

# Architecture and Urban Design Fundamentals

B.S. **Architectural Engineering** 1984 (U. Texas, Austin)

M.Eng. Engineering Science 1992 (Penn State)

Ph.D. Electrical & Computer Engineering 1994 (U. Delaware)

*Plus 2 years (39 credits) of **Urban and Environmental Design** (U. California, San Diego)*

*Ten years of **Architectural experience** in Texas, California, and Pennsylvania*



# Architectural Vocabulary

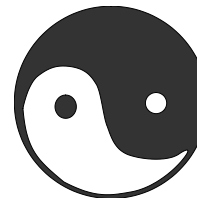
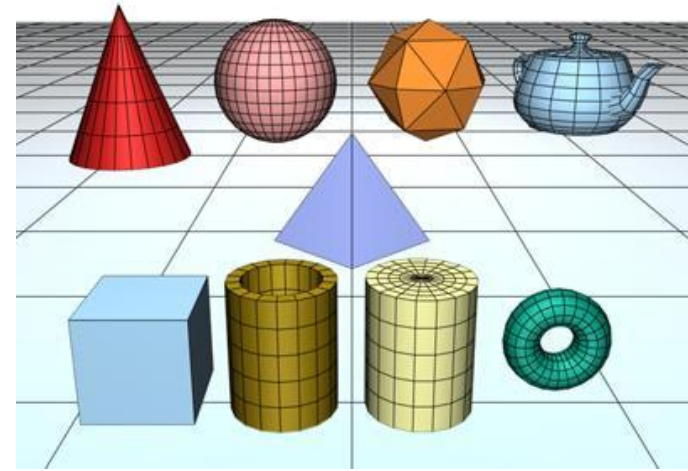
- ▶ Form
- ▶ Scale
- ▶ Behavior
- ▶ Context
- ▶ Proportion
- ▶ Balance
- ▶ Symbolism
- ▶ Tastes
- ▶ Anthropomorphism
- ▶ Color
- ▶ Texture
- ▶ Rhythm

# Form

- ▶ Recently in the U.S. and many developing countries we accept geometric shapes with sharp edges
- ▶ In the past, Euclidian (columns, domes) were more accepted
- ▶ Frank Lloyd Wright said  
*“Form follows function.”*

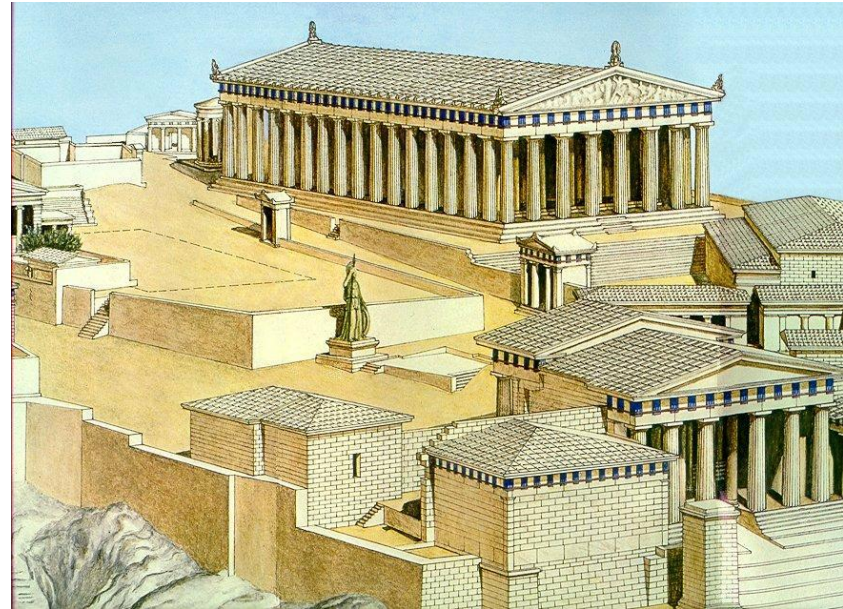
He later clarified this:

*“Form follows function - that has been misunderstood. Form and function should be one, joined in a spiritual union.”*



