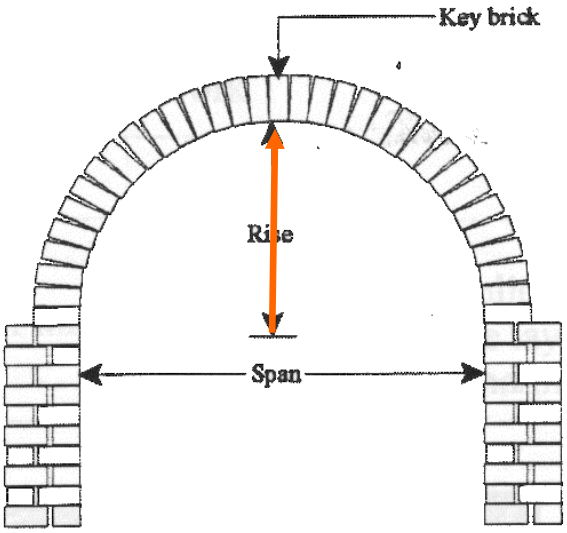
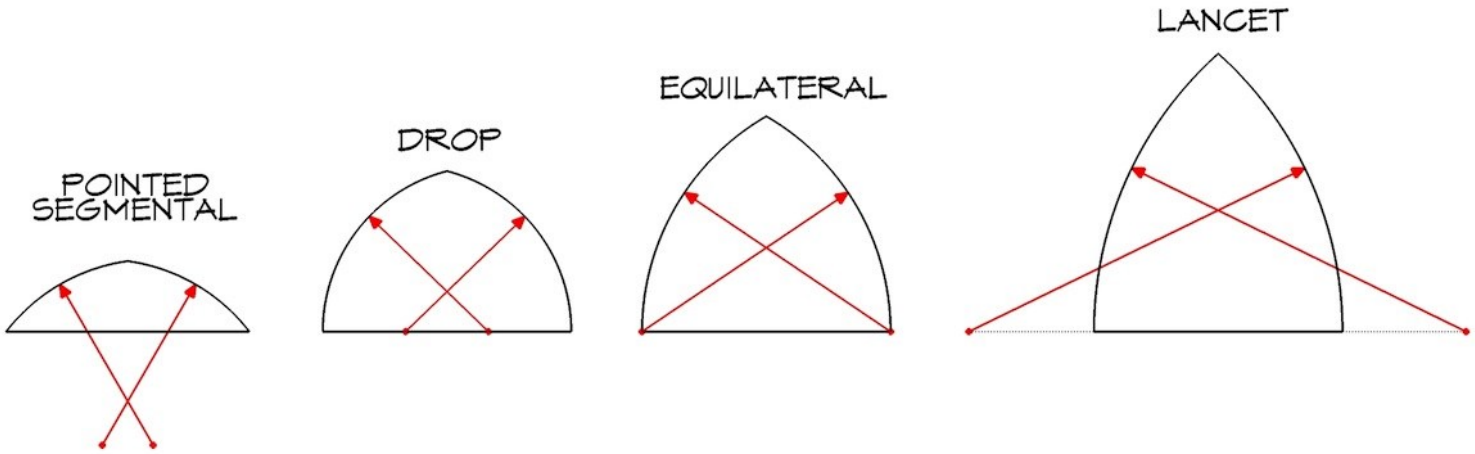
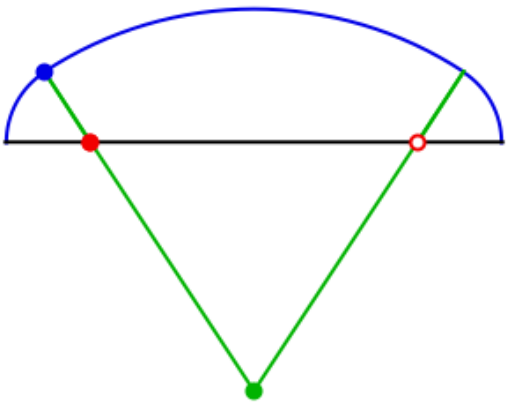
Types of Arches.

