The Arch, An Enigma Of Modern Speculative Freemasonry

George L. Simpson, Jr.

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Dedication

This is the first research paper to be presented to Virginia Research Royal Arch Chapter. Most Excellent Companion William E. Norman, Past Grand High Priest, was to have presented the first paper, and it was his great desire to do so. But he is presently recovering from serious illness, which has prevented him from being here today. It is a great honor for me to present this paper: still, I would rather be sitting with my companions listening to the wise and scholarly words of our dear friend "Bill" Norman. It is with this thought in mind that I dedicate this paper to Most Excellent Companion "Bill". It is the least I can do.

Forward

It was originally intended that this paper be simply a history of the arch in its various forms. But I made a pair of very curious observations while analyzing some of the background material for it: first, that the arch, which, in its several forms, is a most important element in stone architecture, is never mentioned in American Ancient Craft Masonry. Secondly, our modern speculative Masonry, including Capitular Masonry, relates entirely to Roman, or round-arch, masonry: an apparent contradiction in fact, when one considers that our operative Banish brethren – upon whose works the early speculative Lodges and the first Grand Lodge of 1717 were founded – wrought almost exclusively in Gothic, or pointed-arch, masonry for several centuries preceding that date. Masonic scholars, such as Mackey and Pound, consider it an Ancient Landmark, or at least a time-honored tradition, that Freemasonry is a speculative science based upon an operative art.

If this be true, then it seems to me that Anglo-American speculative Masonry, with its Anglo-American system of jurisprudence and its organizational structure and ritual so easily traceable to the Premier Grand Lodge of England, should be based upon that form of the operative art known to have been practiced in England for so long before the transition from operative to speculative Masonry. Indeed, Perpendicular Gothic Architecture was developed in England, by English Masons, was used almost exclusively in England, and was in use there for a long time TO THE EXCLUSION OF OTHER ARCHITECTURAL FORMS! Large cathedrals in Perpendicular Gothic, still in full use in many parts of England today, give mute testimony of the truth of this statement. So, it has become my intention in this essay to attempt to shed some light, if light there be, on these two puzzling questions: "What of the Arch?", and "Why no Gothic Masonry?" In order to do this, It is necessary to look into the technical and historical side of operative masonry as well as a little of the early history of speculative Masonry.

Technical Background

In general, the three basic solutions to the architectural problem of supporting that part of a building above a doorway, a window or a room are (1) the truss. (2) the post-and-lintel, (3) the arch. The truss makes use of the fact that the triangle is a rigid figure: none of its angles can be changed without changing the lengths and sides. This technique is useful in providing openings and coverings for wood – or steel – framed buildings, but is of little use in buildings of stone, which are of the "bearing-wall" type, the exception to the rule here is being the "hammer-beam" roofs of timber which once covered a few of the earliest Gothic structures, and the flat timber roofs which, it is believed, once covered some of the Classic Greek temples, including the Parthenon.

The post-and-lintel method simply involves two or more upright members with a piece, called the "lintel", laid across them to top the opening and support the structure above it. This method was used also in Classic Greek temple masonry. Although both civilizations have produced some remarkable stone structures using this technique, its application in

stone architecture is severely limited: the piers or columns supporting the lintels must be close together, since a lintel which is too long can break of its own weight. For similar reasons, the weight of a stone structure which can he placed above a lintel is severely limited.

The arch largely overcomes the disadvantages of the other two methods, while presenting some problems of its own. By definition, an arch (the word comes from Vulgate Latin "arca') is (1) geometrically, any part of a curve; synonymous with "arc", and (2) a structural member, curved and made up of separate wedge-shaped solids, called "voussoirs", with their joints at right angles to the curve. It is used to support the wall or other weight above an opening or as an ornamental feature in decorative work. The arch is a means of spanning an opening with many pieces of material, each smaller than the width of the opening, by resolving vertical pressure into horizontal or diagonal force: in effect, "bending" or shifting its weight and that of the masonry it supports to a lateral, outward thrust. An arch can support considerably more weight than a lintel, the only limiting factors being the strength of the piers or columns supporting the arch, the breaking strength of the voussoirs themselves, and the strength and solidity of the abutments bearing the outward thrust of the arch and the masonry above it.

