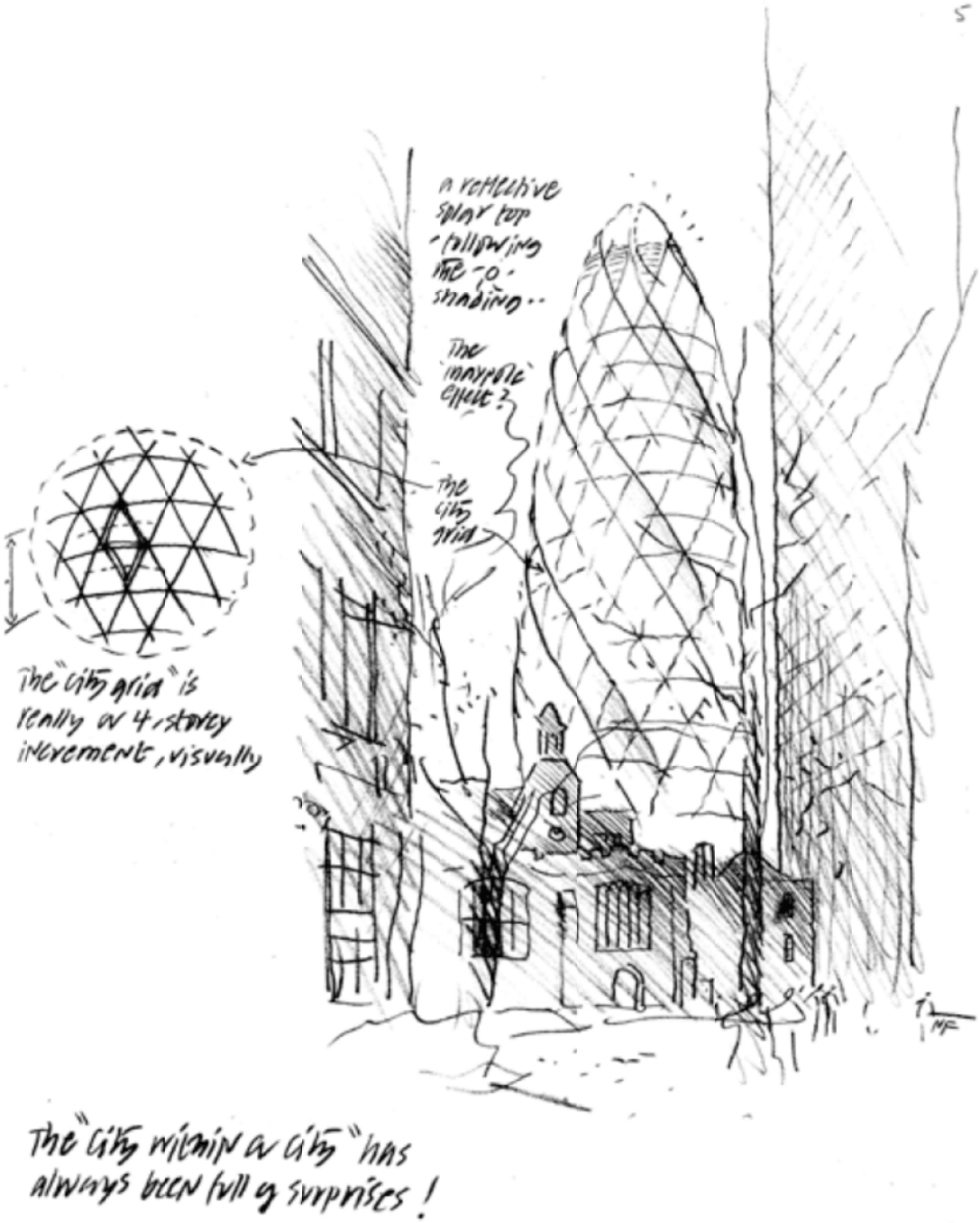
DIAGRID: NOT A RECENT IDEA

by

Howard Hershberg, AIA



SOURCE: Diagrid: Structural Efficiency & Increasing Popularity by Ian McClain

The word "Diagrid" is an abbreviation for diagonal grid. The identifying trait of a Diagrid is the triangle. Over the last several years something new has been brewing in the architectural and structural engineering fields. This is not a new structural discovery or system. However, its implementation in projects since 2003 has been unprecedented.

