

Form

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Form & Matter: the shape of things & the material it's made of

- Everything that physically exists has both
- The idea that form & matter are separable is central to architectural theory
 - The Naiku Shrine at Ise in Japan proves a striking illustration of this relationship



Separation of Form and Matter

- One way form & matter are separate in architecture is through design
 - essence of architecture is capturing design on a convenient medium, giving precedence to form over matter
- **De re aedificatoria**, by Leon Battista Alberti, is the earliest & most important architectural treatise, written in the 1450s

Drawings and Design

- There are many types of architectural drawing, the most fundamental distinction being between drawing something that already exists & designing something new

Two Types of Design Drawing

- Those that give an impression of what the building will look like, typified by perspective
- Those that are drawn accurately to scale, typified by so called “orthographic” drawings: plans, sections, & elevations

Harmonics and Proportion

- Most buildings are complex objects, collections of forms.
 - These forms are **structural**, **functional**, **ornamental**, or a mix: columns, beams, roofs, walls, buttresses, rooms, doors, windows, ect. . .

Harmonic Proportions

- **Harmonic Proportion**: 1:2 numerical ratio; named due to corresponding to musical harmony
- **Musical harmony**: explained with physics & mathematics—the ratio between the lengths of the strings corresponding to the ratios between the frequencies of vibrations of the strings
- New breed of intellectual artist/architect of renaissance, aware of concepts of harmonic proportion, wanted their building to participate in the **cosmic harmony** that regulated the universe
- **Proportion**: in architecture is mainly a question of aesthetics

The Problem of Perspective

Harmonics and Perspective

- **Visual Harmonics:** distorted by effects of perspective
- **Doppler Effect:** pitch distortion caused by the relative movement that can heard every time cars drive past; almost imperceptible before motorized transportation
- **Perspective:** 1413; invention of this new drawing technique allowing more accurately depicting the world as humans see it
 - Before perspective, objects were positioned according to symbolic significance

Proportional Systems

Natural Ratio

- **PI:** 1.6180339887, is irrational & has some extraordinary qualities attributed to the rectangle 1: π
 - Rectangle said to be most pleasing to human eye of organic growth
 - Rectangle called "*golden section*"

Two Types of Proportional Systems

- Harmonic system: characteristic of the Renaissance architecture
 - Commensurate: meaning it consists essentially of rectangles formed by whole numbers of squares
- Geometric system: which may have been used in ancient & medieval periods
 - irrational: although simple in construct, it produces awkward & unwieldy numbers