Quality of space in Romanesque and Gothic Architecture

Ar. Minu Joshi [1], Ar. Manali Deshmukh[2]

[1]B- Arch SCET, Surat. M.Sc. Theory and Practice of Sustainable Design, Cardiff University, UK
[2]B- Arch BKPS, Pune, M.Arch. Construction Management, YCMOU, Nashik
Email- ecour.ar@gmail.com, manalideshmukh@brick.edu.in

Abstract: Religious spaces are one of the best surviving architectural specimens to study the key architectural characteristics of a particular style or era. These buildings were erected with a specific purpose and at many occasions they were some of the most ambitious projects of the time. This Paper focuses on advancement in architecture from Romanesque to Gothic style by studying some of the masterpieces built between 10th to 15th century A.D. This paper examines the contrast between these two styles as well as examines various reasons behind the contrast and concludes by comparing the quality of space associated with both the styles.

Key Words: **Light in gothic, massing in Romanesque, Quality of Space, Aesthetics in architecture, Cathedral, Dark ages.**

Introduction- Society

The period from the 11th century until the middle of the 12th century saw one of the radical transformation in Europe. It was also considered a time of frenetic activity. Urban areas grew dramatically accompanied by population growth and a new political and social climate (vi). The art and architecture provides evidence of this lively period. The middle ages is also a period of demographic, cultural, and economic deterioration occurred in Western Europe following the decline of the Roman Empire. The constant wars and decades of division lead to a decayed society that was devoid of knowledge and lived in constant fear. Italian Scholar Petrarch termed the post-Roman centuries as "Dark Ages" representing wars and deaths, destruction and ignorance in contrast to the light of knowledge in the classical period. People of different age groups and strata of society got engaged in learning the warfare that went on for decades. This left no time for the people to engage in educating themselves and this gave birth to fear and depression. People stopped looking for role models and turned to superstitious beliefs, looking for supernatural explanations for those phenomenons they did not understand (viii). In this scenario, religion came to the rescue, as people got attracted to the concept of deliverance after life, a hope to provide a purpose to an otherwise decayed life on earth. Churches and Monasteries became the safe houses and hospitals treating mental and physical ailments. Monasteries also preserved the important documents like the writings of Hippocrates and Galen. Monks and priests were the only people who were literate and could read and interpret important documents. They often became the messengers of the kingdom taking messages from one king to the other thus playing an important role in the administration. With Charlemagne came the idea of "Holy Roman Empire" with reforms in the political and social scenario as well as the feudal system. A new order thus emerged, in which a separation of secular and religious power and an affirmation of collective values in the city's social classes and their civic organisations, stimulated diversifications in the placing of commission (vi). Cathedrals and residential palaces began to appear in the city centres. Crusade the holy war brought several changes in Europe both externally & internally (vii). The trade route opened up revitalizing the old cities and giving birth to several new cities. Feudalism broke down giving rise to new social classes of merchants and craftsmen with more secularism than spiritualism. With the spirit of rivalry between the cities many magnificent cathedrals were built as the collective effort of the townspeople with their money & labour. The society made attempts to move towards the light of Knowledge. Structural expressions, planning evolutions, craftsmanship reached their climaxes, which were manifested in the great cathedrals during this period. With first intervention made in St. Denis Abbey, Gothic architecture principally evolved from the Romanesque Architecture and existed between the serene, rigid monastic old order of Romanesque Architecture & the secular, dynamic new order of Renaissance.

