

Math in Architecture

(and shapes and curves and other interesting things that seems to relate)



ETH, Zürich, Switzerland.

intuendo: to look at attentively, gaze at, consider.

meditatione: practice, preparation, getting ready / consideration, pondering.

experimento: to try, test, experience, prove.

constantia: steadily, firmly.

impeto: to attack, head for. (not in picture)



The Parthenon, Athens, Greece.



Santa Maria Novella, Florence, Italy.



A Church, Ia, Santorini Island, Greece.



Lutheran High School, District VII, Budapest, Hungary.



Loggia dei Lanzi, Piazza della Signoria, Florence, Italy.



Palace Ruins, Visegrád, Hungary.



Máttyás Templom (St. Matthew's Cathedral), Budapest.



Stephansdom (St. Stephen's Cathedral), Vienna, Austria.

What I understand here by beauty...is not what the common man generally understands by this term as, for example the beauty of living things and their representation. On the contrary, it is sometimes rectilinear ... and circular, with the surfaces of solid bodies composed by means of compasses, the chord, and the set square. For these forms are not, like others, beautiful under certain conditions; they are always beautiful in themselves.

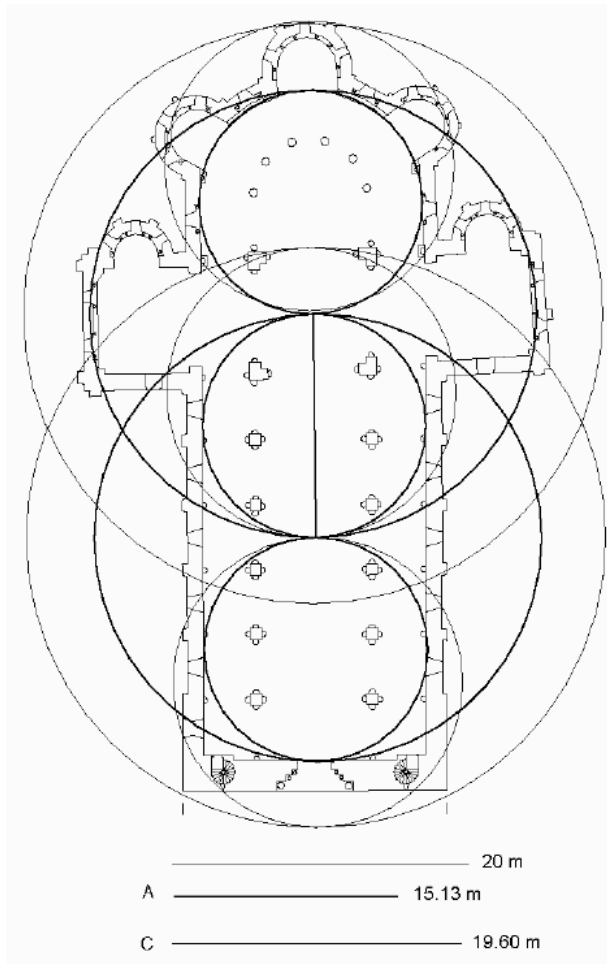
– **Plato**, Philebus



Hungarian Yurts (middle ages), Ópusztaszer, Hungary.



Santa Maria del Fiore, Florence, Italy.



Saint-Étienne de Nevers, France.
(drawing by Marie-Thérèse Zenner)

Philosophy is written in that grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language...in which it is composed. It is written in the language of mathematics, and its characters are triangles, circles and other geometric figures.