# Scale

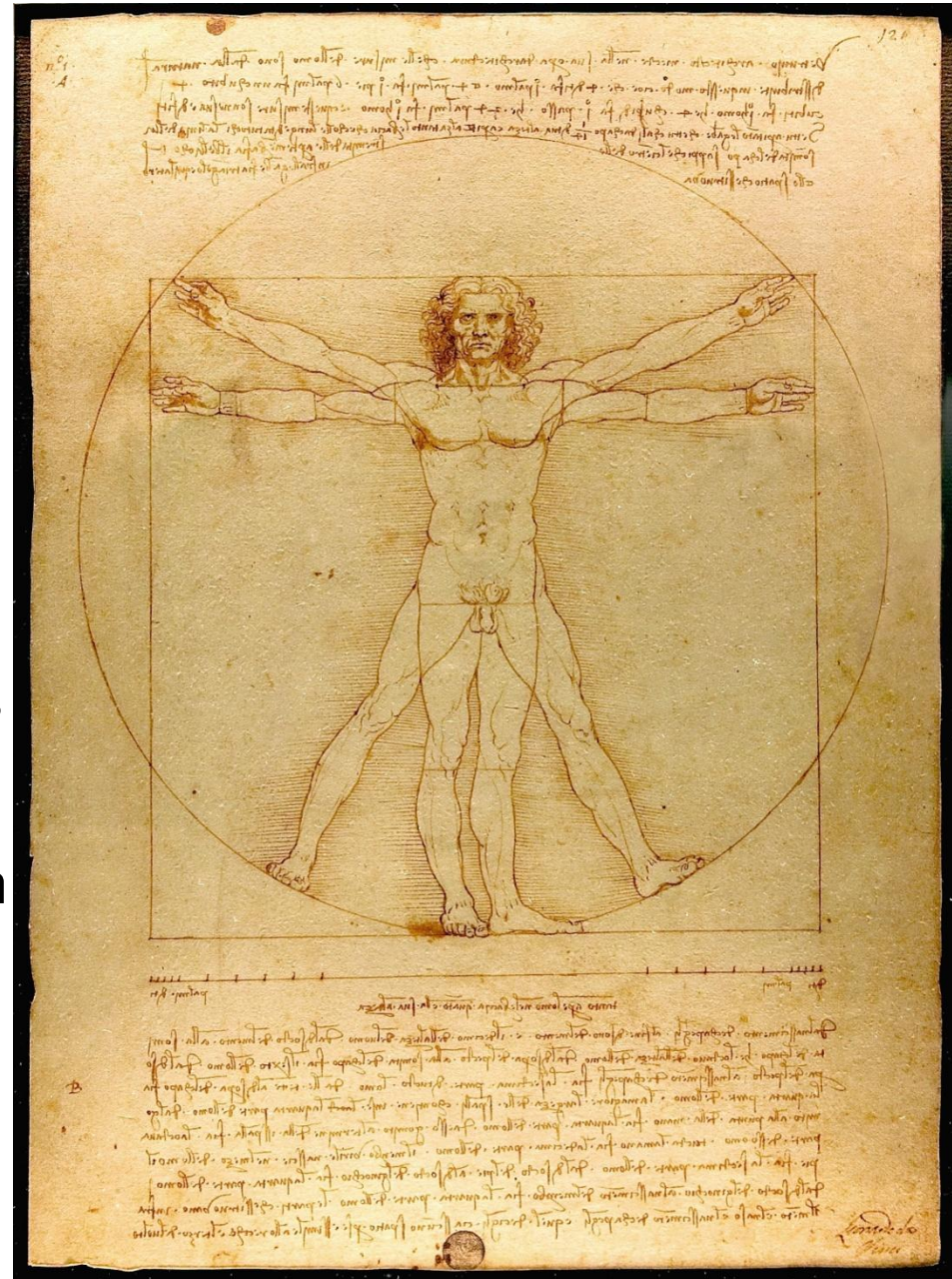
- ▶ Architecture may relate to the scale of humans
  - If not, architecture may be
    - Monumental, impressive
    - Intimidating, frightening
  - Columns on building can give illusion of scale
  - Surroundings and adjacent buildings can scale-up or scale-down a building





# Behavior

- ▶ Bodies create space
  - Activities
    - Ergonomics
  - Group interactions
  - Beliefs
  - Movement through spaces
  - Flow – interior to exterior
    - Bank of widows and French doors invite outside in