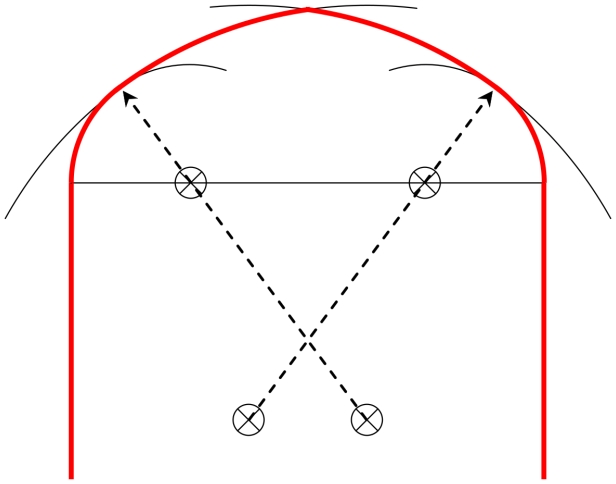


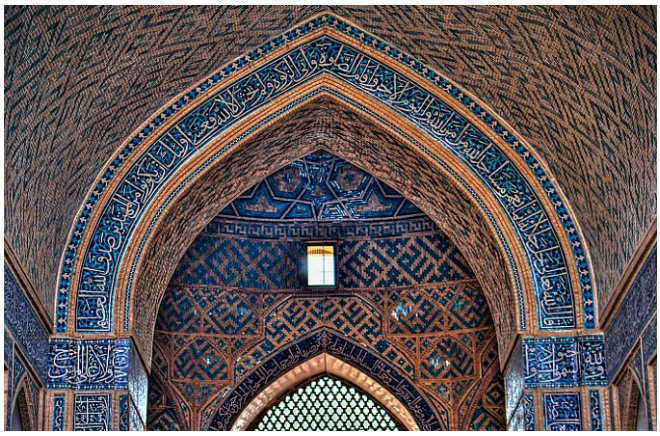
On the left is a Roman-style/Romanesque arch which is semi-circular , and is drawn by placing your compass point in the centre of the span at the springing point (the level at which the arch starts).
The arches below are 2 centred Gothic arches drawn by placing your compass point on the lower 2 points of each arch in the diagram.
For the equilateral arch the points are on the springing line, but for the others the points are placed further apart, closer, or lower. The lancet is the earliest form used structurally in Europe. The pointed segmental and the drop arches afford a structurally strong but lower and wider span.



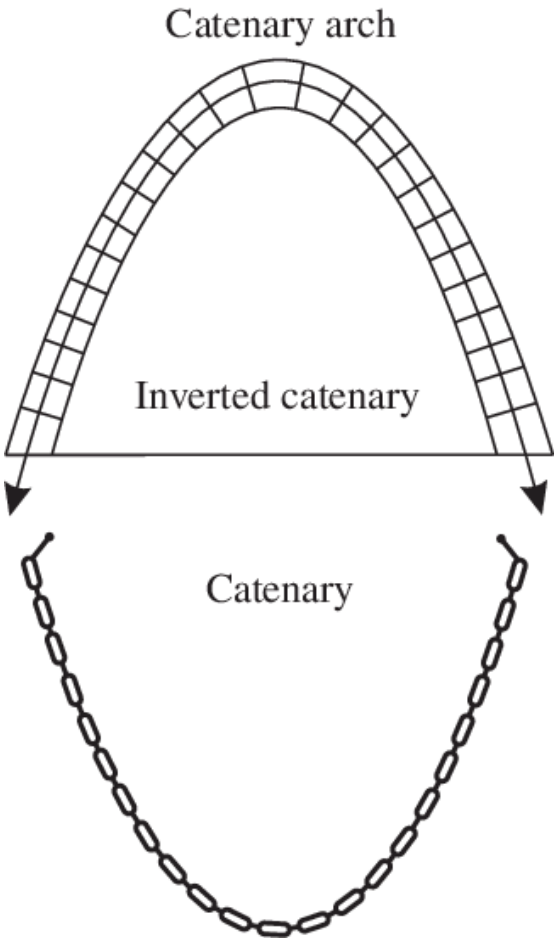
On the right is a 3 centred arch drawn by making arcs with your compass point on the red dots, and connecting them to a large central arc from a compass on the green dot. Below is a 4 centred arch, following the same method of drawing. These are also sometimes called Tudor arches, or if slightly taller, Persian arches. Below right is a Tudor arch at Canterbury Cathedral.



