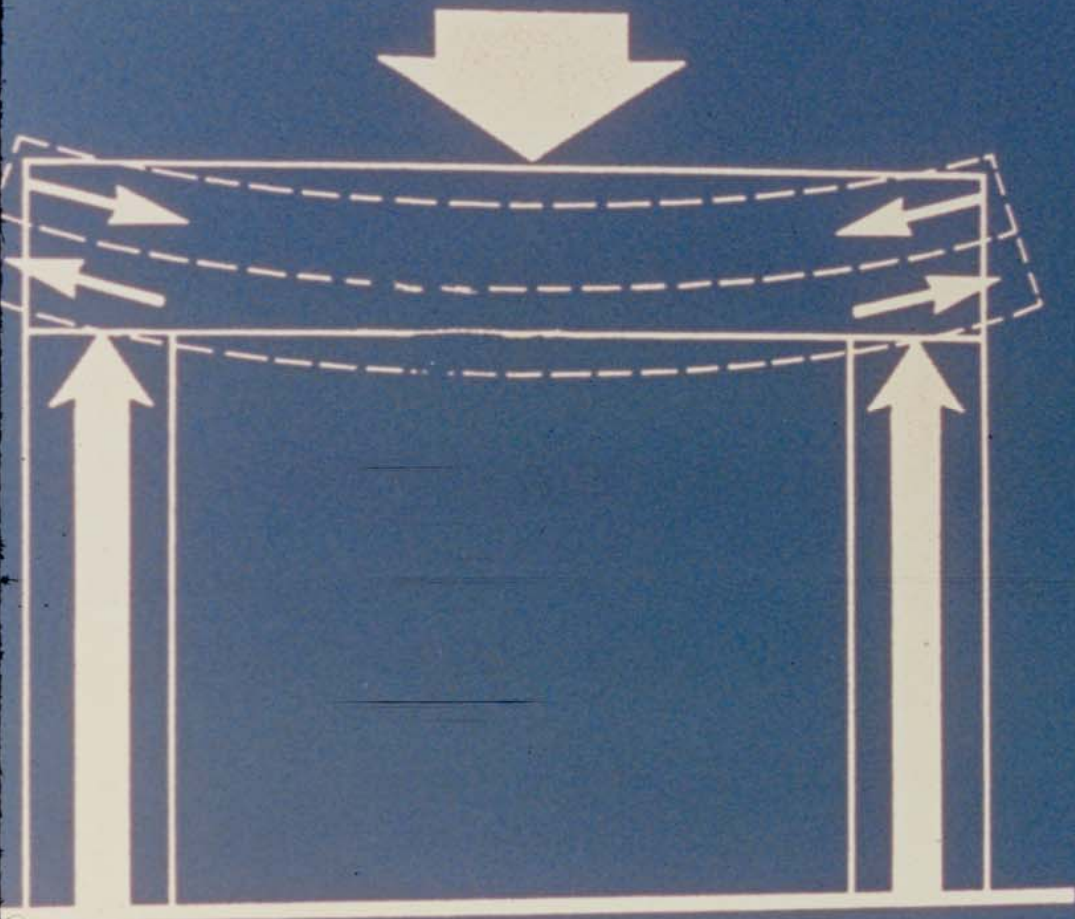


POST AND LINTEL

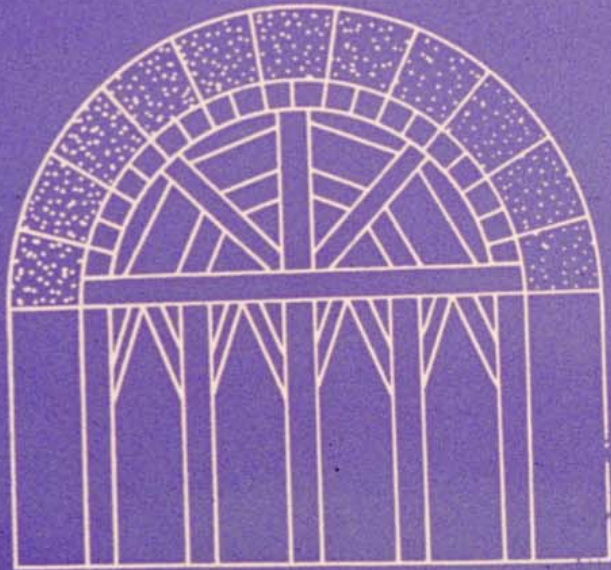


Vertical posts or walls are bridged by a horizontal lintel

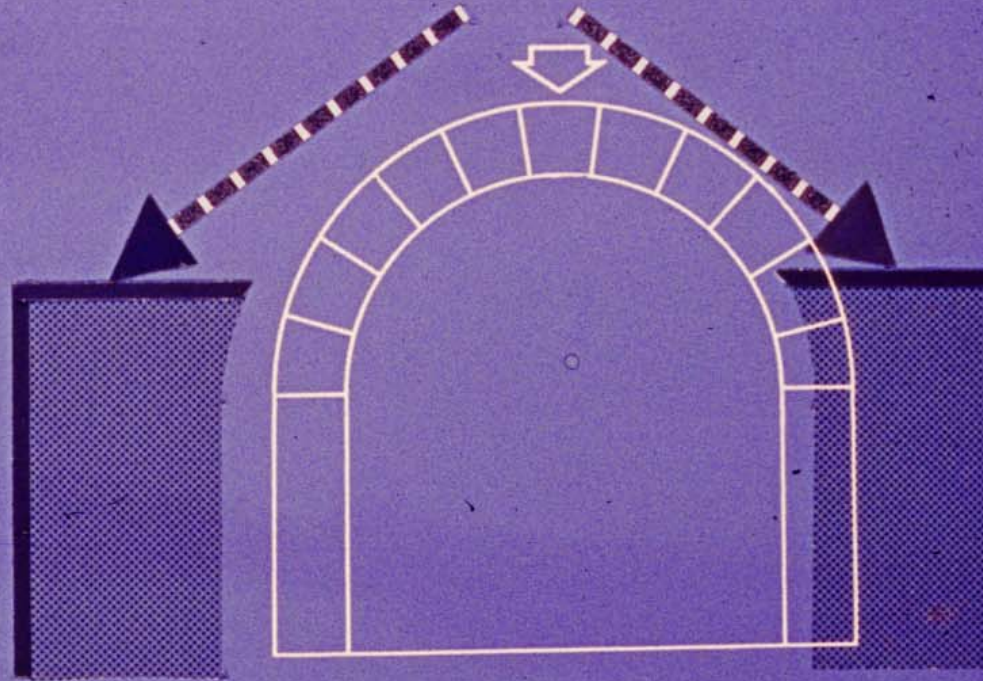
The weight of the lintel is countered by the opposite forces of the posts