# Context

- ▶ Architecture can be an expression of a time
- ▶ Can relate to other buildings
- ▶ Can relate to land













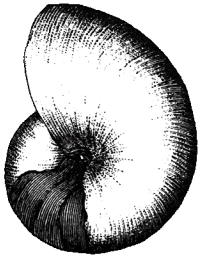




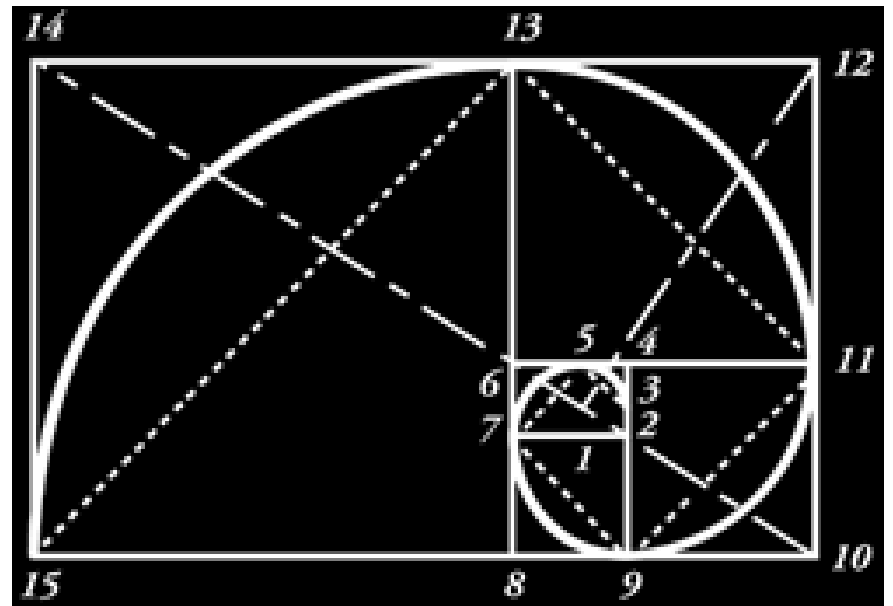




# Proportion

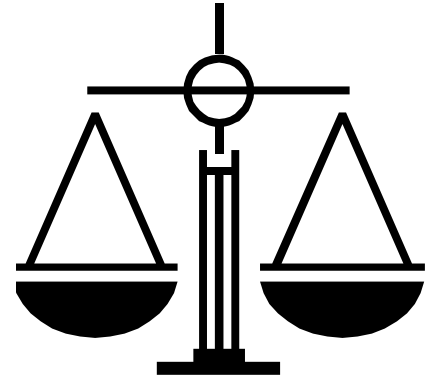


- ▶ Relation between spaces
  - Between rooms in a floor plan
  - Between elements of a facade





# Balance



## ▶ Symmetry

- May symbolize order, or wealth
- May put people at ease (perceived stable)

## ▶ Asymmetry

- Can symbolize revolt
- Can evoke feeling of movement & excitement, or comfort
- Can arise from organic vernacular growth
  - Medieval cities
- Frank Lloyd Wright made entrances low and dark to surprise with final destination.
- Also, light at end of corridor draws you in.