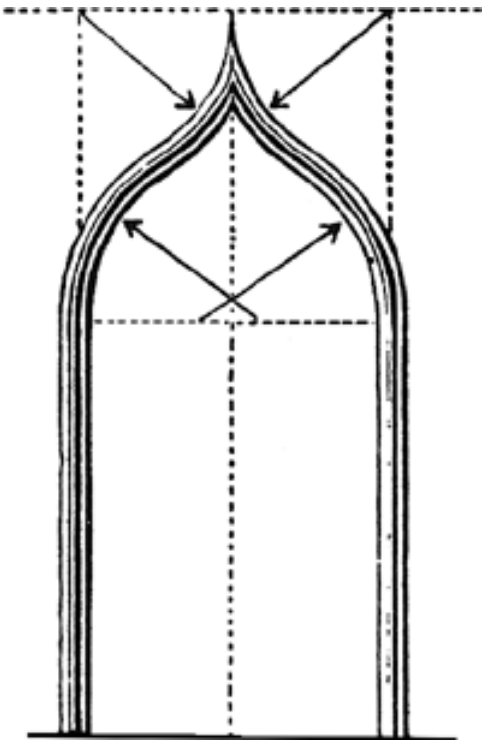




Jame Mosque of Yazd, 14th century. This is an example of a Persian arch. A Catenary arch is shown below. A catenary is the shape made by a hanging chain, and is inverted to make a Catenary arch, which is close in shape to a 4 centred arch. Gaudi favoured this type of arch, as can be seen below left.

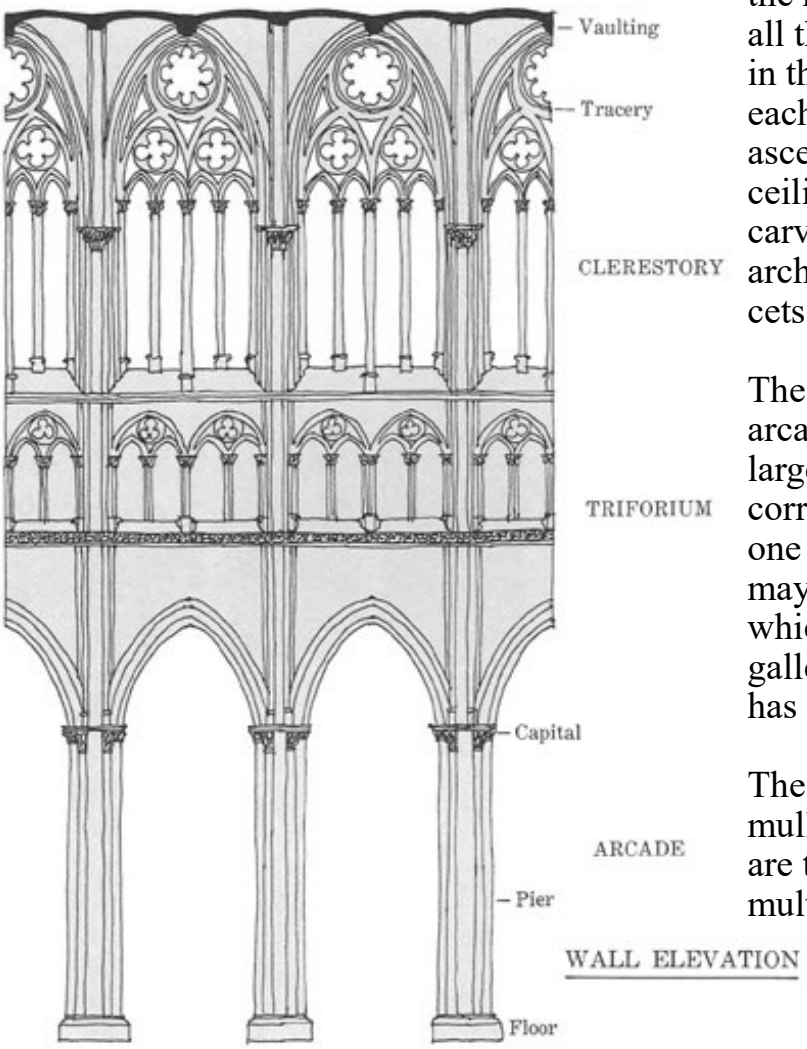


King's College Chapel has a Tudor arch in the Perpendicular style, and you can see its closeness to the Catenary arch shape, but it has the addition of a slightly pointed top.



