Chapter 4
Prytanæum and the Floor Plan of the Temple of Solomon

The Prytanæum as the Frame of the Universe

In the *Chronology*, the corruption of the original religion is not expanded into any substantive conclusion. However, in his unpublished manuscripts, Newton expanded the subject of the ancient corruption of the original religion which led to the corruption of the Church in Newton's own time. Newton redrafted his work *Theologiæ Gentilis Origines Philosophicæ*[296] many times and left various tables of contents.[297] Although this indicates that he intended it to be published, the contents of these manuscripts were heretical and it seems unlikely that he would have intended it for publication in his lifetime and neither did his heirs consider all of the contents publishable. The original *Origines* consisted of rough drafts and notes, but he continued to develop and redraft the concepts of *Origines* from the 1680s until his death in 1727 in manuscripts such as *The Original of Religion*[298] from the early 1690s and *Irenicum*,[299] which is undated. These concepts were still being worked on when he was working on his *Chronology.*

Newton believed that the ancient Egyptians practiced a sacred philosophy that originated from knowledge of the stars – "Sacred philosophy obviously flourished in Egypt and was founded on the science of the stars".[300] He made the celestial iconography explicit in a description of a religious procession.

> In this procession the hymns of the first priest are associated with the harmony of the heavenly spheres. Next comes the astronomer with the holy books concerning the study of the stars. Next comes the sacred scribe who understands the planets, stars and the sacred things. Finally the priest and chief appear, who know all things as a consequence of studying the sacred rites and theology, and who close the entire procession. By bringing together a knowledge of the stars and the earth with the study of that which was the most important, Egyptians indicated that their theology concerned the study of the stars. Indeed, the gods of the Egyptians were stars and elements (Knoespel, 1999).[301]

The study of the stars was essential to the rituals of the priests. In *Origines,* Newton does not discuss the Prytanæum, but in the mid-1680s he was also working on Babson MS 0434, and there is a distinct change in emphasis in his redrafts. In the latter developments of *Origines*, the iconography of the building becomes essential to the enacting of the rituals. For Newton, "The religion most ancient and most generally received by the nations in the first ages was that of the Prytanæa or Vestal

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Temples".[302] This form of worship was spread by Noah and his sons, from Egypt, and at the heart of the Noachian religion lies the symbol of the Prytanæa – the sacrificial altar, the hearth, the centre of worship – which represented the structure of the heliocentric solar system. Although Noah kept the true religion, he and his sons were worshipped as gods and eventually as planets. Noah was worshipped as Saturn and his son Ham as Jupiter, and Ham's sons became identified with Hercules, Osiris, Antaeus and Busiris. In Egypt and elsewhere, the original religion became corrupt, with idolatrous worship of kings who were transmogrified figures of Noah and his family. Noah performed rituals of sacrifice around a sacred fire. Newton claimed:

> Noah & his sons carried with them the sacred fire from the Tower of Babylon into the land of Shinar . . . & Abraham carried it with him to offer Isaac & Æneas carried it with him from Troy & the ancient Kings of Greece & Persia carried it along with them into the field when they went to make war: so the sons of Noah when they went from him into their several countries took this fire along with their several families & the like was done by their sons & grandsons as oft as they went with their families to live at any considerable distance from one another in a distinct polity. And by this means I conceive it came to pass that the sacred fire at the first plantation of the earth was to be found in every City, as an essential part of the government, for in the first ages when the whole world was distinguished into as many kingdoms as cities.[303]

The original religion had continued with Abraham, but there were continuous external influences that tainted the religion. The Israelites understood the Prytanæa of the neighbouring nations, "which the Israelites should introduce into their Land, & therefore these Prytanæa were used in the Cities of Canaan & Syria before the days of Moses".[304] God sent Moses to teach the uncorrupted Noachian worship to the Jews. Moses taught the Jews no other than the true religion that was purged of the corruptions of the nations, who had added the idolatrous elements. Both Noah and Moses