# Symbolism

- ▶ Power
- ▶ Status
- ▶ Change
- ▶ Tradition
- ▶ Spirit



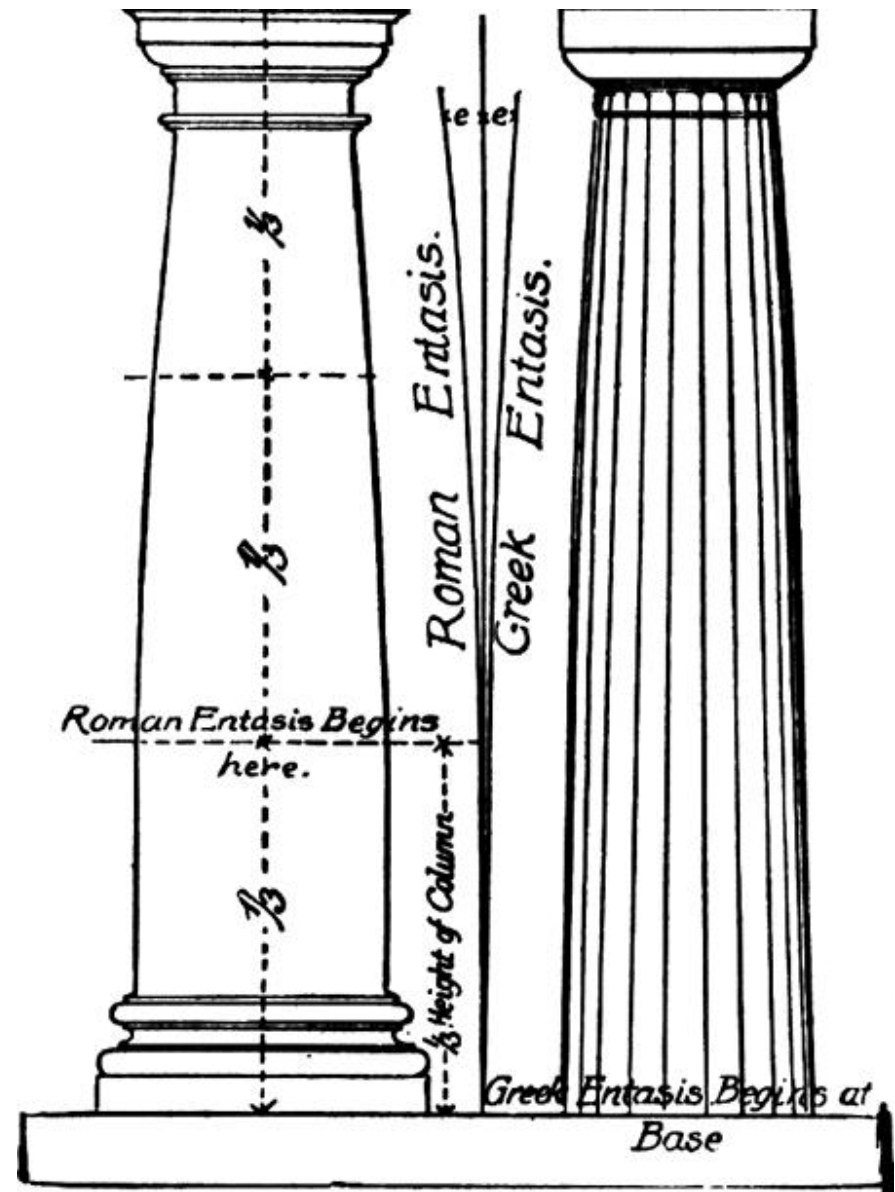


# Tastes

- ▶ Change over time
- ▶ Vary across cultures

# Anthropomorphism

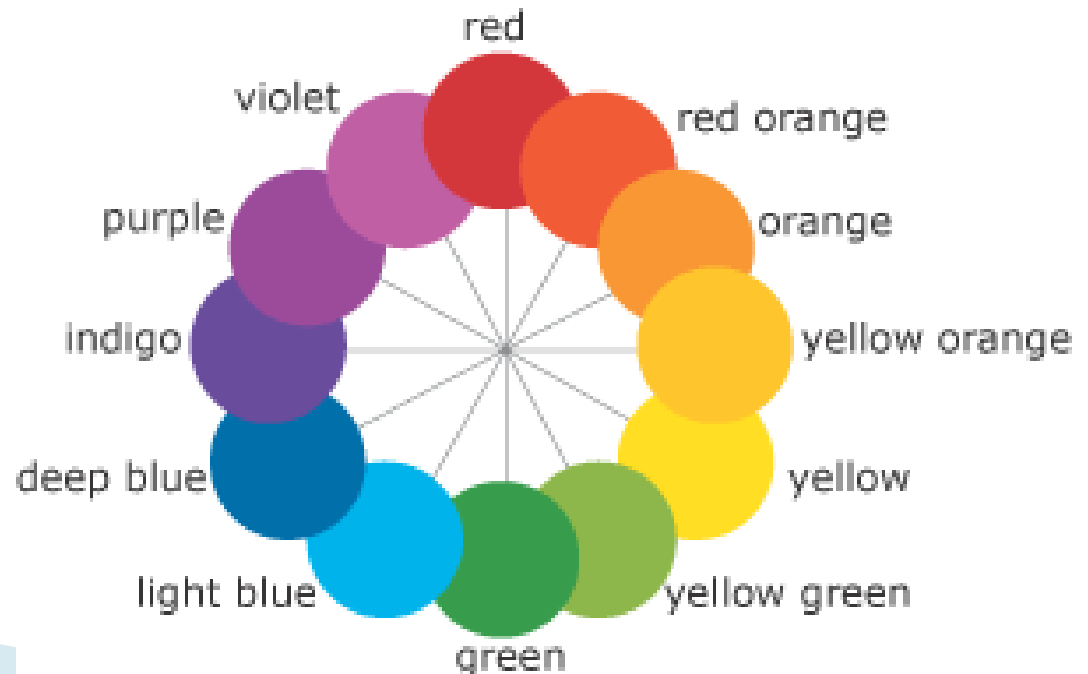
- ▶ Animate the inanimate
  - Equate columns with humans
    - “Entasis” in columns is a slight curvature to resemble hips