– **Galileo**, *Il Saggiatore* [The Assayer], 1623



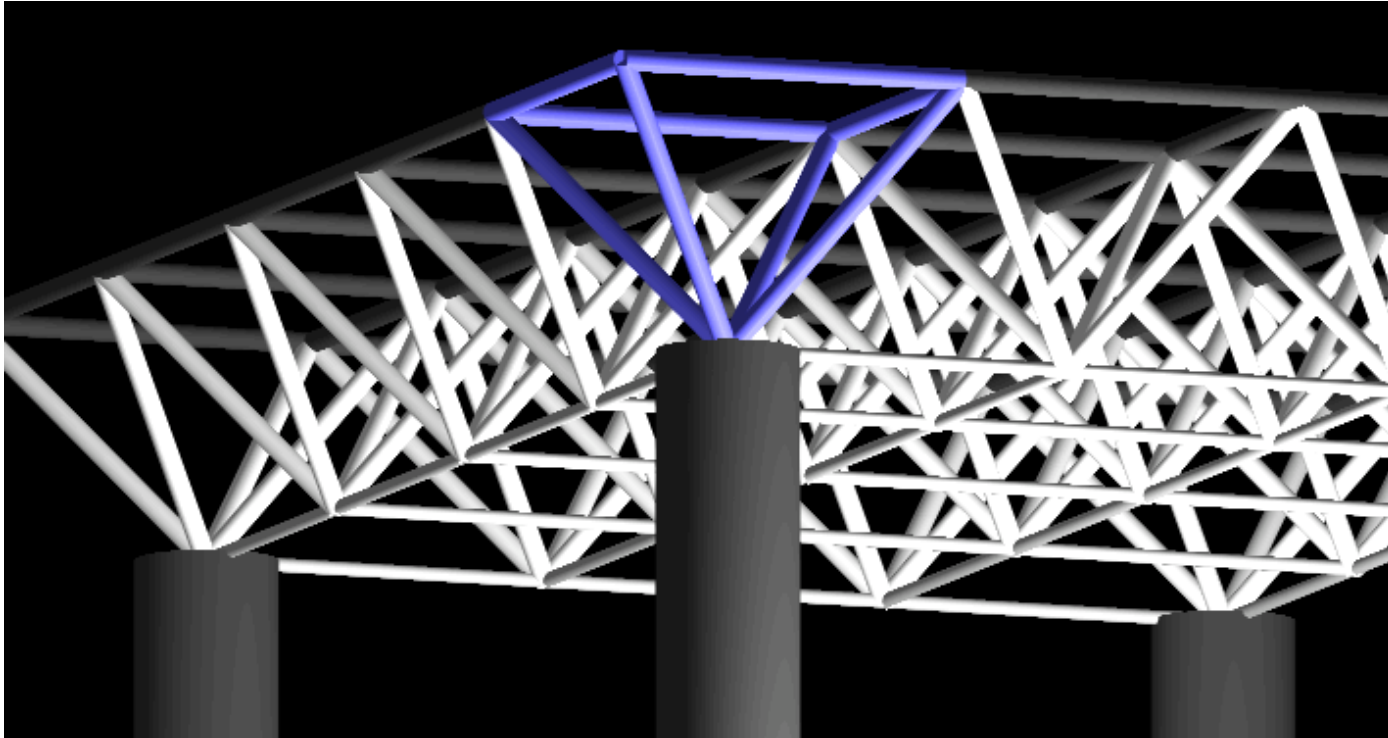
Hungarian Yurts (middle ages), Ópusztaszer, Hungary.



Glassblower's Hut, Western Africa.



Telus Sphere, Science World, Vancouver, Canada.
(photo from Wikipedia)



Fuller's Octet Truss. (photo from Wikipedia)



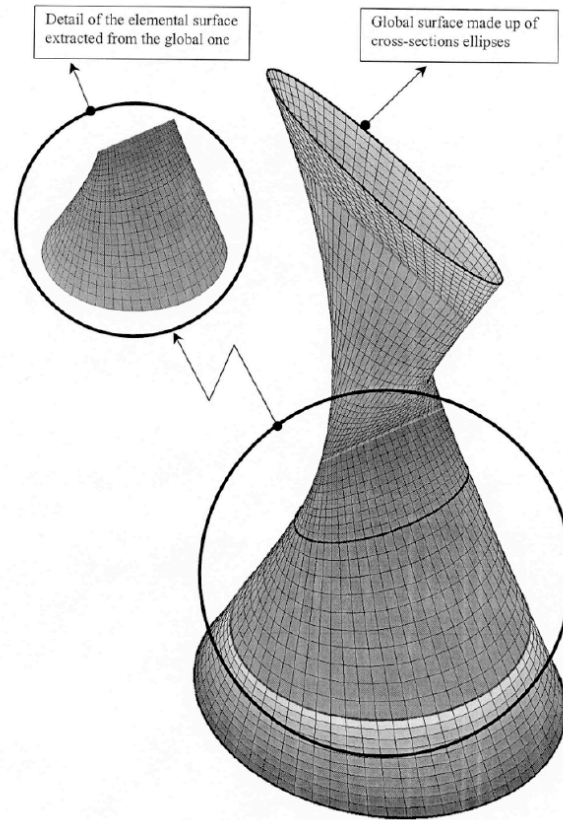
Applied Science Building, Simon Fraser University, Burnaby.