From an engineering standpoint, the arch is almost ideally suited for a doorway or a window in a stone building. Erect a row of columns, span them with arches, buttress the end arches to conduct the lateral force of the end arches to ground, and surmount the structure with several courses of ashlar, and an arcaded wall is the result. A dome is simply a circle of half-arches; one of the most stable structures in masonry, provided that the outward-and-downward thrust is countered properly. Imagine taking vertical slices from a dome, such that four piers remain, forming a square at the base. This is called a pedentive, and is a practical, strong, and aesthetically-pleasing means of adapting a dome to a square structure beneath it.

Hagia Sophia, the Byzantine church-mosque located in Istanbul, is simply one huge, highly-embellished stone dome and pedentive. If two parallel rows of columns or piers are erected, then each pair arched across and the intervening spaces covered, the result is a basic vault. The vault is used when an all-stone ceiling or roof over a rectangular room is desired. (Incidentally, more than one profane friend has arched an eyebrow in skepticism when told he had to look up to see the vault in a stone building.) The arched vaulting beneath the ground floor of a stone building is, of course, known as a crypt.

Historical Background

The history of architecture, being so intimately related to man's need for shelter and protection, his craving for artistic expression and his compulsion to impress his friends, his enemies, and his gods, is a reflection of the history of man himself. The arch, for instance, was used in mud brick structures five thousand years ago by the inhabitants of the Tigris-Euphrates River Valley in Mesopotamia. It is odd that the principle of the arch was unknown to the ancient Egyptians, whose Pharaonic Empire, which arose about 3500 B.C., remained in a relatively undeclining state for over 3000 years. Ruins of their mighty masonry still stand: Mastabas, or rock tombs; pyramids and funerary temples; and temples to their gods.

It is interesting to note that prehistoric Egyptians built the walls of their houses of bundles of reeds, tied together at top and bottom and set upright, to which they added more bundles of reeds, laid across and tied to the upright bundles. Ruins of the earliest stone pillars have been discovered which have their base and capital carved to resemble bundles of reeds tied together at top and bottom. This should nudge the memories of all who, as Fellowcrafts, learned of the "simple hint from which proceeded the more improved art of architecture". Indeed, to all appearances, stone masonry was born in the Nile Valley.

From its earliest period, Egyptian masonry was designed to serve its intended use as practically as the state of their art would allow, the material and building techniques selected to achieve strength and Permanence, and the structures designed aesthetically with attention to unity of form, balance, and impressiveness. In the building of the earliest mastabas was born the germ of an idea that has persisted through Egyptian, Greek, Roman, Gothic, Renaissance and Modern architecture and is now known to us as the threefold idea that "there should be wisdom to contrive, strength to support and beauty to adorn" any successful architectural work. It has been so written by Greek, Roman, and Gothic architects, and it continues to be included as basic Philosophy in most modern architectural textbooks.

The individual Egyptian fellowcraft was no slouch when it came to craftsmanship. The Great Pyramid at Gizeh, 480 feet high by 760 feet square, was made of polished ashlars weighing two- and one-half tons apiece. But the joints between them were one-fiftieth of an inch, to jeweler's accuracy: work unexcelled by the builders of the Parthenon. The ashlars, some of which were 20 by 6 feet, were wrought at the quarries, then hauled to the site and laid using quite ingenious methods. Remember, they didn't know the principal of the wheel: no cars, no pulleys, no cranes. And they used no arches.