# Color

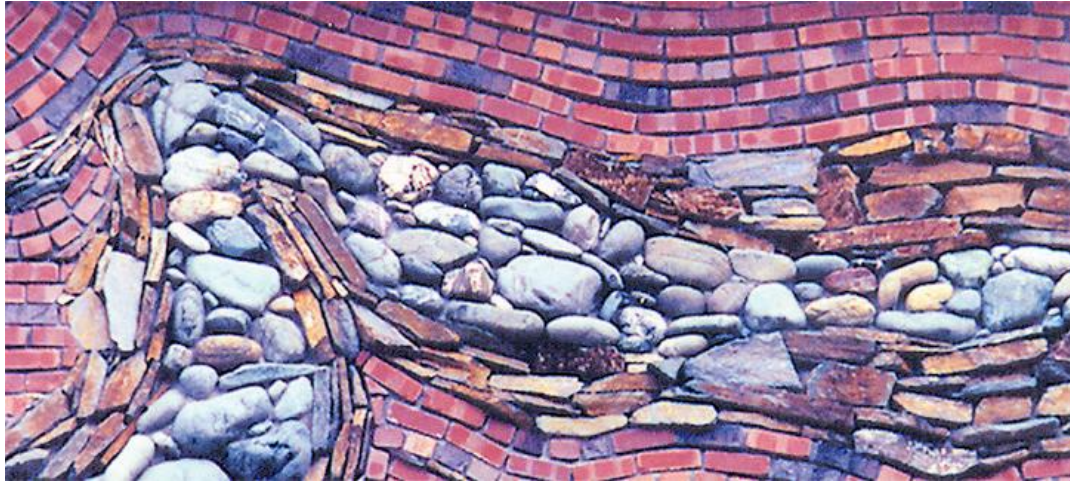
- ▶ Harmonized colors
  - Use different hues of same color or pair hues of colors close to each other on color wheel