The bowing action subjects the top of the lintel to compression, the bottom to tension

THE ARCH

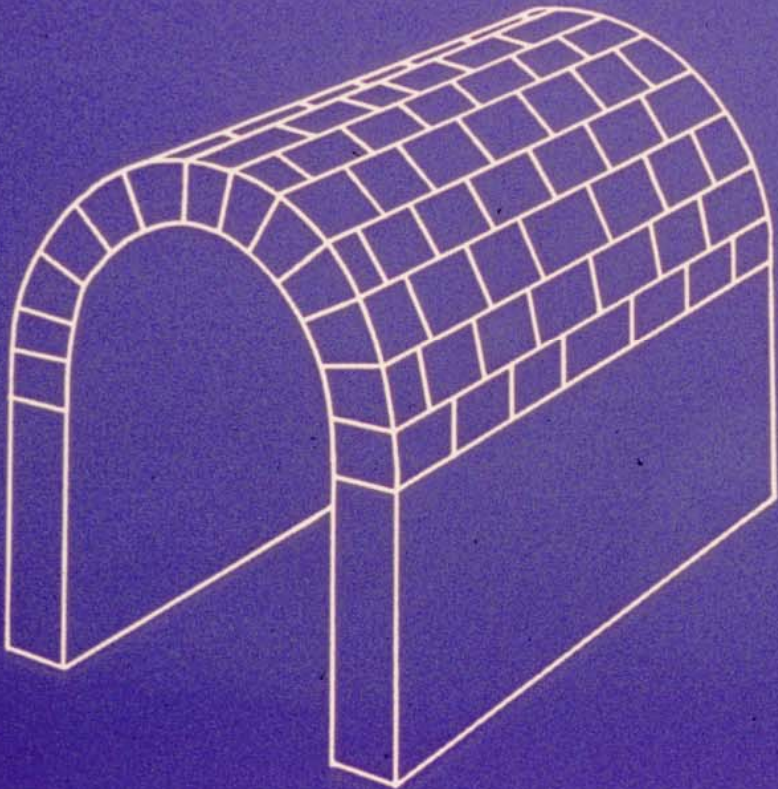


Wooden scaffolding provided temporary support of the precisely shaped stones until the top keystone was in place