Advancements -

According to the ancient writings, Europe was dressed up in a white cloak of churches post 10th Century. The Romanesque structures dating back to early 10th century have rather simple facade with unfinished appearance. The look of the churches and monasteries is fort like. One of the reasons of this was the constant wars and churches acting as the safe houses. These structures needed to be safe and strong as well as fire resistant; therefore massive load bearing structures with small windows were made using stone. As decades passed, the technological advancement and architectural development led to taller structures with beautiful ornamentation. This also represented economic growth and political stability (vii). The mere size of the structures suggested that people had developed ability to plan and organize as well as construct large-scale works. Designing buildings of such a scale and complexity required education, a product of which monasteries still had domination(vii). The master builders were not only skilled craftsmen, but also highly educated. Advancements like the development of rib - vault where the ribs became structural elements and could be in filled with light weight material or panels which permitted larger spans can be seen in various

examples. The ribs also made it easy to transfer the load by concentrating the stresses onto a localized point from where load could be transferred to columns. Internal spaces got divided into bays. Use of columns and different types of piers is also seen in various examples. In the later period, mostly towards the end of Romanesque era, pointed arch is introduced to bring the apex in line with the top of the semi- circular arch for greater span and better transfer of load. The Pointed arch becomes a more prominent element in the later period known as Gothic era. The most striking parts of the gothic architecture were the innovative structural evolution which included the pointed arch (adapted from Islamic architecture of the East during the crusade), vaulting and the flying buttresses (iii). The pointed arch ribs revolutionized the planning and construction by bringing flexibilities in the structural bays which could now be rectangular with larger spans. These rectangular structural bays divided the interiors on which longitudinal and transverse pointed arch ribs were constructed. Stone panels were then placed over them. The height of these rectangular bays increased to a great extent with varying spans of longitudinal, transverse & diagonal arches further increasing the monumentality. The walls were freed from taking the load of the vaults by introducing flying buttresses to lighten the entire interior. Slender columns inside and flying buttresses projected outside supported the vaults. Gradually number of ribs was increased to make different rib pattern with less panel areas e.g. fan vaulting & stellar vaulting. Shape of the buttresses followed the line of force and pointed elements called pinnacles were placed at the top. Aisles, Triforium galleries were fitted within the flying buttresses. Big windows were provided on the entire interior and were adorned with fine traceries of stones. Beautiful stained glass windows filtered the light in the interior with a dramatic effect. This structural striking feature of gothic architecture aesthetically expressed the value of honesty of the structure & materials used. Churches and cathedrals were part of the life of the townspeople and were situated at the centre of the city; houses clustering around. The rebuilding of the choir of the Canterbury cathedral by the French mason in 1147 marked the beginning of the gothic architecture in Britain (iii) with features like lancet window, window tracery or pointed windows. The western entrance had a porch with recessed imposing doorway and a wheel window at the top, flanked by towers on both sides. The eastern end had semicircular chevet with radiating chapels (iii). Fleches were added externally for verticality. Transept was usually absent and due to the great height, imposing flying buttresses above the aisles with pinnacles at the top made distinguishing exterior. Stone rib & panel vaults constructed usually were covered by timber roof. Stained glass interior narrated the bible for common illiterate people to understand the message. Most of the cathedrals were attached to the monasteries or later had a collegiate and were situated in the secluded places. They formed a precinct with other buildings like dormitories, infirmity, guesthouse, cloister etc. The western entrance façade were made impressive with fine sculptures of greater degree of perfection. Longer interior was the striking feature. Other features included the double transept, chancel longer that the nave, Lady Chapel at the east

end, two western towers and one crossing tower. The internal height was less and the buttresses were not the striking features. However, the lack of height compensated externally by adding tall bell towers and spires.

Master pieces- Romanesque & Gothic
There are three masterpieces each from Romanesque and Gothic style studied in this section to understand the advancement of architecture style and also the change in the quality of space these buildings offered. One of the early examples of Romanesque style is the Monastery of San Pedro de Roda in Spain. The work of this church started in 10th century, originally in the Mozarbic style. One can see the combination of three naves, three transepts and three apses in this building. The use of barrel vault is done to cover the central nave in combination with quarter sphere vault covering the aisles. The two towers appear as prominent feature of the church from a distance. This particular feature is believed to be an inspiration from the French Romanesque. Like many other examples built during this era, one can see the use of small openings, thick stone walls and less attention to ornamentation.