# Texture

Random



Ordered



Smooth



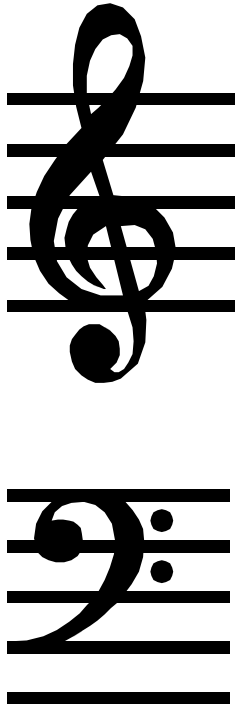
Rough





# Rhythm

► Like Music





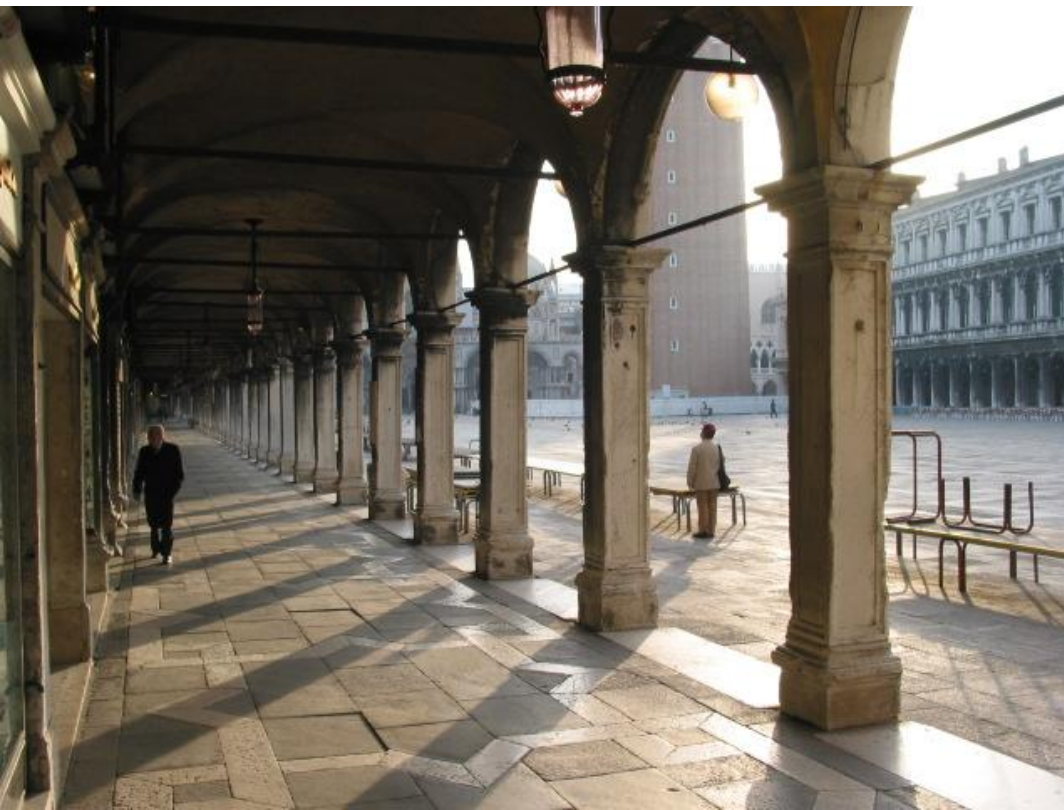


# Rhythm



## **VIDEO:**

<https://www.youtube.com/watch?v=36Fmp2pVKOc>



*Piazza San Marco, Venice Italy  
Visited by JT Wunderlich three times*



# Architectural STYLES

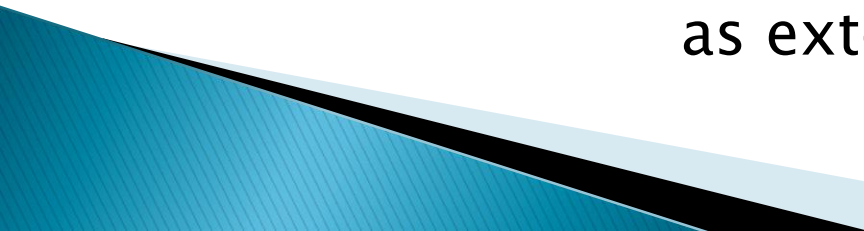
- ▶ Described using our architectural vocabulary

# URBAN DESIGN

- “Urban Planning”
  - “City Planning”
  - “Urban Studies”
  - “Environmental Design”
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# URBAN DESIGN

- ▶ Five elements of “Lynch Analysis” ([Kevin Lynch](#))
    - PATHS: Streets, sidewalks, trails, and other channels in which people travel
    - EDGES: Boundaries such as walls and shorelines
    - DISTRICTS: Areas distinguished by some identity or character
    - NODES: Focal points, intersections
    - LANDMARKS: Easily identifiable objects which serve as external reference points
- 

# URBAN DESIGN

- PATHS
- EDGES
- DISTRICTS
- NODES
- LANDMARKS



SOURCE (Urban Design Graphics):  
<https://www.pinterest.com/blockers99/urban-design-graphics/>



# URBAN DESIGN

## ► Readings

- Lynch, Kevin (1960). *The Image of the City*. Cambridge MA: MIT Press.
- Wunderlich, Joseph T. (1987). *The Evolution of City Boundaries*. UCSD USP173 course paper.
- Wunderlich, Joseph T. (2015). *Lynch analysis of Kyoto, Osaka, and Narita, Japan*. Elizabethtown College lecture notes. (PPT)