a standing ovation for his "Lessons I've Learned in my Lifetime" presentation. Born into a family of welders, Blodgett began welding by the time he was 10 years old. He worked as a welder, ironworker, and ship builder before becoming a salesman for the Lincoln Electric Company. His 18 lessons about "what they did not teach me in school" summarized some of the practical principles that have guided his career. He reminds engineers, welders and others that they must always strive to educate and challenge themselves—by actively participating in industry discussions, practically applying their knowledge in the field, mastering old technology and keeping an open mind towards what's new.



"Innovation comes from people who roll their sleeves up and get busy."

Blodgett is the author of *Design of Weldments* and *Design of Welded Structures*, which have been in print for more than 30 years and are considered the bibles of welding design. He will be leading an upcoming "Welding Design Seminar," Oct. 12-14, 2004, an intensive three-day program covering essential elements of steel-weldment design for manufactured products. The program is part of Lincoln Electric's Professional Seminar Series, Oct. 26-28, 2004. For more information and to register, call 216.383.2240 or e-mail dorothy_steinbach@lincolnelectric.com.

cool job: Ropelink, Ltd.

Ever picture yourself as Spider-Man, scaling the sides of skyscrapers? That's what Ropelink employees do as part of inspection, maintenance and repair projects around the world. An alternative to traditional inspection techniques, industrial rope access combines mountaineering and caving skills and equipment for industrial use. Workers safely access structures by climbing on suspended or tensioned double-static ropes. They can move up, down and sideways, quickly, with minimal equipment, and with no damage to structures.

For steel-framed structures, Ropelink professionals can handle weld-inspection and emergency repairs of difficult-to-access areas, like roller coasters and the undersides of bridges. Skylights, telecommunications towers, and the cables of cable-stayed bridges also are areas that they can tackle. In addition, rope access can be used to install fall-protection systems for high-rise projects; to install platforms for long-term bridge repairs; and to install advanced curtain-wall systems.

Rope-access systems can be assembled and dismantled quickly to accommodate project constraints, can operate independently of site conditions, and do not disrupt adjacent work areas. Because they permit hands-on, close-up inspections, rope access often is used for façade inspections. Towers, bridges, antennas, masts, chimneys and offshore structures are all appropriate for rope access.

Ropelink offers training for engineers, architects, technicians, and contractors. Candidates should have a positive attitude, be physically fit, and free from any disability that could prevent them from working safely at heights.

Most importantly: is it scary? "What we do is no different to what workers building a high-rise structure do," said Hamid Vossoughi, P.E., Director of U.S. Operations for Ropelink. "Our personnel has knowledge, experience, and training. What we do, we do in a calculated way, so there is nothing to be scared about."

For more information, visit www.ropelink.com.

cool bridge: Millennium Park Pedestrian Crossing

The new pedestrian bridge linking Chicago's Millennium Park to the City's lakefront is a steel-framed visual treat. The bridge snakes across Columbus Drive in a complex curvature with a superimposed cladding system similar to an enclosed building. The approximately 100' two-span bridge is framed in structural steel supporting a reinforced-concrete slab walkway deck. Due to the structure's slender profile, a vibration analysis was performed to minimize the effects of vibration from pedestrian walking motions. The steel fabricator completely pre-assembled the entire cantilever trusses and central box-girder span in the shop. The Columbus Drive crossing was erected in a single weekend, with two welded air splices performed in the field.

cool press release:

Spider Power

Modern Steel Construction receives hundreds of news releases each month, but this one really caught our eye. To promote the movie "Spider-Man 2," a 60'-by-30' inflatable Spider-Man was suspended from the façade of the arcade of New York City's Sony Building. LZA Technology, a division of The Thornton-Tomasetti Group, provided structural engineering services for the installation, designing special attachments for the web of cables that secured Spider-Man to existing vertical trusses. LZA's structural super-powers also helped affix a second Spider-Man to the front of an apartment building in Union Square.

cool structural system:

