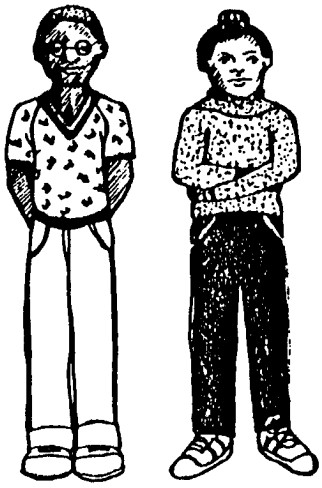
Constructing a Human Building

1. Obtain two volunteers and have them stand in front of the class.
2. Explain how their bodies and bones represent **structure.** And just as one bone supports another, one brick or one stone supports another in the wall of a building.
3. Point out how the volunteers are dressed differently. They are **ornamented** in different ways. Parts of the buildings are also ornamented or dressed in different ways.
4. Add additional students to make a row. They represent a structural wall, ornamented in different ways.
5. Is this a building yet?
6. What else is necessary for a building? Add more students to form four walls (leaving a doorway).
7. Is this a building yet?
8. Have students extend their arms to meet and form a roof. Walls support the roof. The walls and roof together represent **enclosure** and a completed building.
9. Have a student enter and leave the building through the doorway. Discuss **function**--how a building is used.
10. Discuss possibilities for **change** to the building. Add students to make an addition to the building. Alter someone's clothing to change "ornamentation."
11. Discuss what has happened and review architectural principles (in bold face).



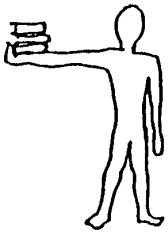
Source: *Pittsburgh Heritage Curriculum,* Pittsburgh History & Landmarks Foundation, 1986

Body Building

Feel in your body the pressure, stretching, and bending that architects must contend with.

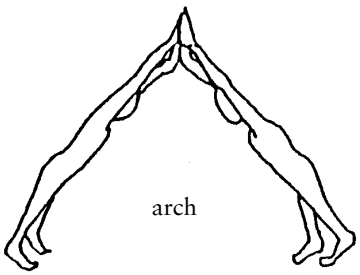
column

A **column** resists compression. Balance a pile of books on your head to feel compression.



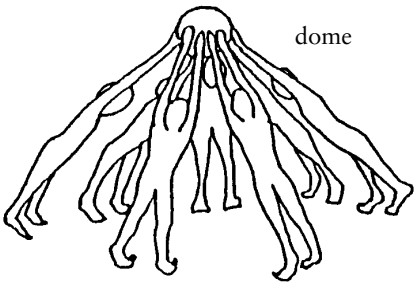
cantilever

A **cantilever** balances weight on one side of a beam with weight on the other side. The beam must be strong enough to resist bending or it will break. To feel this bending force, try to hold the same pile of books at arm's length.



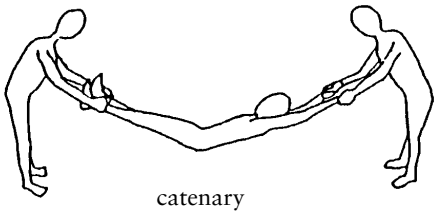
arch

An **arch** uses compression to balance its own weight and the weight piled on top of it. Build an arch with two people leaning against each other's hands. How far apart can you and your partner stand before your arch begins to collapse? Where in your body do you feel the most pressure?



dome

A **dome** works like many arches arranged in a circle. Start to make a dome by having two people make an arch, leaning their hands against a large rubber ball. Keep adding pairs until there is no more room. What would happen if someone took the ball away?



catenary

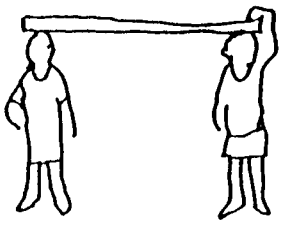
A **catenary,** often seen in suspension bridges, is almost the opposite of an arch. Only steel cables are strong enough to resist this kind of tension. You can feel the tension of a catenary bridge and the compression on the piers that hold it by having two people pick up a third by the wrists and ankles. Is there more tension when the "piers" stand closer together or further apart? Is there ever a happy medium?

Source: *Exploring Architecture Curriculum,* Pittsburgh History & Landmarks Foundation, 1987

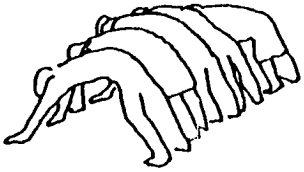
Acting Out Structures

column

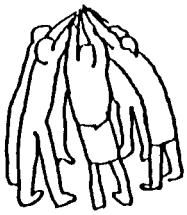
arch



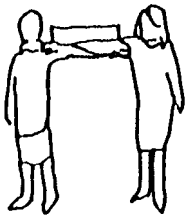
post and lintel



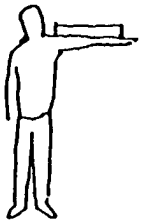
vault-tunnel



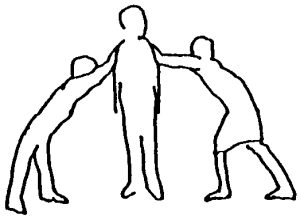
dome



column and beam

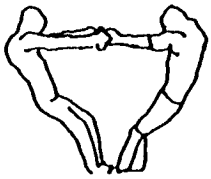


cantilever



flying buttresses

load and support



tension

compression

Source: *Architecture in Education,* Foundation for Architecture, Philadelphia, 1986