The age of Classical Greek architecture, after a thousand years of slow preparation, consisted of virtually the two generations dominated by Pericles in the Fifth Century B.C. During this period, the Doric, Ionic and Corinthian orders reached perfection, as did their use in the erection of Greek religious temples. The Greeks were never engineers. Their genius displayed in sculpture, drama, law, philosophy, and architecture was compounded of the virtue of perfection and the vice of self-absorption. Absolute perfection was sought, but only within clearly defined limits. The Greek temples were of trabeated, or beamed, construction. If the Greeks knew the principle of the arch, they never made use of it. There were no vaults, no dome, and no arched openings in the walls.

With all its aesthetic refinements, the Greek temple, structurally, was no improvement over Karnak or Stonehenge. It mirrored the Greek obsession with the mathematics of ratio and proportion as a mystical thing, the meticulous fitting together of stone blocks mortar was never used, their crude but strangely poetic religion and their adoration of the human body. The typical temple consisted of a rectangular enclosure surrounded by a colonnade – the peristyle – and having a low-pitched roof facaded at the ends with shallow triangles of stone – the architrave, entablature, and pediment – which were elaborately carved AND PAINTED, and were of the same architectural order as the columns supporting them: either Doric or Ionic. The Corinthian order, although invented by the Greeks, was rarely used by then. They preferred the two plainer orders, but were obsessed with details and proportions of all three, which were minutely prescribed and followed with fanatical care, as if they had been laid down by their gods!

While the Greek was a deeply-religious artist and creator of style, the Roman, by contrast, was an engineer. By the Third Century A.D., the Roman Empire extended from Hadrian's wall in Scotland across to the Persian Gulf, embracing much of Arabia and North Africa. Over this vast expanse of the world had spread Roman roads, Roman law, and Roman architecture. Where the Greeks of the Classical Age produced a little architecture of the highest order, the Romans produced vast quantities of it, mostly second-rate. Many Roman temples were copied from the Greek, but dimensions were altered to accommodate the use of brick and concrete, which was then faced with stone.

But this is not intended to belittle Roman engineering skill. The Romans were concerned with utility and structure, and, unlike the Greeks, made wide and ingenious use of the arch in civil and military buildings, bridges, and aqueducts. A few of their arched stone aqueducts in parts of Southern Europe still carry water from mountain sources into towns many miles away. Roman buildings were characterized by round arches and barrel vaults. In order to bear the tremendous side thrust of this form of arch and vault, they built walls

of heavy masonry sometimes as much as thirty feet thick, having small, obstructed windows. It created an architecture of weight and gloom. But their extensive use of the arch and the vault was to influence European and British architecture for many centuries.

On July 25, A.D. 306, outside the walls of York, the Roman emperor Constantine was acclaimed Emperor of the World. Seven years later, he gave freedom and official standing to the Christian Church, and the great era of Cathedral-building was gradually born. By the time of the Norman invasion in 1066, there was a mediocre masonry in parts of Britian, and several arctuated churches had been built of used Roman bricks on principles derived from Roman ruins. The Norman invasion of 1066 brought with it good Caen freestone, several great French master masons and a spate of building based on an improved form of Roman architecture. But walls were still thick and heavy, and arches and vaults still round.

One of the disadvantages of the round-arched vault is that the width of a room must always be twice the height of the vault above its springline. Building dimensions were severely restricted. Two intersecting rooms had to be of equal width. And the walls still had to be thick and the windows tiny.

Strangely coincident with the era of the Crusades, a new architecture developed in Northern Europe and spread to Central Europe and Britain. It stemmed from the invention, or perhaps importation, of the pointed arch and the flying buttress. The pointed arch consisted of two symmetrical arcs, joined at the top, and having intersecting radii. It allowed vaulting of intersecting rooms of practically any width, length, and height. It permitted complex ribbed vaulting, overlaid with thin stones: lightweight, fireproof stone ceilings whose diminished side-thrust could be concentrated at predetermined points in the walls and taken to the ground by flying buttresses. Walls, piers, and columns became

thin and tall, and numerous large, tall lancet windows pierced the walls, flooding the interiors of the buildings with light. Many years later, someone trying to reintroduce the Roman style called this new architecture "Gothic" – meant to be a term of derision similar to "barbaric" – and the name stuck. Misnomer though it be, Gothic it has been called all these years, and Gothic I shall call it.

