

# Reaching for the Stars

BY SCOTT MELNICK

Contemporary architectural press covers architects with great fanfare—but where are the “Star-Engineers” that make their projects possible?

**WHILE FRANK GEHRY, RAFAEL VIÑOLY, AND REM KOOLHAAS ARE ALL HOUSEHOLD NAMES,** you’d be hard-pressed to come up with a living structural engineer who has the same acclaim. Leslie Robertson, Larry Griffis, and Jim Fisher are widely recognized within the engineering community, but despite winning numerous and prestigious awards, are unknown to the general public. The “Starchitects” are well recognized; where are all the “Star-Engineers”?

After yet another perceived slight in a *New York Times* architecture review, Irwin Cantor (one of the name principals behind the well-known New York structural engineering firm WSP Cantor Seinuk) wrote a letter of complaint to that publication: “The

ability of a structure to resist gravity, wind, and earthquake are not primarily architectural functions,” he stated. “Rather, they are engineering functions marrying the art and science of structural engineering with the availability of higher strength materials, which is turning these architectural aspirations into reality.”

Cantor’s point is that in most press coverage of the built environment, it is the architect who is credited with the design of the structure and the structural engineer is routinely ignored. As a result, the readers of these articles get a false perception of design and innovation.

“Whether it be the Hearst, [New York] Times, or the Bank of America Tower in New York City, or any of the ever-more soaring structures throughout the Middle and Far East, these ‘atavistic preoccupations with celestial heights’ could only be realized by the intimate collaboration of the architect and his structural engineer,” Cantor continued. “Not to recognize the latter diminishes the integrity of the former.”

Cantor’s feelings are not uncommon in the structural engineering profession. “[His] comments are on the mark, but don’t go far enough,” stressed Ronald O. Hamburger, senior principal with Simpson Gumpertz & Heger in San Francisco. “It is not just the unusually shaped or super-tall building, but virtually every structure, that is a result of successful collaboration between the architect, the structural engineer, and other talented design professionals. However, I am afraid the public will never come to recognize the efforts of structural engineers in the same light as that of architects. The fault is not the public’s or even the architect’s, however, but rather structural engineers themselves. As a profession, we tend to be reclusive and uncommunicative, and seldom brag about our achievements. I once heard a joke that went: ‘How do you tell an extroverted engineer from an introverted one? The extrovert looks at your shoes when he talks to you, instead of his own.’ Structural engineers need to stop blaming others for their own failure to publicize their achievements, and do something about it. Let’s be more vocal about our own achievements and those of our profession!”



**Irwin Cantor**, WSP Cantor Seinuk, New York



Nearly everyone has heard that New York’s critically acclaimed Hearst Tower was designed by architect Norman Foster. But who was the structural engineer?

### Engineering as a Commodity

Of course, not every structural engineer agrees. “Architecture critics (and architects) actually do recognize the importance of structural engineering; they know that today’s spectacular architectural forms owe their existence to modern structural materials and techniques,” stated R. Shankar Nair, a principal and senior vice president with Teng & Associates in Chicago. “But the critics (and many architects) also think of structural engineering as fungible, a commodity—an important and valuable commodity no doubt, but a commodity nonetheless—one that could be obtained interchangeably from any qualified source.”

“Everyone understands that two architects given the same design challenge might come up with two very different solutions,” Nair added. “It is not nearly so clear that the choice of structural engineer makes a difference. Most architects today use the structural engineer not as a collaborator to help develop the form of the building, but as an enabler whose function it is to make the architect’s vision work in steel and concrete. Would any of Frank Gehry’s buildings look very different if he had used a different (but equally competent) structural engineer?”

“Probably not. The vision is the architect’s, turned into reality by the engineer, and the critic can be forgiven for crediting the architect alone for the form and character of the building. Yes, a good structural engineer was required for the success of the project, but so were good welders and brick-layers.”