> kept a perpetual sacred fire in a consecrated place for sacrifices. And as there was but one Prytanæum or Temple in the kingdom of the Jews so in the first kingdoms of the Nations so there was but one fire in a kingdom. When every city was a kingdom there was a Prytanæum in every City. When many cities united under one common council & thereby grew into one kingdom, there was in the chief city where the Council met a Prytanæum of a nobler structure common to all the cities & the private Prytanæa in time grew out of use. . . The ancient nations built the front of their Temples toward the East & therefore Moses in doing so retained the religion of his ancestors. The placing the fire in the common centre of the Priests Court & of the outward court or court of the people in the Tabernacle & in Solomon's Temple [& the framing the Tabernacle & Temple so as to make it a symbol of the world] is a part also of the religion which the nations received from Noah, for they placed the fire in the middle of the Prytanæa.[305] (Newton, undated-c)

For Newton, the entire heavens were to be

> the true & real Temple of God & therefore that a Prytanæum might deserve the name of his Temple they framed it so as in the fittest manner to represent the whole system of the heavens. A point of religion then which nothing can be more rational.[306]

The Prytanæum embodied universal knowledge,

> So there was one design of the first institution of the true religion to propose to mankind by the frame of the ancient Temples, the study of the frame of the world as the true Temple of the

> great God they worshipped. And thence it was that the Priests anciently were above other men well skilled in the knowledge of the true frame of Nature & accounted it a great part of their Theology. (Newton, undated-c)[307]

The frame of the Prytanæum or Temple embodied the original religion that symbolised the geometric structure of the universe. This geometric structure was the mathematical form of the universe untainted by the corruption of the original religion. In turn, the Temple of Solomon, which replicated the plan of the Tabernacle of Moses, embodied the perfection of the original religion within its structure, which had been inherited from the time of Noah. Babson MS 0434 carefully constructed the Temple through its measurements and its geometry. To understand the frame of the Temple was to understand a great part of the original religion's Theology; the frame of the Temple was the symbol of the exoteric knowledge while the enactment and understanding of the rituals within the Temple lead to the esoteric knowledge of the prophets.

Newton used a range of ancient sources to support his hypothesis: Josephus; Diodorus; Plato; Strabo; Herodotus; Eusebius and many other ancient authors, plus various contemporary authors. Frequently cited are Samuel Bochart's *Geographia sacra;* John Marsham's *Chronicus can aegyptiacus, ebraicus & graecus* and Gerard Vossius' *De theologia gentili*. These three authors created classifications of the pagan traditions to reinforce Christian beliefs. Vossius' *De theologia gentili* was published together with his son, Dionysius Vossius' translation of Maimonides treatise of idolatry, *Mishneh Torah, Hilkhot Avodah Zarah*. Originally published in 1641, it was reprinted eight times by 1700.[308] Newton's copy of *De theologia gentili* showed pages that were "very extensively dog-eared with 112 pages still turned and several similar signs".[309] Kenneth J. Knoespel has demonstrated that Vossius' discussion of the sun's assimilation into religious practice provided a direction for Newton's research. In a section entitled *Quae est de cult corporis caelestis (The use of celestial bodies within religious cults)* Chapters 1–17 Vossius marked out a structure that could have assisted Newton's research. Vossius based his work on a scholarly study of nature in an attempt to reveal the nature of God.[310] He outlined all the different sun cults in ancient religions and considered the way that sun still played a role in Christianity. He considered the ancient observation of the sun's characteristics and verified the sun's velocity mathematically. Although there are similarities between the "mythographic work of Vossius and Newton, the *Origines* does not imitate *De theologia gentili* but simplifies and systematise[s] Vossius' rendition of mythographic material".[311]

In Maimonides' *Laws Concerning Foreign Worship*, he outlined how the earliest man corrupted the true religion by worshiping the stars as objects of veneration. Noah and Abraham were among these who attempted to preserve the original religion. There are certain elements of Newton's concept of the Prytanæa that parallel those of Maimonides. However, the Prytanæa that preserved scientific knowledge and that deified ancestors does not come from Maimonides. In Vossius' commentary on Maimonides, he used Maimonides to develop his own taxonomic analysis of ancient religions, and Newton was closer to Vossius than to Maimonides in some of his concepts.[312]

For Newton, the frame of the world and therefore the Temple was concentric, with the sun or the hearth in the centre. The natural philosophy of the ancients became corrupt along with their religion; the centralized fire was taken to be in the centre of the earth. Thus, the earth replaced the sun in the centre of the universe and this became fully elaborated in the system devised by the second century Egyptian astronomer Ptolemy.[313] The Egyptians were not only the source of the original religion, they were also the source of its demise.