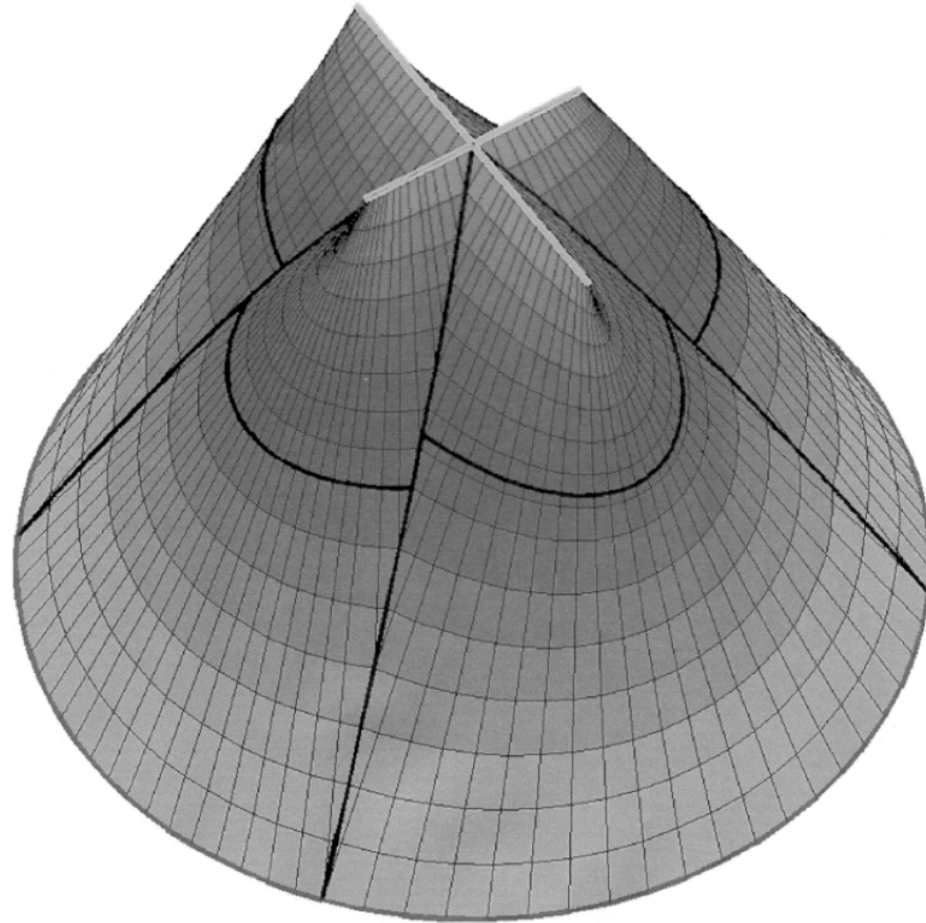
Fuller's Soccer Ball. (unknown photographer)

Mathematicians have a clear and consistent idea of what is beautiful in mathematics and use the term freely. For them, the beauty of mathematics is very similar to the beauty one finds in abstract art or architecture, or in music. Yet these latter disciplines have the advantage of producing works which are directly perceived by the senses and therefore are called beautiful by the public at large. The mathematicians feel cheated: their beautiful toys receive no praise or applause except by their tiny community of peers. But the people who are really cheated are the non-mathematicians who have not been taught that there is beauty in mathematical abstraction too.

– **David Mumford**, *Mathematics belongs in a liberal education*, Arts & Human. in Higher Ed., 5(1) 2006, p.28



Figure, (Zorraquino et al.).



An Alternative Design Project for Rio e Janeiro Metropolitan Cathedral, (Zorraquino et al.).



The Guggenheim Museum (Frank Lloyd Wright), New York.



The Disney Concert Hall (Frank Gehry), Los Angeles, USA.
(photo from Wikipedia)



The Guggenheim Museum (Frank Gehry), Bilbao, Spain.
(photo from Wikipedia)



Nationale-Nederlanden Building, Prague, Czech Republic.

Most of the arts, as painting, sculpture, and music, have emotional appeal to the general public. This is because these arts can be experienced by some one or more of our senses. Such is not true of the art of mathematics; this art can be appreciated only by mathematicians, and to become a mathematician requires a long period of intensive training. The community of mathematicians is similar to an imaginary community of musical composers whose only satisfaction is obtained by the interchange among themselves of the musical scores they compose.

– **Cornelius Lanczos** (Quoted in H. Eves, *Mathematical Circles Squared*, Boston, 1972)