Steel Plate/Composite Column/Shear Walls

Seattle's new Federal courthouse has a feature most people will never see: a steel plate/composite column/shear wall (SPCCSW). The courthouse's SPCCSW system was under development for decades, and in its culminated form is the first of its kind. Magnusson Klemencic Associates collaborated with NBBJ Architects, the Canadian Institute of Steel Construction, University of California-Berkeley and the General Services Administration in its application on the new U. S. Federal Courthouse. The SPCCSW initially was designed to provide resistance to gravity, wind, and earthquake forces, although other performance benefits are inherent. The system includes thin structural steel plates and rolled shapes, large-diameter steel pipes, and high-strength concrete arranged within the building's core. Inelastic drift for the SPCCSW system was measured at 3.3 percent, significantly better than other structural systems. The SPCCSW is economical and fast to build. It is a tool to create buildings with thinner core walls that consume less building space. The concentration of the lateral-force resistance in the core frees the exterior for more windows, horizontal articulation, and building setbacks.

cool building retrospective:
Soviet Pavilion, Montreal Expo '67

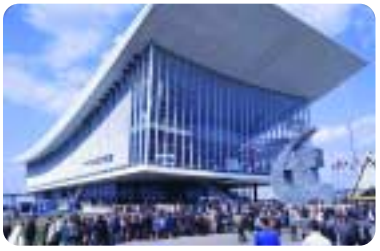


Photo courtesy Library and Archives Canada

Thirty-seven years ago, the Soviet Pavilion debuted at the Montreal World's Exposition. Today, it is at home in Moscow—after it was disassembled, transported, and reassembled there. The 140,000-sq.-ft hall's four-point supported roof structure is the largest of its kind ever constructed. The light, airy and modern building was built partially in honor of the 50th anniversary of the Russian Revolution of 1917. Inside, exhibits focused on the country's history, way of life, agriculture and industry.

The roof, shaped like a ski-jump, rises to nearly 190' high. It consists of two longitudinal edge girders supporting crossbeams. Two enormous V-shaped structural steel frames act as columns, supporting the crossbeams. The roof structure suspends the outside bays of floor slabs with structural hangars, which also functioned as framing members within the curtain-wall system. Steel post-and-beam systems support the floors.

The two-story building has multiple terraces on its North end. At the Expo, it contained an exhibit hall, a 6,000-seat movie theater, and the 1,100-seat *Moskva*, the fair's largest restaurant. The building featured dozens of Sputnik and other air and spacecraft. One popular attraction was a copy of the space capsule that, in 1961, carried the first man into space. Also heavily trafficked was the spherical 60-seat Cosmic Hall, which simulated a space flight.

Curious to learn more about the Soviet superpower, about 13-million people visited the U.S.S.R. pavilion, more than any other at the Expo. Unfortunately the crowds brought to light an unsolved design aspect of the structure: continuous vibrations could be felt in the pavilion due to improper isolation.

cool web site:
Emporis.com

So you're looking for a high-rise in Sri Lanka, and you need an architect in Peru. You want to check the progress of a condo construction in Houston, and you're curious about Russian real estate. Where do you go?

Formerly known as www.skyscrapers.com, www.emporis.com, allows you to explore the buildings of the world—without leaving your office. The site profiles more than 87,000 structures, and includes information on international design and construction, and relevant businesses and consultants.

Building profiles include location and dimension information; construction dates; owner, contractor and supplier names; and facts about architecture, history, and more. Photos accompany most profiles, and the web site boasts more than 100,000 new photos annually. Emporis.com also features a database of more than 21,000 building-industry professionals, which you can search by type ("steel supplier," "asset managers") or by location.

A "Building News" section describes current building activity and industry trends. Browse interviews with "decision makers"—politicians, engineers, architects, and developers—on topics like security, real estate strategies, and up-and-coming ideas.

Click on the names of cities and countries for regional information, including architectural histories and new developments. Zero-in on particular urban zones, with building statistics and photos of works-in-progress.

You can also research tallest buildings by type, country or continent, and find out which cities have the most per-capita skyscrapers. How does your town measure up to the top skylines in the world?