The Prytanæum or Temple as Microcosm of the Macrocosm

The Prytanæum or Temple of Solomon, as the frame of the universe, as the microcosm of the universe, was a widely debated topic in the early seventeenth and eighteenth centuries. In 1604, *Ezechielem Explanationes et Apparatus Vrbis Templi Hierosolymitani* was published; it was to be a collaboration by two Spanish Jesuit priests, Jerome Prado and Juan Bautista Villalpando. However, the early death of Prado left the entire project for Villalpando to complete on his own. *Ezechielem Explanationes* is a commentary on the Book of Ezekiel in three massive volumes. Volume Two contains an elaborate reconstruction of Solomon's Temple. Although there had been reconstructions of Solomon's Temple and commentaries on Ezekiel before the publication of *Ezechielem Explanationes* in 1604, it nevertheless stimulated an avalanche of support, criticism, commentaries and a variation of reconstructions of the Temple of very different opinions and designs. *Ezechielem Explanationes* was an expensive publication and was only made possible by the patronage of Philip II, King of Spain.[314] It was illustrated with elaborate and skilfully executed engravings, and the design of the Temple was fully articulated with plans, elevations and sections. Villalpando had conceived of the Temple as a massive classical edifice, ornately and richly decorated. Both critics and supporters agreed that it was a magnificent design, but many of the commentaries were negative.[315] Newton claimed that "Villalpando, although the best (and) the most eminent commentator on Ezekiel's Temple: yet (he is) out in many things".[316] Newton's comments on the reconstruction of Villalpando are in two manuscripts, Babson MS 0434 and Yahuda MS 14. His comments are a mixture of criticism and support; Newton was highly critical of the architecture of Villalpando's reconstruction, but Newton was supportive of the theoretical justification of the plan (Fig. 4.1).

The basis of Villalpando's reconstruction is that the Temple of Solomon was the microcosm of the universe. Villalpando carefully defined all the measurements of the Temple as being derived from the Sacred Texts, drawing on support from profane texts such as Josephus. He demonstrated that all of the columns of the Temple were in harmonious ratio to each other and to the rest of the building. Villalpando claimed that these harmonic proportions are most apt for a building of divine origins and he implied the existence of a link between the harmonic proportions and the celestial bodies. For Villalpando, the Temple reflected the creation of God and thus needed to incorporate itself into the universal harmony according to the movements of the

Fig. 4.1 Villalpando's plan for the layout of the tribes of Israel's camp around the Tabernacle[317] (Drawn by the author from Villalpando and Prado, 1604, vol. 2, p. 467.)

planets and the fixed stars. To this end, he examined the Tabernacle of Moses, since it prefigured the plan of the Temple, and the camp of the tribes of Israel that surrounded the Tabernacle which is a primitive plan of the Temple precinct. Villalpando first established that the proportion of the atrium that surrounded the immediate temple and the altar was a double square. He then considered the configuration of the camp of the tribes of Israel. The configuration of the camp was highly structured with the Tabernacle placed in the centre, fortified by the four Levites' camps: Moses and Aaron; Caathi; Gerson and Merari. Surrounding them were the twelve tribes of Israel, each tribe camped under a banner that declared its ancient lineage.