With scaffolding removed the inward thrusts were stopped by the keystone. Outer thrusts required supporting walls

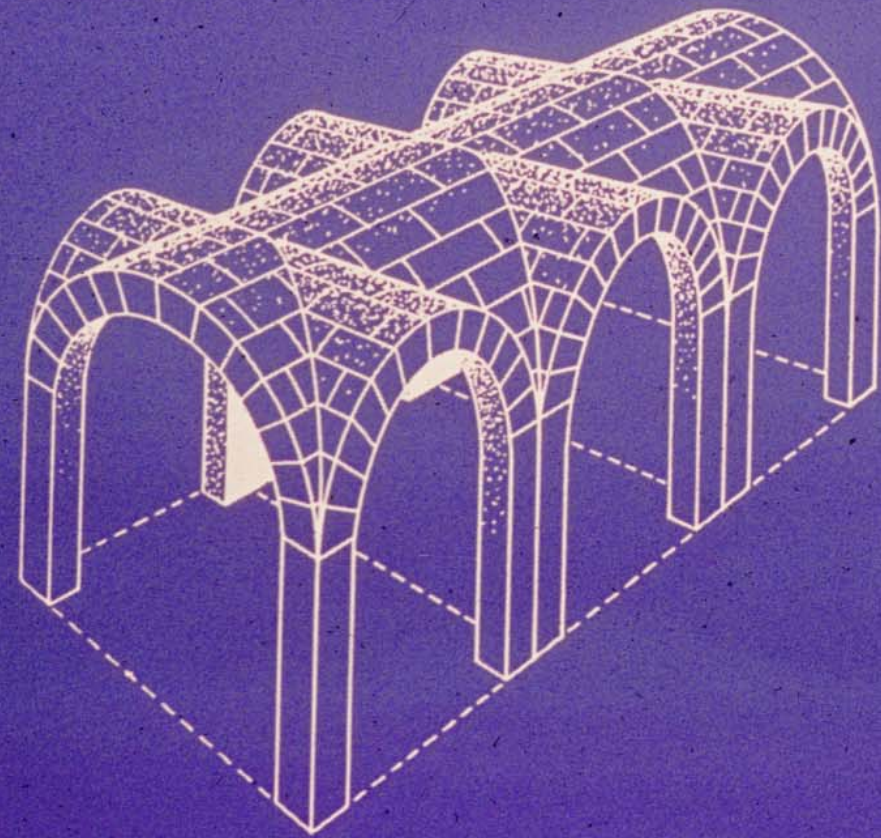
THE BARREL VAULT



The barrel vault was built over a wooden scaffolding as the arch. Its outward thrusts also required supporting buttressing

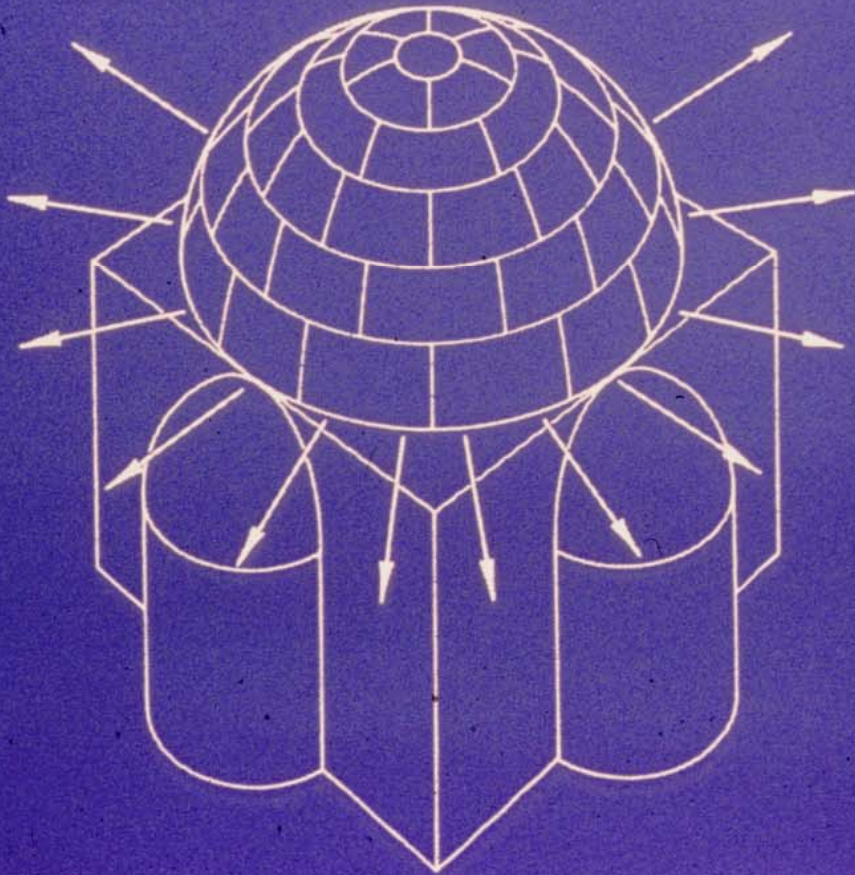
Theoretically a series of arches in file, the shaped stones called "voussoirs" were interlocked in staggered fashion