Ogee arches are also 4 centred with 2 of the centrings being above the arch. (right). They were popular in the later Gothic buildings and were loved in Venice, where they can be seen everywhere in great palaces and smaller houses.

Elevation.

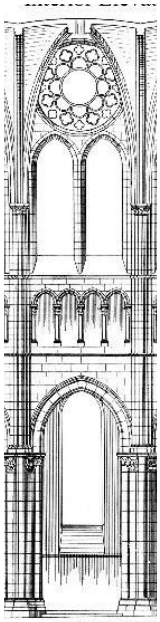


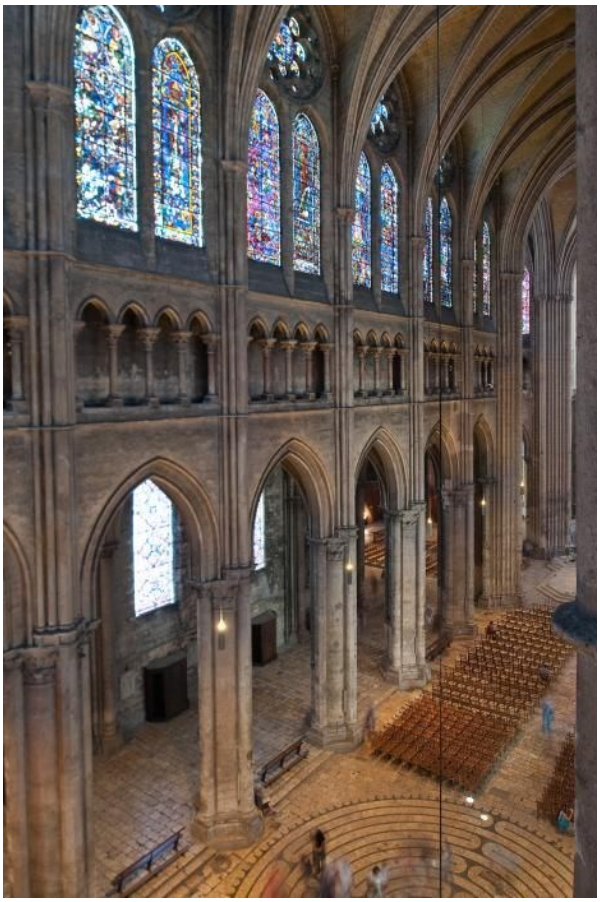
In this diagram of the elevation of part of the nave arcade of a church, you can see all the major divisions. There are 2 bays in the middle and half a bay depicted on each side, and the structure of the piers ascends all the way to the vaulting of the ceiling. Capitals may be classical, or carved with foliage or heads. These arches appear to be equilaterals or lancets.

The triforium is a gallery above the arcade of arches, and it may be small or large. It is sometimes narrow like a corridor to enable a person to move from one end of the building to the other, or it may be as wide as the aisle beneath, in which case it is sometimes termed the gallery, or the tribune gallery. Each bay has 2 bipartite openings in this triforium.