Early Gothic freestone masons developed individual styles, carrying the aesthetic beauty of structural statement, form, and decoration both internal and external, to almost unbelievable heights, yet always within strict bounds of geometric and structural discipline. In the fabrication of Cathedrals and monasteries, especially, English master masons proved themselves to be celebrated artists indeed, both in design and execution. Numerous edifices, wrought of the finest freestone and marble from Caen and Purbeck, stand today as mute testimony of their genius. Their lancet, wheel and rose windows, symphonies in stone and stained glass, still captivate the viewer's eye with their majestic beauty. The tall forests of flying buttresses surrounding the buildings are of such aesthetic appeal in themselves, from their ashlared bases to their richly-decorated finials, that one is tempted to forget that they are, after all, only structural members.

But perhaps the most outstanding feature in English Gothic is the fan-vaulted ceiling. The round Roman arch was relatively inflexible, in that only square bays could be created from them. But with the Gothic arch, oblong bays could be made without increasing the height of the arch. Such flexibility allowed complex vaulting, which, especially in England, developed into intricate and highly-decorative ribbed vaulting: the lierne, or star vault, the palm vault, and the crowning glory of English Gothic masonry: The fan vault. It would require many volumes of writing and illustrations to describe in any detail the many, many examples of this peculiarly English style of stone ceiling, but I shall cite as an extreme example the ceiling of the Henry VII Chapel in Westminster Abbey, which was designed and executed between 1503 and 1519 by William Vertue, Master Mason.

Will Shakespeare would not attempt verbally to describe the awesome beauty of this marvelous work. This is fan vaulting which surpasses itself: almost parody on fan vaulting. It looks for the world like a profusion of spinning parasol fans made of the finest lace: the mind can hardly accept the realization that it is wrought entirely of stone. But this was the ultimate in English Gothic architecture, beyond which it could not go. The principle of the pointed arch in stone was carried to its mathematical and aesthetic limit. In many ways, it marked the decline of widespread freestone building, and the gradual disappearance of operative freemasons. By the middle of Sixteenth Century, the demand for the services of the old King's Master Masons and their fellows in the masonic craft had largely ended, but not before they had designed and built so many exquisite Gothic cathedrals and monasteries all over the British island that masterful architectural design and superb craftsmanship were, in their time, to be considered practically commonplace!

The Seventeenth Century Renaissance Movement in England saw an attempt to return to Classical Roman and Greek form and shape – but in painted wood and stucco, with very little stonework. The architects of the time were usually not artisans (or Freemasons) themselves, were obsessed with ancient architectural forms of which they apparently had little understanding, and attempted – and I believe unsuccessfully – to convey the idea that somehow a framed wooden building had to have giant Corinthian columns and arched windows. In my opinion, at least, the typical English building of this period was overly-decorated, artificial and ugly: a "plastic Parthenon".

It was during this period that lodges in England saw a gradual rise in the number of speculative Masons. By 1646, there were a few English lodges composed entirely of speculatives. The number of operatives was dwindling. During the years immediately preceding the formation of the English Grand Lodge in London in 1717, the Craft appears to have been in a high state of confusion and disarray. The confederation of the lodges around London, now composed mostly of speculatives, and the installation of Anthony

Sayer, gentleman, in the NEW office of Grand Master, in effect was a revival, or even a rebirth, of Freemasonry. It was to emerge in changed form; and the effect of these changes was to be very dramatic.