THE GROIN VAULT



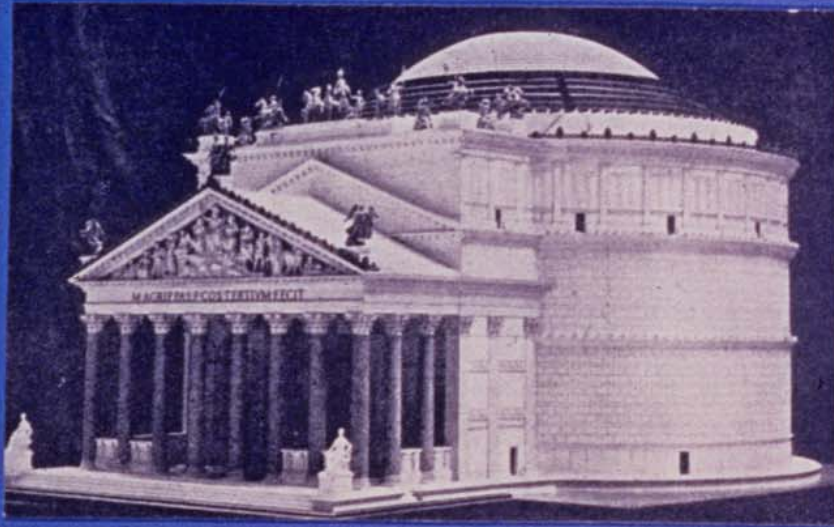
A building could be divided into a series of bays each covered by its own vault

THE DOME

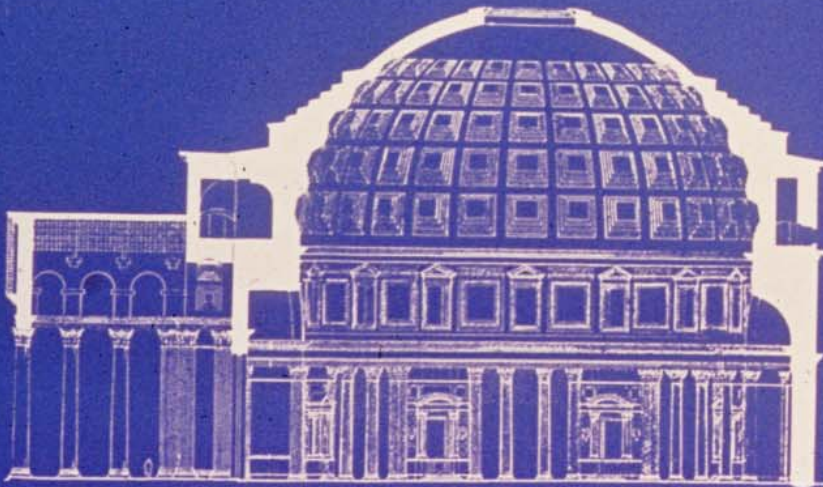


The thrust of the dome must be contained by heavy masonry walls or half domes

THE PANTHEON



The dome was barely visible from the exterior. Heavy masonry walls supported its weight



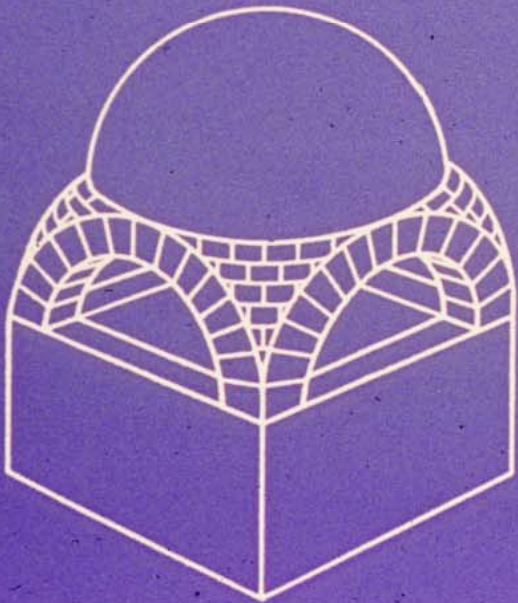
The weight of the dome was decreased by geometric recesses called coffers