“There are exceptions, instances of true collaboration between architect and structural engineer,” continued Nair. “The architectural designs of the Sears and John Hancock buildings in Chicago would not be what they are if Fazlur Khan had not been the structural engineer, collaborating with architect Bruce Graham. But these are exceptions. Sadly, for structural engineers who would like to see their names in reviews, the architecture critics are usually right to credit the architect alone for the architectural designs of most buildings.”

Nair’s opinion is echoed by Paul Goldberger, who received a Pulitzer as the *New York Times* architec-



**Ronald Hamburger**, Simpson Gumpertz & Heger, San Francisco

tural critic and who now writes for the *New Yorker*.

“While mentioning structural engineers in the context of architecture reviews is rare, it has happened,” Goldberger said. “I recall that the engineer Fazlur Khan was credited along with Bruce Graham for the design of both the Hancock Center and the Sears Tower in Chicago—an attribution that I suspect was encouraged by Skidmore, Owings & Merrill, since Khan was a partner in the firm. I suspect that if Khan had lived longer and done more conspicuous projects, the same kind of joint attribution would have continued, and it might have encouraged a broader willingness to mention structural engineers.”

“In general, however, structural engineers function as consultants, and it is usually not a practice to mention consultants, since a full list can often be as lengthy as the credits in a film. (To Irwin Cantor’s argument that it would be impossible to realize the architect’s vision without the structural engineer—which is altogether correct—I suspect that the zoning lawyers, the lighting consultants, environmental consultants, and the bankers might all say the same about how vital their work is to getting the building built.) And we might well ask: If the structural engineer is to be considered equal to the architect, then why doesn’t the client hire the structural engineer first and let him select an architect as his consultant?”

Steven Litt, art and architecture critic at the *Plain Dealer* in Cleveland, agrees. “The premise seems to be that without engineers, architects would be unable to create their highly expressive structures. I’m not sure that’s always the case. There must be a variety of possibilities, ranging from a true and equal collaboration between an architect and an engineer to situations in which the engineer provides a standard service in ways that would make different practitioners interchangeable.”

### A Matter of PR

The issue of perception is critical to any discussion of this topic. “I have mixed views on this subject,” commented David Scott, current chair of the Council on Tall Buildings and Urban Habitat and a principal at Arup’s New York office. “However,



**R. Shankar Nair**, Teng & Associates, Chicago

I certainly feel that engineers are under-recognized in the media, and the general public does not really understand what we do. This issue has been around for many years. Yet today, more than ever, there is a growing band of Starchitects, but very, very few Star-Engineers. I think that part of the problem is that the media love the cult of the personality and so when Frank Gehry does a



**Blair Kamin**, *Chicago Tribune*

project, they like to focus on Frank as the maestro, rather than the 300 or so talented people in his organization who may have contributed to the project. Perhaps it's because as engineers we are trained to be realists and we tend to recognize that we can achieve very little without a strong and talented team. However, considering the engineering challenges associated with designing the Burj Dubai as the world's tallest building, which will be 50% taller than any existing building, it is a reflection of the engineer's status that Bill Baker [has] very limited exposure."

"When it comes to publicity, I don't necessarily think that we engineers are any more modest than the architects we work with. However, as lead consultant the architect has more opportunity to interface with the press and can often decide where to focus their attention, whether it be aesthetics, engineering, or sustainability. I think that we need to educate the press so that they can delve deeper into



**Ahmad Rahimian**, WSP Cantor Seinuk, New York

understanding what goes into a building so that they want to ask engineers about what we have done."

Of course, some architectural critics pride themselves on doing just that. Blair Kamin, the Pulitzer Prize-winning critic for the *Chicago Tribune*, is one of these, and he offers a series of stories he wrote back on August 18 of last year on supertall skyscrapers as evidence (<http://www.chicagotribune.com/entertainment/chi-070817tall-story,0,6407755.story>).