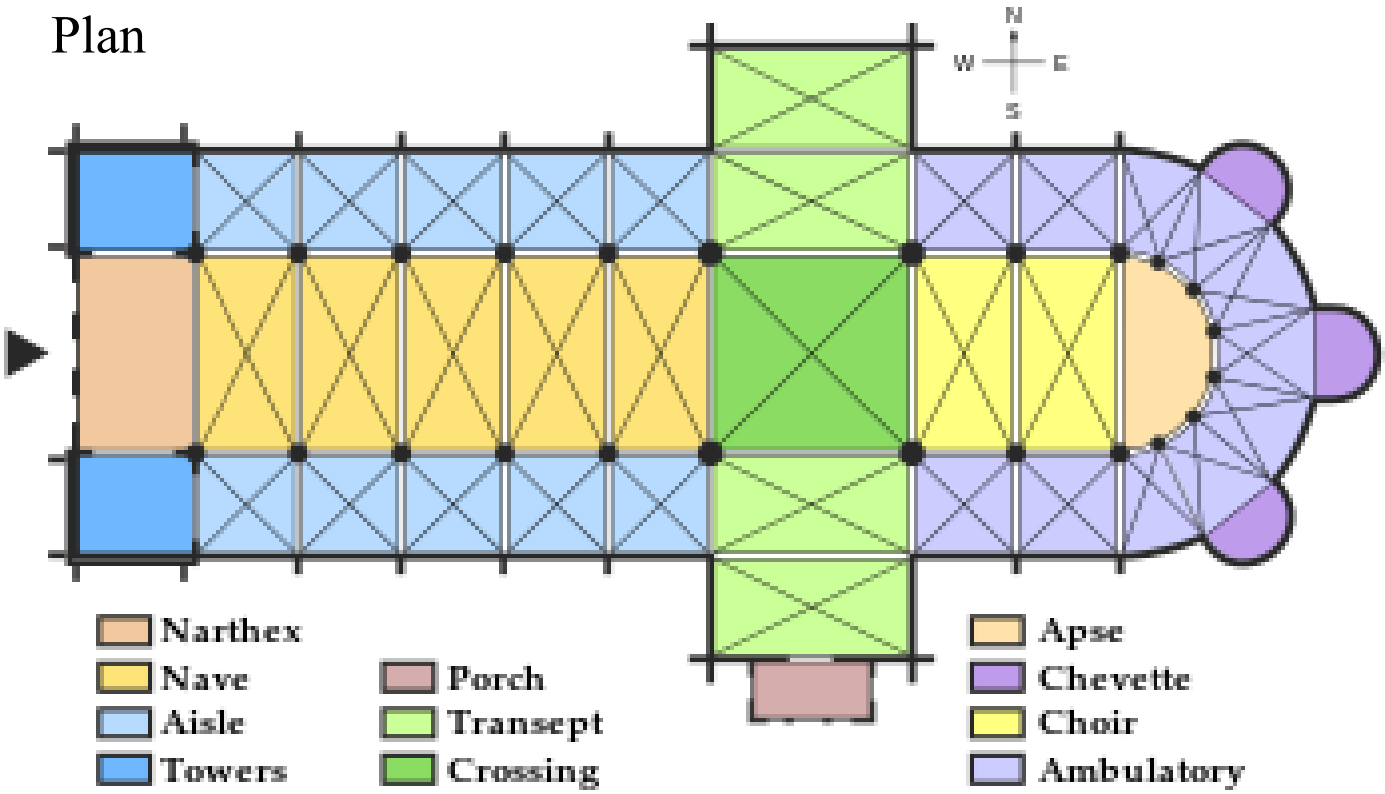
The clerestory windows here have 3 mullions each, to create 4 openings, and are topped with 2 quatrefoils and a multifoil each.

Cathedral nave elevations are very difficult to photograph. On the right and below is Chartres Cathedral. Above the main arches is the small triforium (4 openings) and above that the huge and famous gothic windows with rich and early stained glass. These windows are bipartite, with a rose of plate tracery above.