Image 1:Monastery of San Pedro de Roda in Spain

Monastery of San Pedro de Roda in Spain- Nave

Another peculiar feature that is noticed is the use of salvaged elements, mainly columns, from the buildings knocked down during wars. This indicates that people wanted to have speedy construction. Smaller openings rendered less amount of light in the interiors. In some way this also protected from cold winds and extreme weather conditions outside. The walls were load bearing and thick giving the entire building a 'fort like' look. In the later period, one can identify the advancements in the Romanesque style with additions of features like wall passages, blind arcading, experimentation with massing and roof. This not only refers to the innovation in construction, but also depicts the
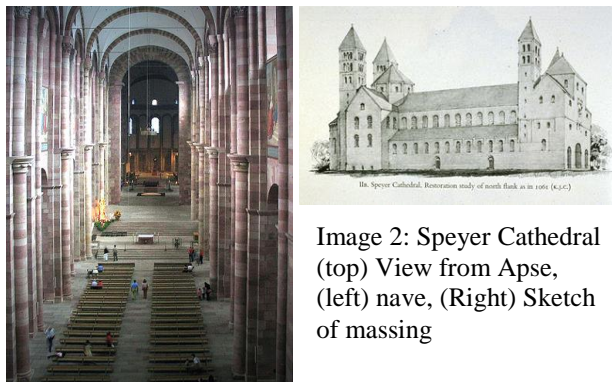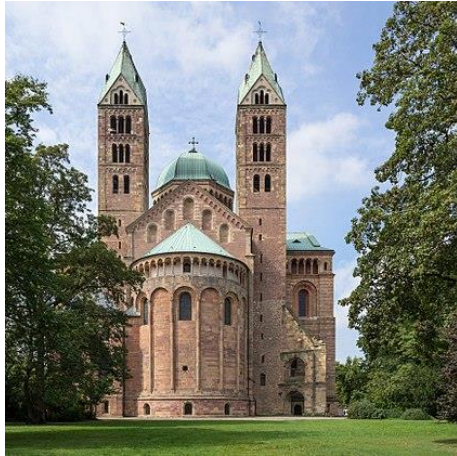
Image 2: Speyer Cathedral (top) View from Apse, (left) nave, (Right) Sketch of massing

Image 3: Worms Cathedral

Worms Cathedral interiors.

confidence of people in undertaking massive scale projects. One such example is the Speyer Cathedral in Germany. The study of plan and elevation shows that every space has a different volume and form reflected in the exterior. This also gives a

sense of progression as one takes a journey from narthex to the apse. The interiors are more aesthetic and refined in the later period. More attention is given to the details and experimentation can be seen in the spanning of roof. Originally Speyer Cathedral had a flat wooden ceiling (vi) which was replaced with stone vault around 1100. The scale, play in massing, clearstory windows and articulation in the structure adds to the quality of space. One more addition was the crypt.