Villalpando described the banners that formed the four angles of the square of the precinct of the Tabernacle. In the south-west corner was the tribe of Ephraim and their emblem was a bull and their colour was gold like chrysolite; in the south-east corner was the tribe of Ruben, and their standard was a human face and their colour was red like carnelian; in the north-east corner was the tribe of Judah and their emblem was a lion and their colour was green like emerald. Finally, in the north-west corner was the tribe of Dan whose banner was red and white like jasper, but Villalpando did not clearly state, in this chapter, what the emblem is. He eventually claimed that Dan is like a horned viper, but instead of being represented by a horned viper, many Doctors

of the Church and commentators, including Saint Jerome, represented Dan with an eagle. Villalpando demonstrated that the horned viper had the same characteristics as the eagle. The emblem of the flag of Dan is not satisfactorily resolved until the next chapter, where it is made clear that the emblem of Dan is a scorpion. The chrysolite, emerald, carnelian and jasper are four of the twelve gems of the breastplate of the high priest's ceremonial vestment; each one of these twelve stones represented one of the twelve tribes of Israel. The order of the stones on the breastplate is set out in a four by three grid,[318] but only jasper is a corner gem. A calf, a man, a lion and an eagle are the symbols of the Evangelists by Villalpando's placement, which has no Biblical precedent, and with his eagle-like scorpion Villalpando made the Evangelists' emblems the corners of the Tabernacle precinct. Although the eagle as an emblem of Dan was not mentioned by Villalpando after this chapter, later writers including Newton mistakenly acknowledged the role of the Evangelists in the plan of Villalpando's reconstruction.

The distribution and placement of the tribes in the camp was determined by a perfect plan; nothing was left to chance, since it reproduced the plan of the Temple but with its dimensions doubled. It represented the microcosm of the universe – the macrocosm. The four Levite tents that surrounded and fortified the Tabernacle in the plan of the Temple corresponded with the four simple elements of the sub-lunar world, and represented the world of man. These were encircled by the celestial orbits made up of the seven atriums. The orbits are positioned on the plan as Ptolemy assigned them in the *Almagest*[319]: "Thus Saturn is situated between Capricorn and Aquarius; Jupiter in Pisces; Mars in Aries; Venus in Libra; Mercury in Virgo; the Sun in Leo and the Moon in Cancer".[320] Surrounding the seven courts or celestial orbits were the twelve fortifications or bastions of the Temple precinct perimeter. These fortifications corresponded to the twelve tents of the tribes of Israel that where laid out under their banners or standards that declared their ancient lineage: Judah was represented under the symbol of a lion; Ruben under the symbol of the Water-bearer; Ephraim under the symbol of the Bull and Dan under the symbol of the Scorpion (no longer associated with an eagle) and so on so that the tribe's banners were equated to the twelve signs of the zodiac. In the centre was the Temple, "dedicated to the profit of man," that represented the "true Sun" of the super-celestial world of the Church. This true Sun is Christ, the "Sun of Justice" whose light is salvation. This light illuminated the seven planets and the twelve constellations, and the centralized Earth is illuminated by the planet sun that is located in Leo (Fig. 4.2).

The circumference of the heavens is divided into three hundred and sixty degrees due to the movement of the sun that returns in a circuit twenty-four hours around the centralized earth. The diameter of the heavens is one-third of its circumference. The height of the Temple is one hundred and twenty cubits, which coincides with the width of the celestial orbit. The atrium, destined to be a residence of the men, is sixty cubits in height, half the circumference of the heavens – i.e. man dwells under the heaven of heavens. This perfect plan represented the three worlds of the microcosm and macrocosm. In the centre was the super-celestial world of God, this is surrounded by the world of man, and then the celestial world of the seven planets and the fixed stars encircling the Earth – a perfect vision of a geo-centric universe.