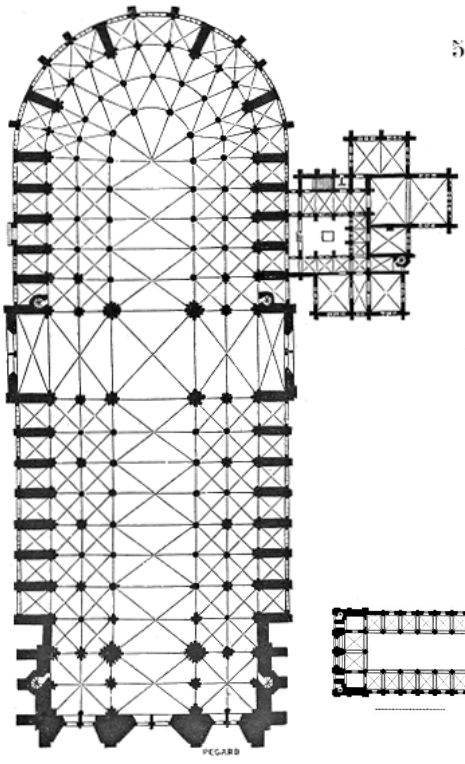




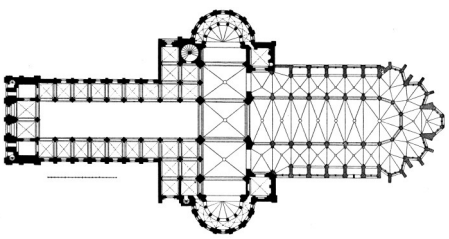
Plan



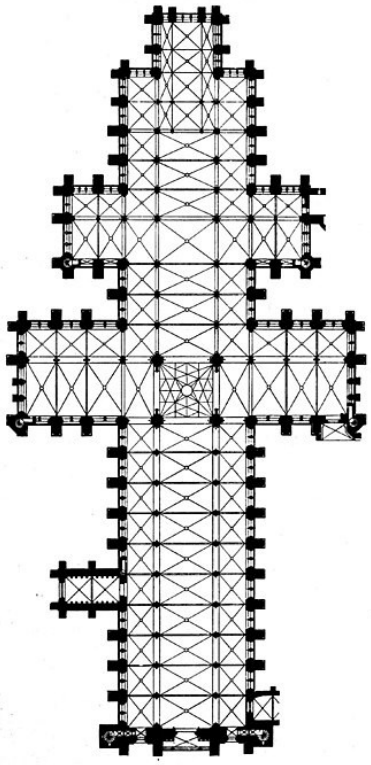
In this diagram of a typical Gothic cathedral plan you can see that the main entrance would be through the great west end on the left, and you would pass down the length of the nave towards the altar in the east. At the west end, between the twin towers, you would enter the narthex, where pilgrims and travellers would clean and refresh themselves before entering the main body of the cathedral. Normally one enters through the porch on the south transept. You can see that each bay is marked, along with the shape of the rib vaults, and this changes for the small chapels (chevettes) of the ambulatory which takes you round the back of the altar. There is a large vault over the crossing, where the tower or steeple is, or in later cathedrals, the dome. The altar is always in the east where possible to symbolise the Resurrection through the rising of the sun. The choir area is usually rich in decoration.



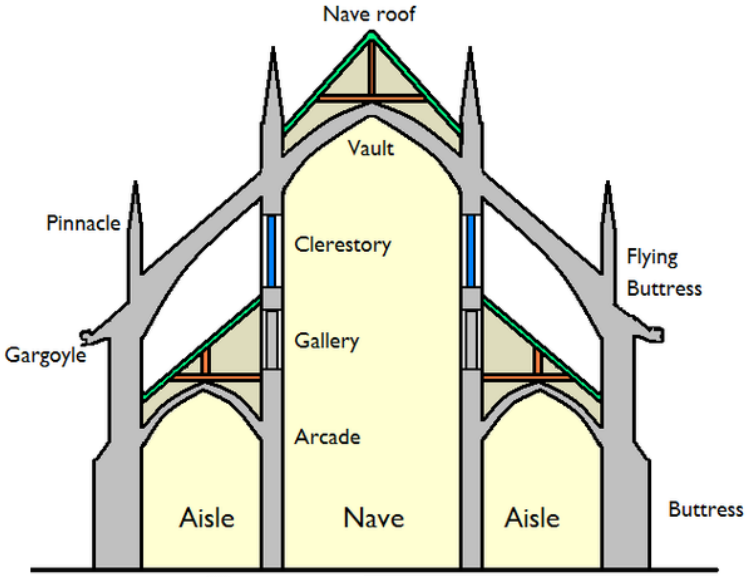
Notre Dame in Paris is on the left, and Salisbury on the right. These are all Latin cross shaped to symbolise the Crucifixion and to allow for vast congregations. Plans become very complicated, with double aisles and side chapels as in Notre Dame, or with double transept arms as in Salisbury, to allow for smaller services. Salisbury does not have a rounded apse or rounded apsidal chapels. This is typically English.