To provide height, the presbytery had to be raised (vi); this in turn resulted into creating optical effects inside the church. A similar cathedral to Speyer is the Worms cathedral built between 1171- 1210. Built over a period of two centuries, this cathedral is testimony to an extra ordinary originality of design (vi) and demonstrates creativity. The overall composition of the cathedral is very dynamic and has strong emphasizing lines and concentration of masses at both the ends. Semi circular apse is replaced by a polygonal west work with rose windows bringing in the light. The nave has cross vaulting in the interior and a sloping roof in the exterior. Addition of openings in the apse allows filtered light in the interiors giving it depth and orienting people towards the apse. In the northern France, the first signs of new sensibility and novel architectural principles derived from careful technical experimentation. This came to be seen with the re-building of St. Denis. The aim to bring uninterrupted light inside the building as a heavenly symbol resulted into innovations in structural system. Rib vaults, flying buttresses and pointed arches were used in sync to achieve great height, stability and easy load transfer in the structures that were filled with light. New spaces like double ambulatory were added to manage the flow of pilgrims. The innovation lay in dissolution of walls and their replacement with stained glass windows (v) representing episodes from bible. A large population was illiterate, hence the stained glass windows acted as a medium of communicating the teachings of bible. There still existed the
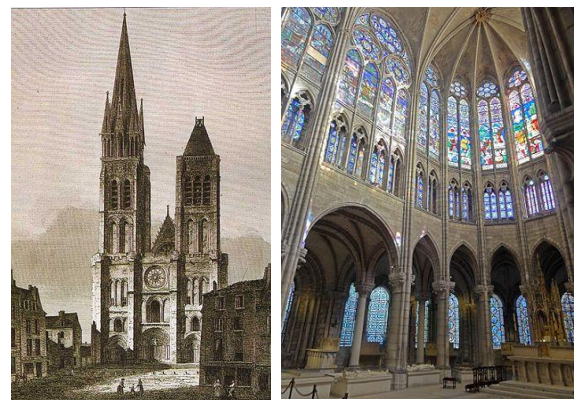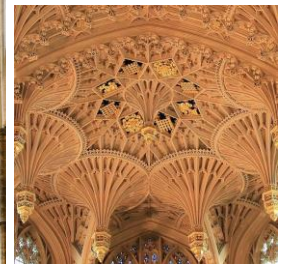

Image 4: St. Denis Abbey, external façade & interior view

concept of heaven and hell. This can be clearly seen in the elements like gargoyles, which were essentially rain water spouts, designed to resemble creatures from hell. The façade of St. Denis shows that walls allow the penetration of light through the large stained glass windows. The aim was to go as tall as

structurally possible. The structural solutions found accentuated the vertical articulation of the church whilst simultaneously creating a far greater range of forms and effects of transparency and luminosity in the internal space (v). There were distinct regional variations seen in Gothic styled buildings, especially the English Gothic. One such masterpiece is the Canterbury cathedral. When a raging inferno destroyed the cathedral in 1174, English and French master builders were summoned to put forward their proposals (v). Canterbury cathedral is an excellent example of innovations with new concepts like enhancing the linearity by the provision of thick walls in the triforium and clearstory. Such an effect made the building look taller and sleeker from outside. Internal spaces are light and airy- 'delicate' as compared to the exteriors that look more like skeleton. Another interesting feature is the fan vault which can be seen in the ceiling across the nave, in the

Image 5: Canterbury Cathedral external view (top), interior view of nave (left), Cloister (right), roof of bell tower (right bottom)

cloister and the roof of bell tower. This adds to the play of light and shadow as well as gives emphasis to the visual perspective. Focus on details, choice of colour to enhance the interiors and stained glass window attempt to replicate the feeling of being in heaven- the house of God. A similar feeling of awe is

Image 6: West Minster Abbey external view (top), interior view of nave (right), Pendant fan- vaulting (right bottom)

experienced at West Minster Abbey which is the last of the magnificent series of royal chapels. It was built in 1503. The most magnificent part of this abbey is the systematically used pendant fan-vault ceiling. Here stone became an elegant pointed- arched skeleton comprising of columns, piers, shafts, vaults and so on (v). All the moulding profiles match so that the entire structure is harmonious. In conclusion it was style that resulted from the combination of spiritual vision and engineering skills combined. The church truly became "the condensed idea reaching towards heaven" – *Abbot Suger.*