Light entered from a circular opening in the top

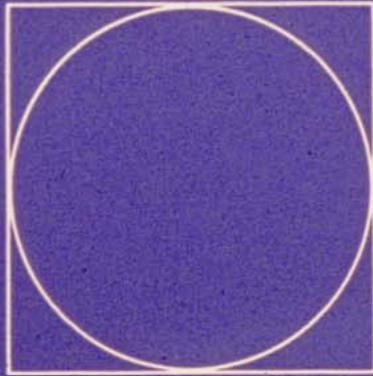
THE PENDENTIVE



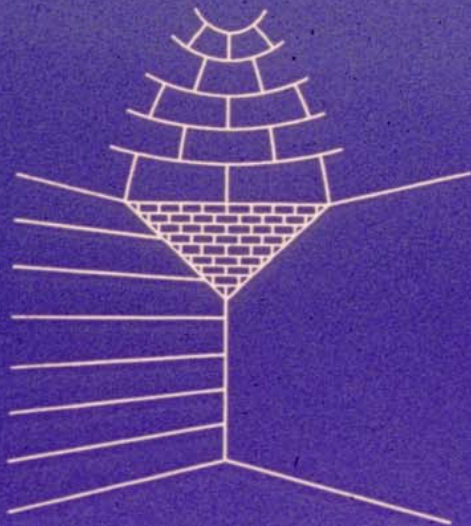
The dome is supported at four points by arches. The rest of the dome's rim is supported by triangular sections of a sphere called "pendentives"



THE SQUINCH



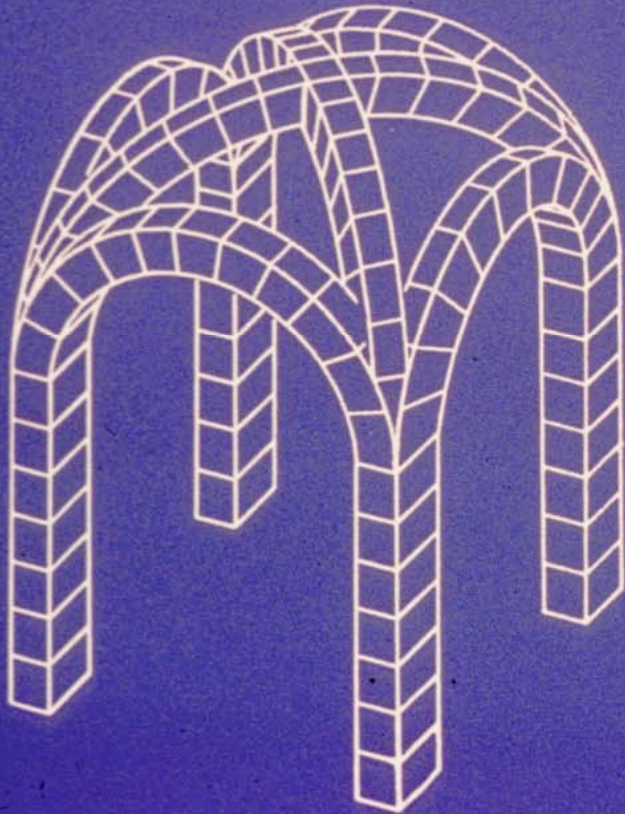
A circular dome is supported at only four points over a square



Filling in the four corners with triangular wedges provided the additional support

These wedges were called "squinches"