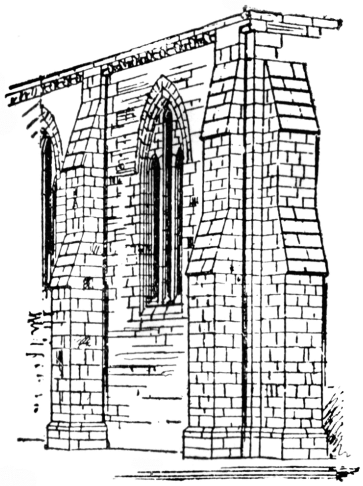
Tournai (left) has an early Gothic nave and a later Gothic choir.



Flying Buttresses.



These are a development designed to support heavy vaults with the minimum of masonry, and became decorative and complex in the later Gothic periods. There are often 2 or 3 levels of them, some of which may be hidden in the roof spaces of the aisles.

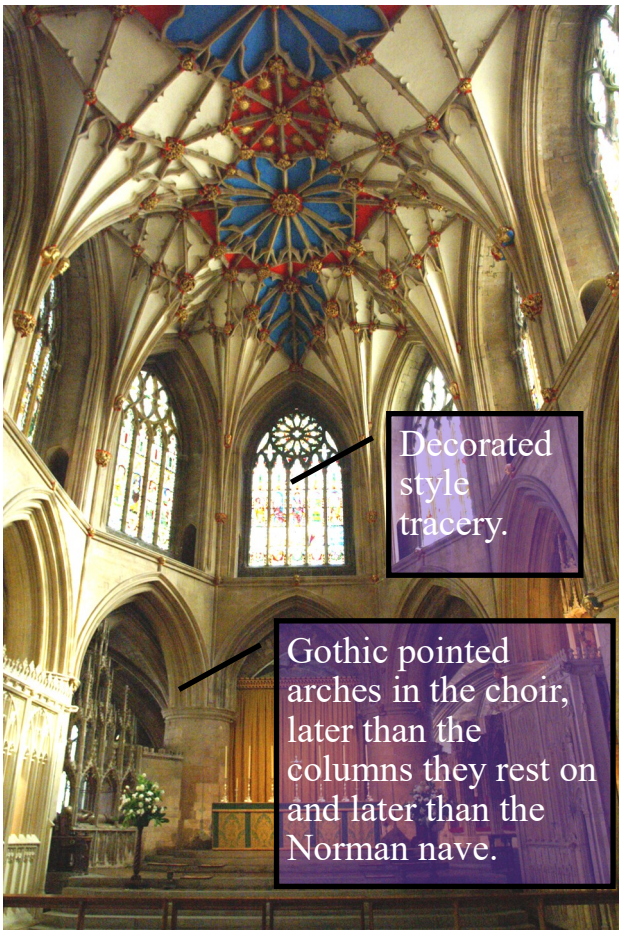


All large walls which support a heavy vault or roof need to have buttresses to prevent them from being forced into collapsing. Romanesque buttresses do not step away from the wall, but are fully attached to it, and are usually wider at the base.

Above is Notre Dame, Paris, far left are the wheel shaped buttresses of Chartres, and left is Freiburg Minster.