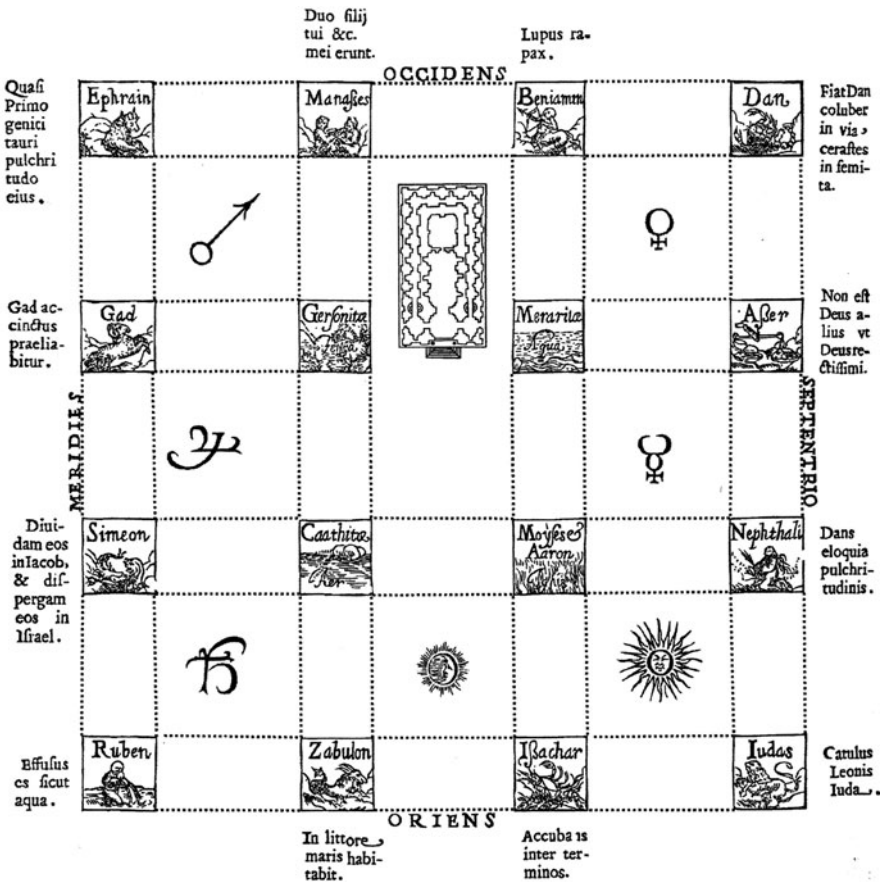

Fig. 4.2 Villalpando's astrological arrangement for the plan of Solomon's temple[321] (Drawn by the author from Villalpando and Prado, 1604, vol. 2, p. 470.)

Villalpando fully endorsed the anthropomorphic theories of Vitruvius. He perceived that the humanity assumed by God is reflected in the measurements and geometry of the Temple, which prefigured the perfection of the mystical body of the Church. The measurements and the proportions of the Temple are reflected in man. The measurements of the Tabernacle equate to the ages of man's active military service; the age of twenty is the age to enlist, twenty-five the age of perfect strength and the age of fifty is the time of weakening strength. This emphasized the Tabernacle precinct as the camp of the twelve tribes of Israel, whilst the proportions of the temple equate to the proportions of man. Man has a height of six feet, this measurement agrees with his arms extended; but if the arms are doubled in front of the chest, so that the end of the longest finger of the right hand touches the end of the middle finger of the left hand, then the width of man will be one and a half cubits or three (Roman) feet. The colonnades of the Temple have eight inter-columns, which coincide with the

height of the head of man from the chin to the upper part and are divided into three promenades or galleries that correspond to the barrel of the chest and with the arms. These colonnades correspond to the proportion of 1:2, not only a double square, but also the harmonic ratio of an eighth – an octave. Here, Villalpando portrayed Christ taking the appearance of man as the cosmological man, which emphasised the microcosm-macrocosm analogy (Fig. 4.3).

The gridded floor plan of Villalpando's reconstruction that corresponded to the plan that represented the microcosm of the universe was crowded with colonnades and incorporated 1,500 columns. The Temple precinct was 500 × 500 cubits and the