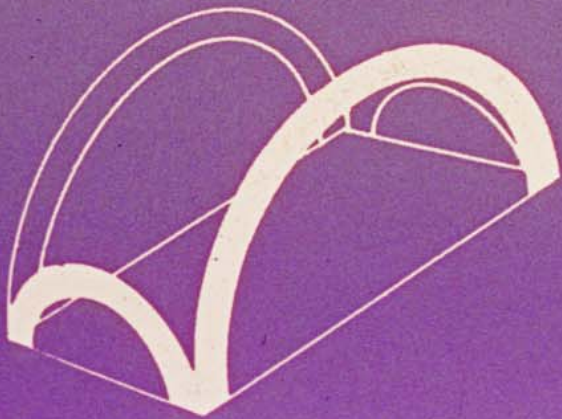
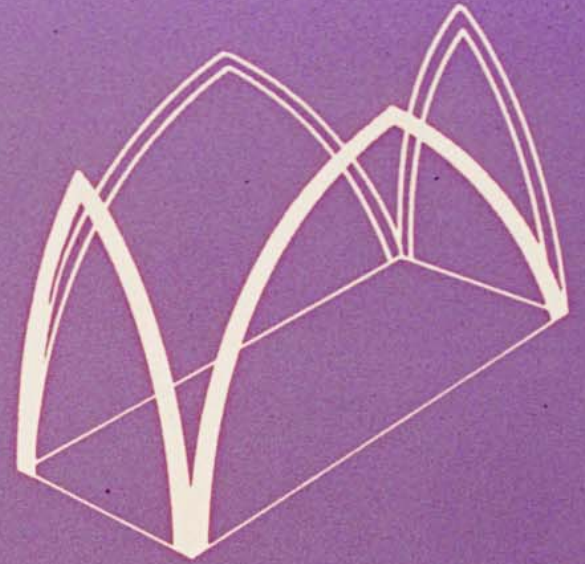
THE RIB VAULT



A complex of six interlocking arches formed the ribs of the vault

This sturdy but lighter weight structure was filled in with stone slabs to complete the enclosure