What is Diagrid? Yoram Eilon, Vice President of WSP Cantor Seinuk, and the structural engineering manager on the Hearst Tower in New York City, defines Diagrid as "a series of triangles that combine gravity and lateral support into one, making the building stiff, efficient, and lighter than a traditional high rise." By utilizing the Diagrid exoskeleton one can reduce interior supports. This saves space and building materials, allows naturally broad apertures, and provides flexibility for systems installation. Because of Diagrid's ability to change by varying the bases and heights of the triangles, it is one of the most flexible building types known to man.

SOURCE: Diagrid: Structural Efficiency & Increasing Popularity by Ian McClain

The foremost developer of the Diagrid was the famous inventor, architect, and engineer, R. Buckminster Fuller, who stated, "Nature's own system of coordination is based on the triangle. Provided its joints are strong enough, the triangle doesn't collapse due to pressure being applied at any one point, as each side is buttressed by its neighbors." Mr. Fuller elaborated his triangular concept into buildings of all kinds, notably in his tensegrity and geodesic structures.

An example of the use of the Diagrid is the Swiss Reinsurance Building (The "Re") in New York City (NYC). It was designed by Norman Foster Architects to "read Green." The legibility and openness of the Diagrid fitted the bill exactly.

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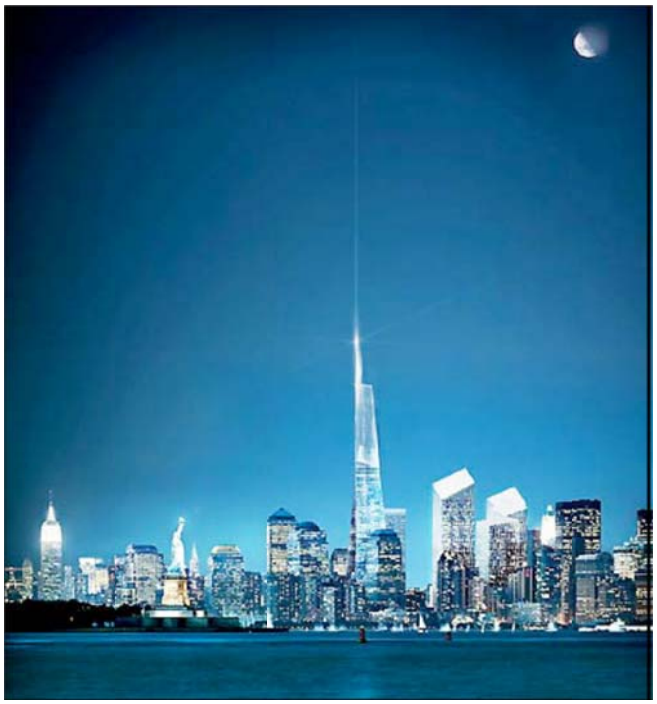
Ever since the violence and destruction that brought down NYC's World Trade Center (WTC) on September 11, 2001, structural systems and buildings that signal structural sustainability, relative indestructability, and safety are of great importance to society. These are also paramount reasons for the popularity and proliferation of Diagrid buildings today. In fact, Diagrid is featured in the submissions to the WTC Competition. Below are the Libeskind submission and the Foster submission to the WTC competition.



A model of the proposed Freedom Tower shows the latticework effect of a structural diagrid.

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The Louisiana State Energy Office (SEO) disseminates information about energy efficiency and sustainable construction. The information includes articles, facts, products, and applications being proposed, designed, and used by the building industry. For more information about Diagrid, see Diagrid: Structural Efficiency & Increasing Popularity, by Ian McCain (www.dsg.fgg.uni-lj.si/dubaj2009/images/stories/Diagrid%20tehnologija.pdf, accessed 11/8/2011).