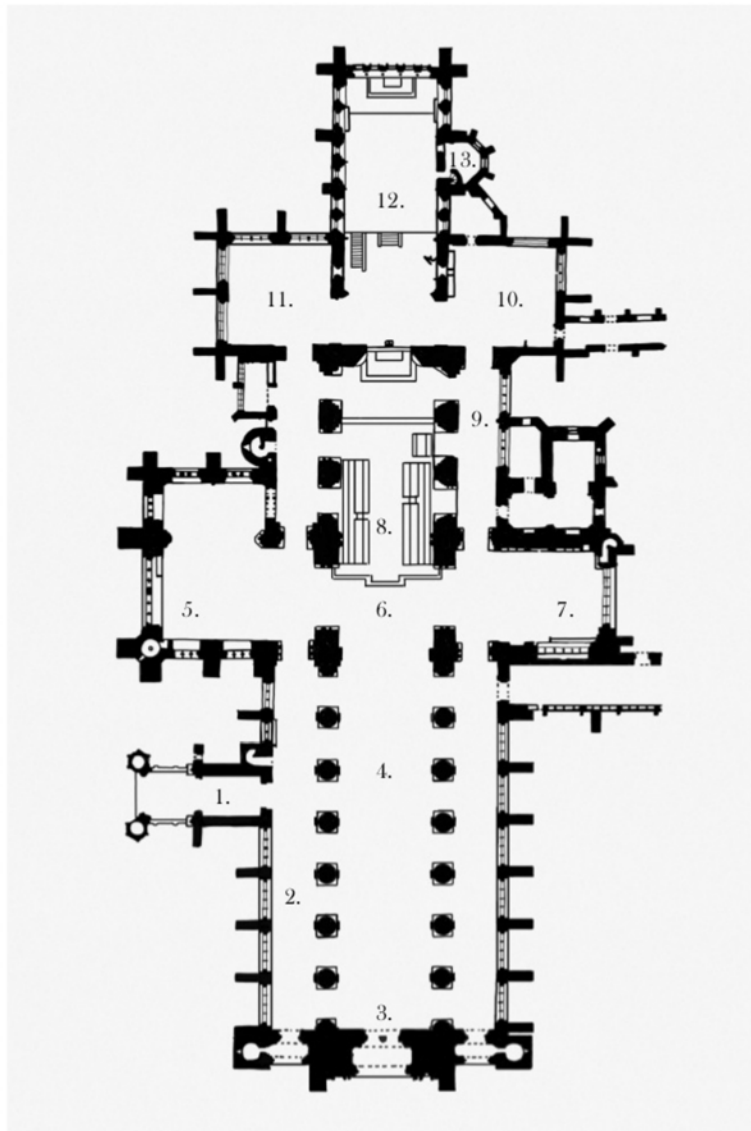


Hereford Cathedral
Formal Analysis 1

Hereford Cathedral-Plan



KEY

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|-----------------------|--------------------------|--------------------------------|--------------------------|
| <u>1.</u> North Porch | <u>5.</u> North Transept | <u>9.</u> Aisle | <u>13.</u> Audley Chapel |
| <u>2.</u> North Aisle | <u>6.</u> Altar | <u>10.</u> South-East Transept | |
| <u>3.</u> West-End | <u>7.</u> South Transept | <u>11.</u> North-East Transept | |
| <u>4.</u> Nave | <u>8.</u> Choir | <u>12.</u> Lady Chapel | |

For one looking to study a building with the intention to investigate its design and understand its effects upon the human being, there is no better guide than Steen Rasmussen's 'Experiencing Architecture'. A book that comprehensively breaks down architecture into formal elements that when separated and examined help the reader understand the reasons for why they feel a certain way when experiencing a building, why it is that a building has a pleasing sense to it or why a building is the right answer to the question its architect was proposed often comparing buildings from across the ages. One such element that offers us these answers is Scale and Proportion. Its early mathematical routes outlined by Rasmussen have solidified themselves within the principles of architecture, but their humble beginnings still offer the same effects on those who experience it. Rasmussen tells us of a fable where Pythagoras "heard the clang of three hammers and found the sound pleasing". After learning the length of the hammer heads related to each other in a ratio, phenomenon. The Greeks explained that the phenomenon "makes the soul happy to work with clear mathematical ratios". This was the beginning of scale and proportion.