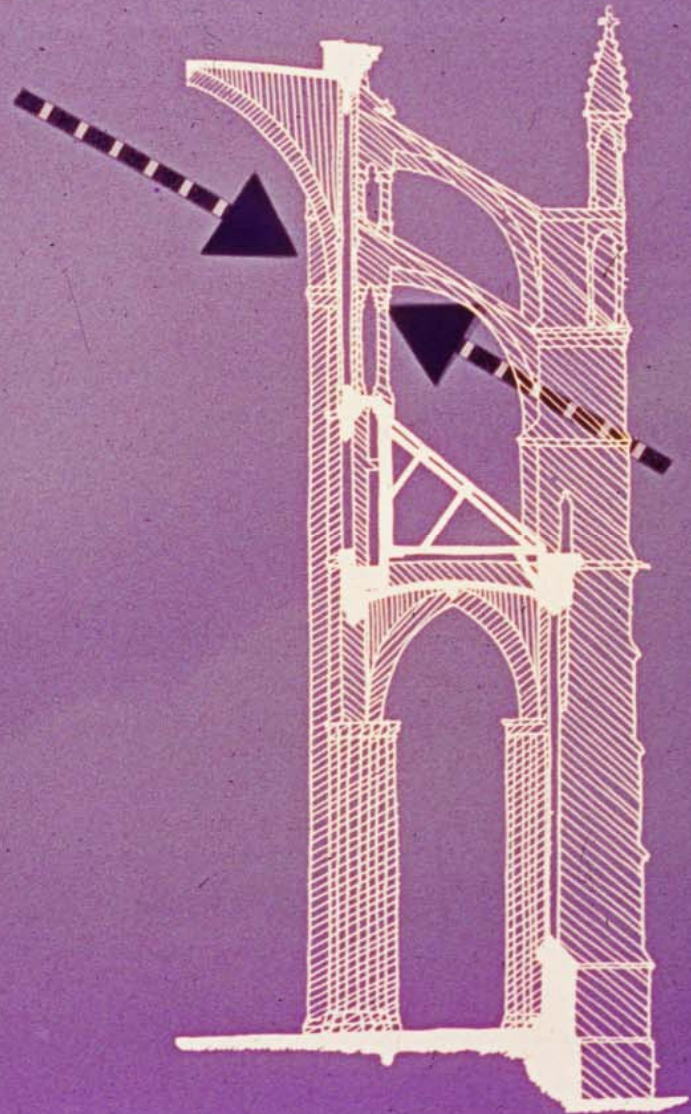
THE POINTED ARCH



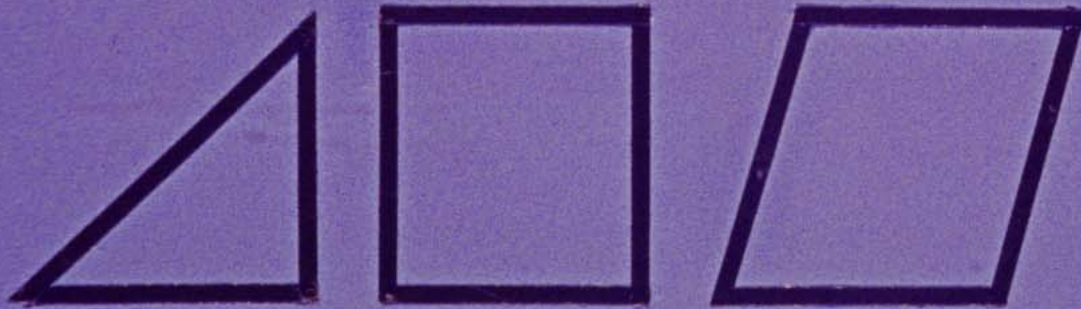
The half circle arch functions well over a square bay area. Over a rectangular bay the half circle arch lowers the ceiling at two points. The pointed arch made possible a continuous ceiling level

THE FLYING BUTTRESS

The lateral thrusts of the extremely high Gothic arches were countered by the opposing thrusts of flying buttresses