"Perhaps some of my colleagues ignore engineers because they don't understand the complexities of engineering or prefer to focus solely on aesthetics," Kamin stated. "But in Chicago, where the tradition of collaboration between architects and engineers has been long and fruitful, we recognize that you cannot fully understand a building without also understanding the crucial interrelationships between space and

structure, economy and engineering, not to mention firmness, commodity, and delight." (If you don't recognize the last part of his comment, you're not an architect. It's a quote from the ancient Roman architect Vitruvius and has been adopted by the architectural community as their mantra; the words even appear on the reverse side of the Pritzker Award medal.)

But Kamin is probably the exception. "I hear from general contractors more than structural engineers wondering why they were not credited," said Robert Campbell, the architectural critic at the *Boston Globe*. "The problem from my end is that there are always, or almost always, many significant collaborators on any building—not only the official team, but clients, public and private agencies, consultants of all kinds, future users, owners, some bright new kid in the architect's office, who knows. It isn't easy to sort out who did what (everyone gives it a personal spin), and even if I could, I wouldn't have any room to list them, nor would such a list be of much interest to the general public for whom I'm usually writing. So I settle for naming the design architect and, usually, the architect of record if that's someone different. I have to assume that everyone knows architecture is collaborative."

### Outgoing vs. Shy

Arup's David Scott thinks a lot of the problem is one of personality. "Unlike architects, our livelihood is much more influenced by our company reputation as perceived by other building professionals, such as architects and developers, rather than architects whose future can depend on the reviews of their work, media interest, and public awareness. It is therefore not surprising that some of them can be real media hounds and forget all about their engineers. As a structural engineer

I would like to be recognized for what I do. But what I do on a project varies enormously, as it does for any engineer. I would like to say that all my best engineering has been on the most beautiful buildings I have worked on. Interestingly, quite a lot of it is, because the best design comes from a true collaboration with an architect and engineer who have both great ideas and a client who is clear

**"As a profession, we tend to be reclusive and uncommunicative, and seldom brag about our achievements."**

about what he wants. But you can also do innovative and exciting engineering on industrial and plain or ugly buildings. And if the design brief is fudged, or the architect will not collaborate, then you can still get some very nice buildings with mediocre or poor engineering. It's difficult for people to tell them apart. And I guess that engineers will only have the same profile as architects if we had some engineering critique of buildings that would slam poor concepts, overdesign, inefficiencies, or bad detailing."

It's a very touchy subject. "None of us want to alienate our clients, and it's hard to 'demand' recognition," stated Edward M. DePaola, president and CEO of engineering firm Severud Associates in New York. "I know we've 'earned' it, but now the key is to get the client to 'recognize' it."

And it may be as simple as the perception of an architect as an ego-driven extrovert and the engineer as the bookish introvert. "I think it boils down to who has the better communication skills, architects or engineers," elaborated Dorothy Shinn, art and architecture critic at the *Akron Beacon Journal*. "Whenever I write about a new building, I ask who to talk to, and I'm always steered toward the architects (or the architects' PR staff). This is probably because architects usually come equipped with a certain PR sense and know how to schmooze the client (and therefore the press). Once in a while, however, I do talk to engineers, and I have to tell you, getting descriptive language out of an engineer is a challenge. I sometimes feel

as though I've called the county sheriff instead of someone who's perfectly free to talk about the subject at hand. If, however, I do happen to get an engineer who is able and willing to talk to me about a certain project, I have found a certain amount of superiority/impatience with those who aren't as conversant with all the structural, metallurgical, and mathematical fine points and jargon as they are. I would say, then, that engineers, generally speaking, lack good communication skills, and therefore would be much more likely to benefit from the services of a public relations representative than architects, who tend to have both the skills and the reps."

Shinn's perceptions seem common among the architectural press. "I rarely write about skyscrapers, since the last one built in Cleveland went up in 1991," added the *Plain Dealer's* Steven Litt. "As for the art museums or other building types I cover, the answer would be that architects claim credit, and contributing engineers rarely or never ask for it. It would be interesting to know why they're so modest. Is it the culture of engineering? Do we have a culture among engineers in the U.S. in which teamwork is prized over individual authorship? Could that be a reason for the lack of recognition you describe?"