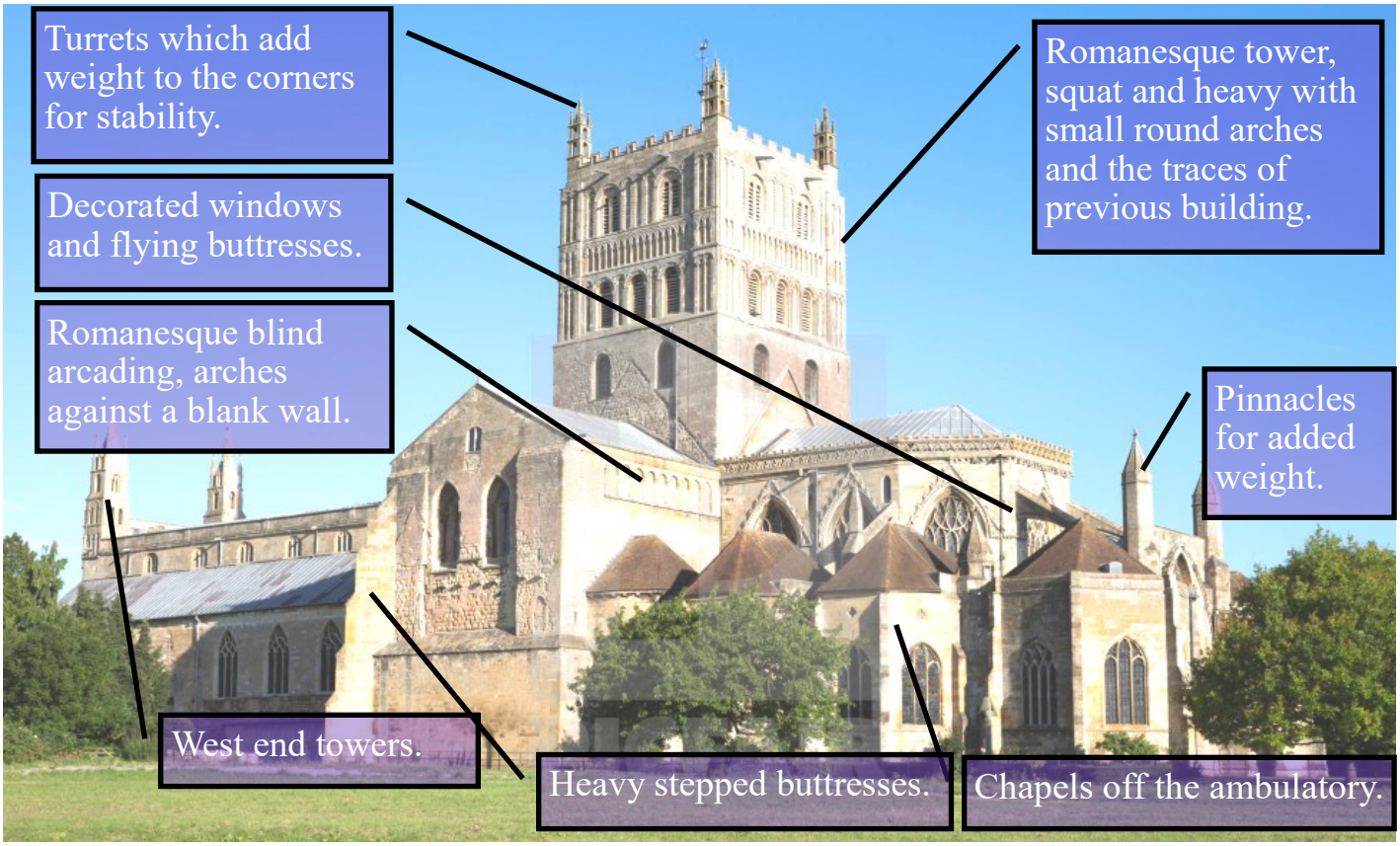
Right, the massive flying buttresses of Exeter. Look for the pinnacles which provide decoration and extra weight for support.

Let's look at Tewkesbury Abbey in detail.



The east choir and apse is gothic in style with pointed arches and a complex lierne vault, which rest on the earlier Norman (Romanesque) columns. The main nave has a simpler lierne vault which fits around the clerestory and is attached to the walls above the column capitals.

The triforium is very small and has bipartite openings. In the aisles are decorated style windows. Below is a view towards the great west end window, which is perpendicular, and placed into the wall replacing a smaller Romanesque window. The first Romanesque ceiling would have been flat and wooden.


Turrets which add weight to the corners for stability.
Decorated windows and flying buttresses.
Romanesque blind arcading, arches against a blank wall.
Romanesque tower, squat and heavy with small round arches and the traces of previous building.
Pinnacles for added weight.
West end towers.
Heavy stepped buttresses.
Chapels off the ambulatory.


West end towers with Romanesque openings.
Blind arcading.
Huge Romanesque arch.
Perpendicular window fitted into the wall where a smaller window would have been. You can see the infill between the round arch and the pointed window. The vertical mullions are also structural and topped with pointed arches.
Decorated window.
Windows for the stairs up to the towers.