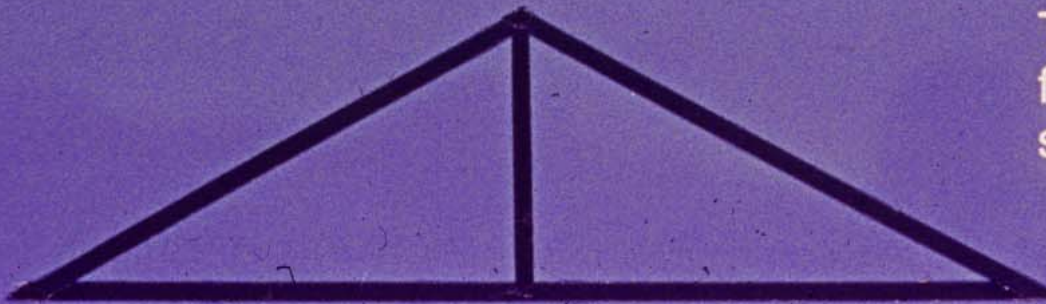
THE TRUSS

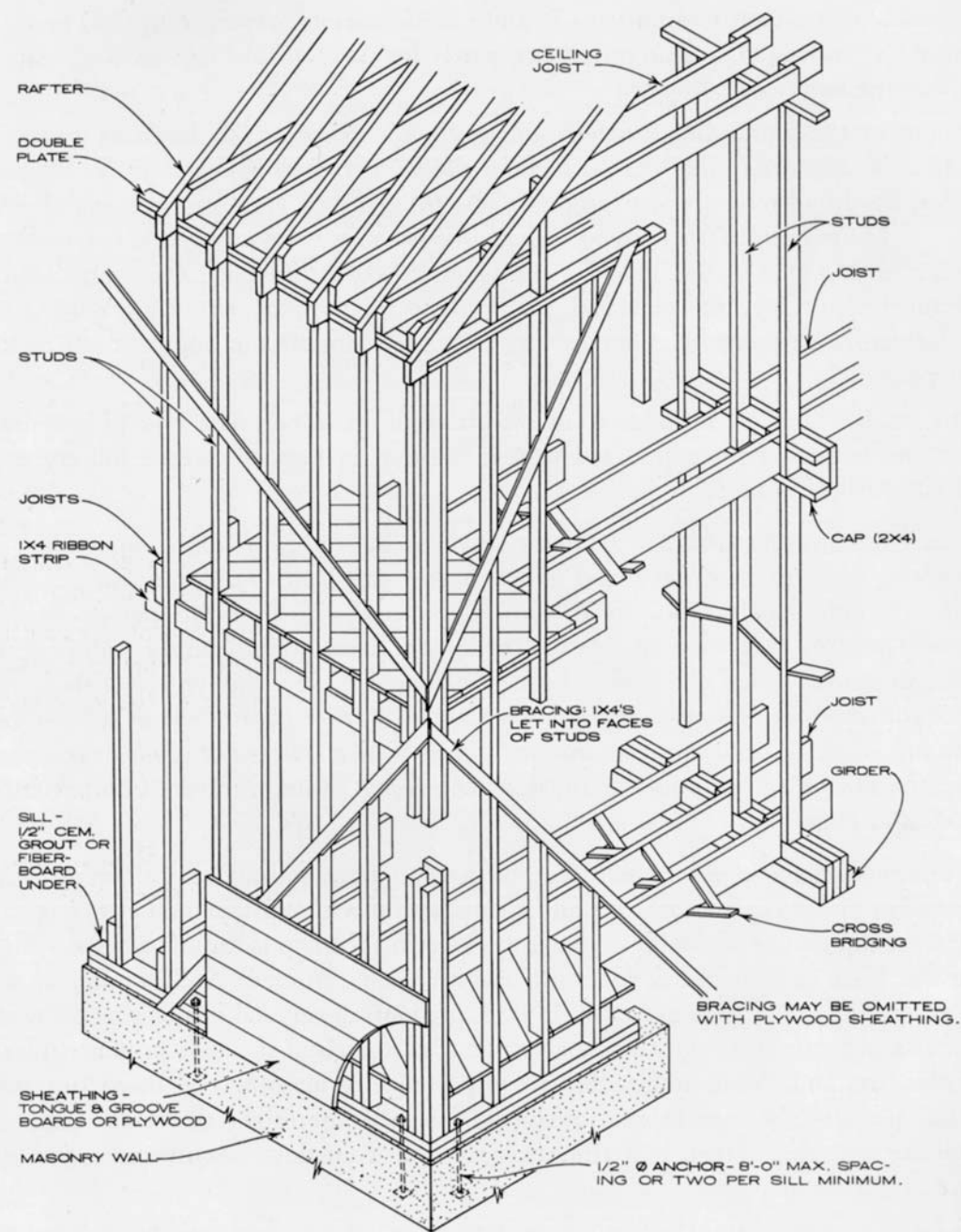


A triangle compared to a square is a geometric shape more difficult to force out of shape when the sides are joined



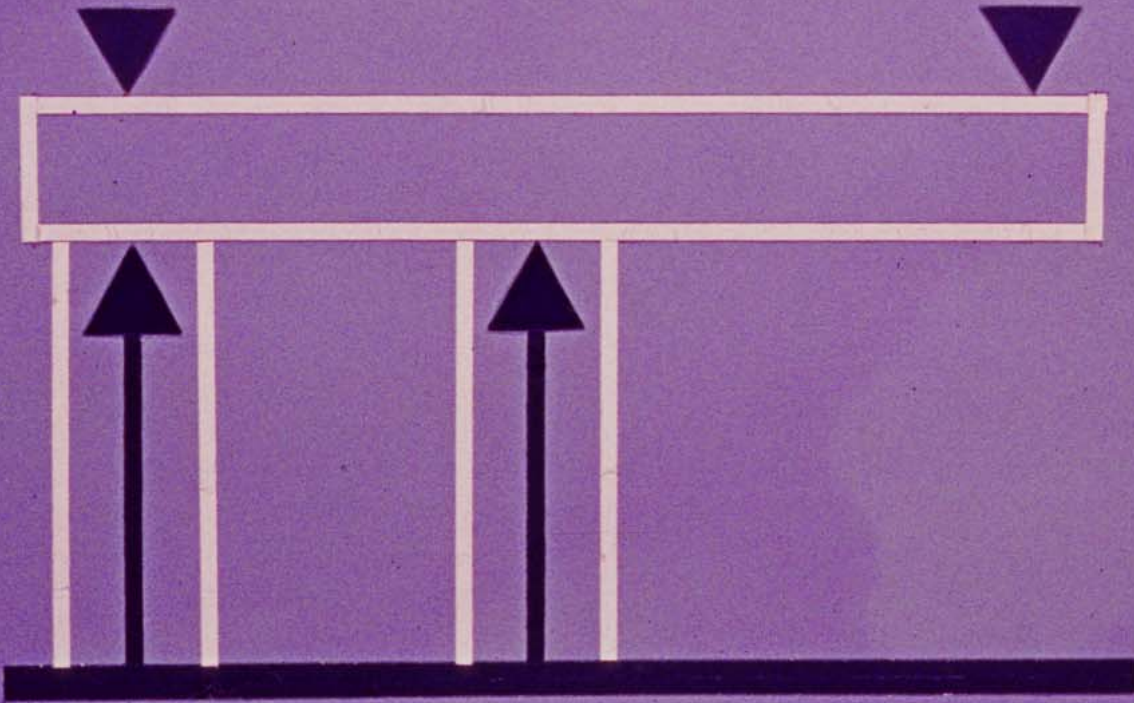
Triangles in combination form trusses which can span very wide spaces





Balloon Frame

THE CANTILEVER



A cantilever is a horizontal beam extended into space

The internal end must be counter weighted or firmly anchored