Quality of Space in Romanesque and Gothic Churches-Conclusion

Throughout the period from 10th to 15th century one can see the advancement in architectural ornamentation, evolution of plan, complexity in form, experimentation in roof for spanning larger and erecting taller. It is realized from the study, that it was not only architecture, but also the society that attained re-birth from the ashes of war into the light of knowledge. The churches built during Romanesque (dark ages) were massive with small openings giving people a sense of safety during wars and also

portraying the limitations people had post decades of war. Craftsmen had lack of ambition during the dark ages as more structures were knocked down then built. When the society attained stability, people started innovating in building technology and detailing structural elements. Throughout this period one can see the advancement in architectural ornamentation, evolution of plan, complexity in form, and experimentation in roof for spanning larger and erecting taller. Romanesque buildings are excellent examples of massing in architecture. The journey of moving from 'dark' towards 'light' led to further innovations. It is realized that the aim to welcome light inside the churches, in turn changed the quality of space in the interiors, resulting in skeleton like exterior facades where the stained glass windows replaced the walls. In the later period towards the 15th century, some of the most mature Gothic buildings were made. This reflected an age of engineering innovation and creative excellence. Romanesque churches have strength of simplicity while Gothic structures show flawless refinement. The human experience due to contrast in quality and play of light, amount of ornamentation, volumes of internal spaces and detailing in both Romanesque and Gothic structures is prominently evident.

References

i.   Ching, F., Jarzombek, M. and Prakash, V. (n.d.). A global history of architecture. 2nd ed. John Wiley & Sons, Inc. ISBN: 0471268925, 9780471268925

ii.   Fazio, M., Moffett, M., Wodehouse, L. and Fazio, M. (n.d.). A world history of architecture. ISBN: 1780671113, 9781780671116

iii.   Fletcher, B., Cruickshank, D., Saint, A., Blundell Jones, P., Frampton, K. and Richards, F. (2011). Sir Banister Fletcher's a history of architecture. Amsterdam: Architectural Press/Elsevier. ISBN: 0750622679, 9780750622677

iv.   Kostof, S. (2010). A history of architecture. New York, N.Y.: Oxford University Press. ISBN: 0195399838, 9780195399837

v.   Prina, F. (2011). The story of Gothic architecture. Munich: Prestel. ISBN: 3791345966, 9783791345963

vi.   Prina, F. (2011). The story of Romanesque architecture. Munich: Prestel. ISBN: 379134630X, 9783791346304

vii.   Risebero, B. (2001). The story of Western architecture. Cambridge, Mass.: MIT Press. ISBN: 0262681331, 9780262681339

viii.   Shuttelworth, M. Explorable.com. (2017). Psychology in the Middle Ages - Beyond Aristotle. [online] Available at: https://explorable.com/middle-age-psychology [Accessed 10 Dec. 2017].[Websites for images]

ix.   Image 1- En.wikipedia.org. (2017). Sant Pere de Rodes. [online] Available at: https://en.wikipedia.org/wiki/Sant_Pere_de_Rodes [Accessed 10 Dec. 2017].

x.   Image 2- En.wikipedia.org. (2017). Speyer Cathedral. [online] Available at: https://en.wikipedia.org/wiki/Speyer_Cathedral [Accessed 10 Dec. 2017]. & http://students.depaul.edu/~ggalda/project/speyer_v2.html

xi.   Image 3- Via Lucis Photography. (2017). The Cathedral Saint Peter of Worms – A Guest Post (Jong-Soung Kimm). [online] Available at: https://vialucispress.wordpress.com/2012/04/27/the-cathedral-saint-peter-of-worms-a-guest-post-jong-soong-kimm/ [Accessed 10 Dec. 2017]. & https://en.wikipedia.org/wiki/Wormser_Dom

xii.   Image 4-En.wikipedia.org. (2017). Basilica of St Denis. [online] Available at: https://en.wikipedia.org/wiki/Basilica_of_St_Denis [Accessed 10 Dec. 2017].

xiii.   Image 5- En.wikipedia.org. (2017). Canterbury Cathedral. [online] Available at: https://en.wikipedia.org/wiki/Canterbury_Cathedral [Accessed 10 Dec. 2017].

xiv.   Image 6- Westminster-abbey.org. (2017). Westminster Abbey » Visit Us. [online] Available at: http://www.westminster-abbey.org/visit-us [Accessed 10 Dec. 2017].