

John Ochsendorf: **The absence of debate**

The Beijing Olympic Stadium, or Bird's Nest, serves as an illustrative point: the construction of the stadium used dramatically more steel than most designs and perhaps as much as ten times more steel than some equivalent stadia. In an age of limited resources and concern for climate change, it is astonishing that the wastefulness of the Bird's Nest did not provoke more debate in the architecture and engineering community. In order to make a bold architectural statement, perhaps two or three times more steel than usual could conceivably be used, but could it be justified to use ten times more steel than most other stadia? Such a wasteful structure did not stimulate debate, primarily because embodied energy and carbon are not part of the dialogue in the design community. The absence of this debate highlights the fact that there is a basic need for increased literacy on material consumption in the built environment.

After two days of intense discussion at the 2014 Holcim Foundation roundtable, three broad needs emerged:

Improved metrics: As a design community, we cannot improve what we cannot measure. The state of literacy on construction materials and their environmental impacts is very poor at present, whether on the scale of a single building, a neighborhood, a city, or a continent.

Inspirational Precedents: Many design ideas and technologies are available today to create buildings with dramatically lower carbon emissions, and numerous inspirational precedents have become a reality in recent decades. However, the wider dissemination of such designs is essential for dematerializing the construction industry.

Breakthrough Technologies: For all of the recent gains, there is a need for dramatic improvements in construction materials that can work at scale. We must find ways to use materials more judiciously, and the planet requires materials with dramatically improved performance for lower environmental impact.

The Holcim Foundation has helped to support each of these three areas, but much remains to be done. Making profound change in the use of construction materials will require a concerted effort by industry, design practices, academia, and government.

The pressing need to minimize climate disruption requires near-term stabilization of greenhouse gas emissions. Each ton of greenhouse gas emissions avoided in a construction project is of immediate benefit not only to the project and the project stakeholders, but also to the globe. The International Panel for Climate Change (IPCC) has identified buildings as the most cost-effective route to carbon reductions. To help incentivize market-based solutions, policy-makers must provide a framework for developers and businesses to work within. In the absence of consistent carbon pricing on a global or national scale, designers and researchers are well-poised to identify carbon reduction strategies. And at some point in the future, it will not be viable for a building to consume ten times more steel than other equivalent structures without provoking debate.



Beijing National Stadium (Bird's Nest), Beijing, Herzog & de Meuron Architects.