At the heart of my study is Hereford Cathedral. Using the formal elements of Scale and Proportion will offer insights into why the Cathedral takes the form it is in relation to height, shape, scale and the inter-relationships between the elements within. It will uncover links between the mathematical and natural in reference to the golden ratio and the underlying meaning of the cathedral. These metaphysical links will be exposed to their philosophical form as I strip back Hereford Cathedral and allow the worlds of mathematics and religion to collide in their common ground of the natural world.

¹Steen Eiler Rasmussen, *Experiencing Architecture* (Cambridge: M.I.T. Press, 1959), p. 104.

²Steen Eiler Rasmussen, p. 104.

The Cathedral in its current guise dates back to 1100s following the Norman conquest of Britain, however the original cathedral was founded in 696 only to be destroyed in 1055. When the Normans rebuilt the Cathedral, they intended it as a beacon of religion for the new administration. This was the beginning of a new England and required a new form of design to spread the word of God. Hereford was constructed in a Romanesque style differing from its contemporaries. The Cathedral was an architectural anomaly to the everyday man of the day. It represented a connection to God and nature with its unparalleled scale, reaching up into the sky and covering hundreds of feet in an attempt to show the majesty and prosperity that religion offered. To be in awe was the intention

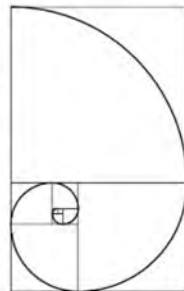


Fig.1

Upon first sight, the proportions of the West-End seem perfect. Here is where we encounter the Golden Ratio that Rasmussen places great emphasis on and correctly so. The width between the two Niches (approx. 9m) and the height to the top of the central window (approx. 15m) equals a golden ratio shown by the equation $(a+b)/a=a/b$ (fig.1). It is by definition a pleasing experience for the soul and is important in realising why the façade takes this shape. It is dictated by mathematic principle, by precedent of other similar structures and by a connection to nature. If the Cathedral maintained its width but increased its height by 5, then it would look out of place and not somewhere one would want to worship their God.

Proceeding into the Cathedral offers an entirely new insight of scale in the structure. Hereford takes the cruciform layout with a long nave leading to the altar positioned below the central tower. This is flanked by a North and South Transept, helping form the cruciform which is topped by a choir and the Lady Chapel. Standing at the altar it becomes apparent that a spatial explosion of calculated proportion flows outwards from the centre, down the long nave, out to the shorter transepts and behind to the Chapel create the cruciform (fig 2). This in itself is incredibly significant. The cruciform is the representation of the cross on which Jesus died on and offers the congregation a subconscious link to their saviour. The cruciform is another example of the Golden Ratio with the expansion of the cathedral based around the proportions of the altar area (fig 3). As Simon Unwin describes "The principal purpose of all Christian churches is to identify the place of the altar"³ its these perfect proportions that focus all attention to the altar. Continuing with the religious relationship to the cruciform, Vitruvius argues that "the human figure is source of proportion for the classical orders" hinting towards the golden ratio. This has direct relationships with the human figure, arguably the most natural of structures. This proposal of a cruciform plan in cathedrals is clearly founded by religious belief and mathematics stemming from nature. This is further bolstered by the thinking of Auguste Hippo where he suggests that the defining quality of the divine is precise mathematical relationships. Considering the Cathedral in its meaning, it is a beacon of religion and the representation of God on earth, hence a divine structure.