It appears that early after this original Grand Lodge was formed, the ceremonies and lessons of the old Gothic operatives were digested into ritual: A formal structure of degrees more suitable for speculative working. There is some evidence that the True Masonic Word was part of the Master's Degree. Now, this ritual must have followed the old forms, at least fundamentally, because the old Masons in the group would not have tolerated any radical innovations. But, early in its history, lodges and individual Masons began to secede from the Grand Lodge for reasons which included matters of rite, of race, of religion, of the authority of the Grand Lodge, and of BUTCHERING THE MASTER'S DEGREE BY LOPPING OFF PART OF IT, REMOVING THE TRUE WORD AND INSERTING A SUBSTITUTE WORD.

Meanwhile, Dr. James Anderson, having been ordered by Grand Master Desgauliers to "digest the old Gothic constitutions into a more suitable form", produced his New Constitutions in 1723. Its historical section contained such things as a long, apocryphal list of Grand Masters" including Noah, Moses, Enoch, and Adan; plus all of Anderson's favorite kings! It removed all reference to Christianity, and in the old Gothic constitutions, the requirement of Christianity was stated firmly, and appears to have been as much of a landmark as monotheism. Then follows an important clue in our quest. I quote from Anderson's Constitutions:

> "King James VI of Scotland succeeded to the Crown of England, being a Mason King, revived the English Lodges; and as he was the first King of Great Britian, he was also. the First Prince in the World that recovered the Roman Architecture from

> the Ruins of Gothick ignorance: for after many dark or illiterate Ages, as soon as all parts of learning revived, and Geometry recover'd its ground, the polite Nations began to discover the confusion and impropriety of the Gothick buildings and the Augustan stile was rais'd from its rubbish in Italy by (here follows a long list of Italian Renaissance and Neoclassical architects) but above all, by the great Palladio, who has not yet been duly imitated in Italy, though justly rival'd in England by our great Master-Mason, Inigo Jones."

Dr. Anderson goes on to praise Inigo Jones and his Augustan style architecture, with its round arches and barrel vaults. Anderson and Jones were close friends, by the way. Inigo Jones, although a well-known architect, was not a Freemason.

Anyway, we may add to our list of reasons for secession the fact that many old Masons would not accept Anderson's Constitutions. By 1747, a rival Grand Lodge was organized, calling itself the Antients, and calling the Grand Lodge of 1717 the Moderns. The Royal Arch Degree appeared, seemingly from nowhere, around 1738-40 as part of the Antients' system, and was not adopted by the Moderns until 1770-76. The Past Master's Degree was in by the Antients in 1751, but was not adopted by the Moderns until 1810! The Great Schism was not healed until the Union of 1813, at which time the United Grand Lodge of England pronounced that "Ancient Craft Masonry consisted of three degrees of Entered Apprentice, Fellowcraft and Master Mason, including the Holy Royal Arch".

Did the founders of the first Grand Lodge, being men of great influence and infatuated with Augustan or "Romanesque" architecture, attempted to delete everything Gothic from speculative Masonry, and in so doing obliterated several Ancient Landmarks? It seems that only tampering with Landmarks could have been sufficient reason for the Great Schism. Who knows what may have been thus lost from Ancient Craft Masonry?

In any event, a sound and reasonably consistent system of Symbolic and Capitular Masonry has thrived and flourished, and I would not wish to alter it for fear of causing further loss and confusion. But I feel that the thoughtful Freemason might benefit from a study of Gothic masonry, and might derive useful moral and ethical statements from the symbols to be found therein. Here is an example: to construct the so-called "perfect" Gothic arch, set the compasses to the desired arch width. At the springing points, strike two arcs. The figure formed between the springing points and the upper intersection point is an equilateral arch, called a "perfect" arch. Connect these three points together with straight lines, and the resulting figure is one of the most precious symbols of the Royal Arch Mason: the equilateral triangle. Every perfect Gothic arch contains a symbol of God, to be seen by all who have eyes to see.

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