### Credit Where Credit is Due

Whether it's a focus on teamwork or the lack of public relations savvy, the fact remains that few structural engineers receive recognition. "Of course I like to see architects who respect and recognize their engineers," said Scott. "There are very few buildings where engineers really shape, inform, and influence a design in a fundamental way, and when they do this, then they deserve equal billing with the architect. I have seen architects do this a few times, but not nearly enough. For bridge structures, engineers more than deserve this equal billing. When I lived in Hong Kong I led the design work on the Cheung Kong Footbridge, which in my view is one of the nicest footbridges in the world. It won several



**David Scott,**  
Arup, New York;  
Chair, Council on  
Tall Buildings and  
Urban Habitat

awards for engineering and aesthetics, and we were recognized as engineers with the architects Leo Daley and Cesar Pelli. Yet I have always been reticent to say publicly that this is my design, despite me having as much influence on the aesthetics as the architect. That's because I am an engineer and we do not like to speak out on aesthetics. At another extreme, two summers ago I went to see 'Foster's' Millau Viaduct in France. It has truly wonderful aesthetics, but I was stunned in the visitors' center when I could not find out the name of the structural engineer."

And that lack may sum up the problem. "I think there are multitudes of factors including, not the least of it, human psychology," explained Ahmad Rahimian, a principal at WSP Cantor Seinuk. "But without getting into that, I think

**"I think that part of the problem is that the media love the cult of the personality..."**

the press and the architectural critics know in general what we do and what our role is; however, they don't have an understanding of intricacies of [the] challenges that we are facing in reconciling the too-often conflicting aspiration of architecture with economic realities and construction capabilities, not to mention the laws of nature."

"I feel sometimes that society's awareness about the science and engineering has not improved a bit from the late nineteenth century, when many people discouraged Max Plank from studying physics since they believed 'everything was discovered and known already, and there is nothing to be discovered so he shouldn't waste his life!' I guess they now think in our field, everything [that] needs to be known is already known, thus our contribution to a project is mundane and clerical in nature rather than creative with a minefield full of challenges, which quite often requires pushing the boundaries of knowledge."

"The irony is they very well know who to call when something somewhere goes wrong; whether [it] be a bridge in Minnesota, a hotel in Kansas City, a Shuttle in space, or another strong earthquake in one of the major cities. Unfortunately, those

are the only times that the engineers are taking the spotlight from the architects: when something has gone wrong!"

Jon D. Magnusson, Chairman and CEO of structural firm Magnusson Kle-mencic Associates in Seattle, agreed, and added that the same holds true in many industries. "The conductor gets credit... but never plays a single note. The head coach gets credit... but never is in the game. The actor gets credit...but did not



**Jon Magnusson,**  
Magnusson Kle-  
mencic Associates,  
Seattle

utter a word of his own. The architect gets credit...but doesn't know how to make his design stand up. It is just the way the world works. And it is not necessarily bad, because many times the musicians, payers, writers, and engineers would never get the same result without the person that pulls it all together to make it happen."

"Probably the ultimate test of 'credit' should be when things go bad, rather than when things go well. When an architectural design is successful, an engineer might be tempted to say, 'Couldn't have done it without me.' However, if the architectural design is not successful, that same engineer would probably say, 'Not my fault.'"

"Yes, many times engineers are essential to the creation of architecture, but the architect is the leader and has final responsibility for the overall design, and thus, should receive the most credit—or blame."

Concluded Rahimian: "I share [David Scott's] sentiment in our collaboration with architects: Our true reward is when we work in a collaborative manner, which usually will result in creating projects with body and soul (structure and architecture) in harmony, respecting the forces of nature." MSC

*What do you think? E-mail your thoughts to [mehnick@aisc.org](mailto:mehnick@aisc.org) or post a comment at [www.modernsteel.com/readerfeedback](http://www.modernsteel.com/readerfeedback).*