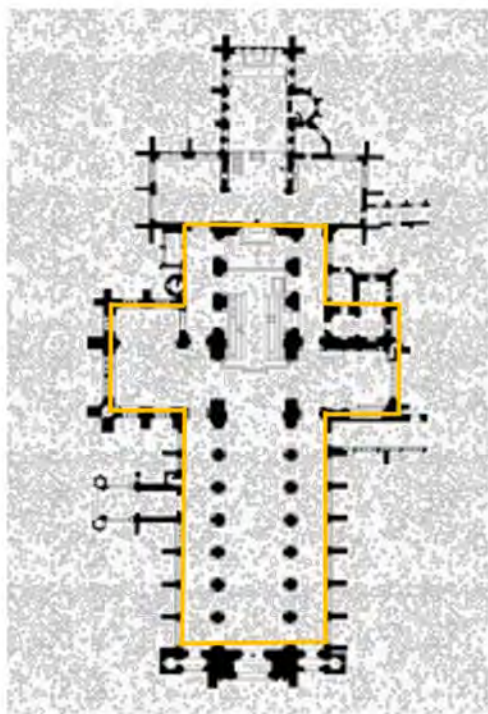


Fig.2

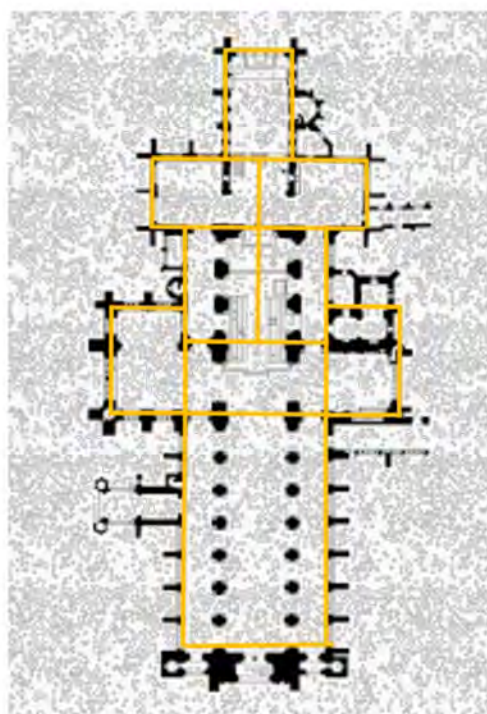


Fig.3

³ Simon Unwin, *Analysing Architecture* (London: Routledge, 1997), p 67.

⁴ Vitruvius, *The Architecture of Marcus Vitruvius Pollio*, trans. By Joseph Gwilt (London: Lackwood & Co., 1874), p.81-82.

Presented now is an argument where divinity, everything the Church represents, is tied intrinsically to mathematics via the proposals of Pythagoras and Hippo which produces a building that personifies this combination. When we consider this and the thinking of Wittkower who hypothesises that the natural creations of the human figure that follow geometric ratios allowed thinkers to understand that "if the products of architecture were to possess the same conceptual integrity they too should be designed using perfect figures and harmonic mathematical proportions.". This produces the explanation for the Cathedral's guise. The height and width of the arches in the nave. The height of the tower. The dimensions of the windows in the clerestory. All having links to perfect geometry and therefore a representation of the natural which in this case, a relationship with God and all things divine, offering the Cathedral as a unique and holy experience explaining the formal elements of the structure.



Another formal element Rasmussen uses is Daylight in Architecture. Something he says is out of the control of the Architect. It is how it is utilized in offering an experience of a space that is the factor the architect can control. He tells us that there are three types of light in architecture, a bright open hall, a skylight and a room with light entering in from the side. Quality of light is far more important than quantity and of great importance is how this light falls, what does it show to the viewer? Using Rasmussen's guide on the subject I will now endeavour to explore Daylight in Hereford Cathedral in relation to the formal elements.

Throughout this, it is crucial to remember that light in Christianity is incredibly significant. Light or divine light is part of the concept of divine presence and that being the presence of God.

Therefore, its importance and use in the Cathedral is highly significant in understanding the formal elements. Windows on the cathedral are given priority within the structure often forming the centrepiece as does the rose window in the Lady Chapel at Hereford. Their positioning is also vital. Take the windows high up in the Clerestory above the Nave. Exteriously, buttresses rise to hold the main structure but constructed not to block the light. Interiorly, they appear to cascade light down into the aisle of the nave, almost guiding the way to the all-important altar.

The larger windows in the Aisles direct light across the Nave, offering light to the pews and highlighting textural differences in the Romanesque columns. This detailing shows off the richness of texture and wealth the church offers. With this incredibly powerful use of daylight as a guide within the cathedral, it is further enhanced with imagery. The stain glass not only varies the light in colour but also uses it to tell stories of great victories of saints and patrons of the religion. Light within the cathedral is God. For the congregation, light is vital. It tells them a story. It guides them and connects them to God and this, above almost all else is one of the most tangible connections in the Cathedral. It is no wonder why there is such a vast use of windows and lighting techniques within the building that help transform the cathedral into a place of meta-physical connection.





It seems that no matter where you are in Hereford Cathedral, the sense of scale and proportion in a variety of environments, combined with the intelligent, often manipulative use of light link to the essential message a Cathedral is intended to deliver. One of power. Of wealth. Of piety and of community. From the sublime Nave with its intricate vaulting and sheer scale, to the altar where the link between congregation, preacher and God is complete and the Audley Chapel where the details of the Cathedral are tangible. Hereford Cathedral is a masterpiece of Gothic design. There is simply no other way of describing it.