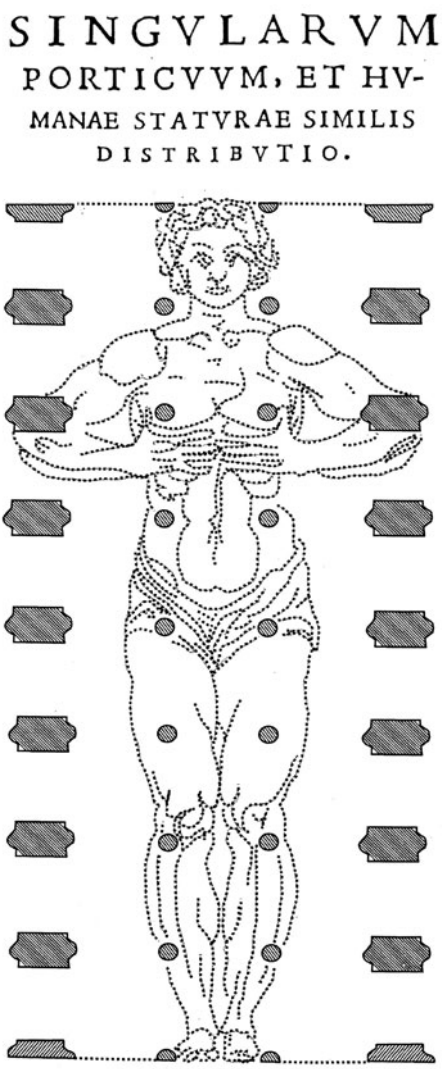

Fig. 4.3 Villalpando: A single colonnade and the resemblances to the division of the human stature[322] (Drawn by the author from Villalpando and Prado, 1604, vol. 2, p. 472.)

exterior boundary 800 × 800 cubits. Its height, including the foundation, was a massive 420 cubits. Every part or element was in a harmonious ratio to the entire building. For Villalpando, this was the greatest building ever built and no building could ever surpass it. His was the first full-scale reconstruction of the divine archetype and this reconstruction inspired other commentaries and other reconstructions of Solomon's Temple.

There were six main points of debate identified by Villalpando's critics that were stimulated by *Ezechielem Explanationes*. First, the Divine origins of the Temple were questioned: was God the architect of the Temple? Second, Villalpando's reconstruction had no historic basis. It was far too elaborate for the tenth century BC and it would not have been built in the classical style. Third, the Temple's architecture was not the pinnacle of architecture and the design would be surpassed by subsequent designs; in particular, Herod's Temple was larger and grander than Solomon's Temple. Fourth, the interpretation of the Biblical measurements of a cubit by Villalpando was wrong and the result of this was that Villalpando's plan exceeded the site of the Temple at Mount Morion. Fifth, the lack of Jewish sources in Villalpando's work, such as the *Talmud*, *Middoth* and Maimonides' description of the Temple in Book Eight of *The Code of Maimonides (Mishneh Tornh)*,[323] gave a limited view of the Temple. Last, Ezekiel's vision of the Temple was not the same as the Temple of Solomon. It was the last two points regarding the sources of the Temple that generated the most criticism and, in turn, this generated a large number of reconstructions from various sources in response.

One criticism emerged before the publication of *Ezechielem Explanationes* from a fellow Jesuit, Benito Arias Montano. Montano criticised Villalpando for his use of Ezekiel's vision, and he claimed that this was not the same as Solomon's Temple. Montano based his reconstruction primarily upon the Book of Kings (see Fig. 4.4).

Claude Perrault, architect of the Louvre, illustrated *The Code of Maimonides, the Mishneh Torah* which had been translated into Latin by Louis Compiègne de Veil in 1678 (Fig. 4.5).[325] In the Preface of de Veil's translation he expressed surprise that Villalpando had spend so much time and effort on an image that did not portray the historical truth. He claimed that Villalpando's main aim was to prove that the Temple conformed to Vitruvian norms and that the Greeks and Roman had learned the art of building through studying the ancient buildings.[326] Constantin L'Empereur (Fig. 4.6), John Lightfoot and Louis Cappel were interested in historic reality and they considered that Villalpando's reconstruction had failed because it had not considered the Jewish tradition. They, in turn, were criticised by Bernard Lamy because they had failed to realise that the Jewish writers on whom they had based their reconstructions were inexperienced in building and were incapable of giving a competent account of the Temple.[327] The plans that were derived directly from the Jewish sources were notably different from those used by Villalpando and Newton; importantly, the buildings of the Temple were not symmetrically placed within the Temple precinct. These plans would not have been suitable for either Villalpando's image of the Temple as the microcosm of the universe or Newton's frame of the world. In all, the criticism of Villalpando, which was extensive,[328] the Temple as the microcosm was not criticised and appeared to have been a generally accepted concept.

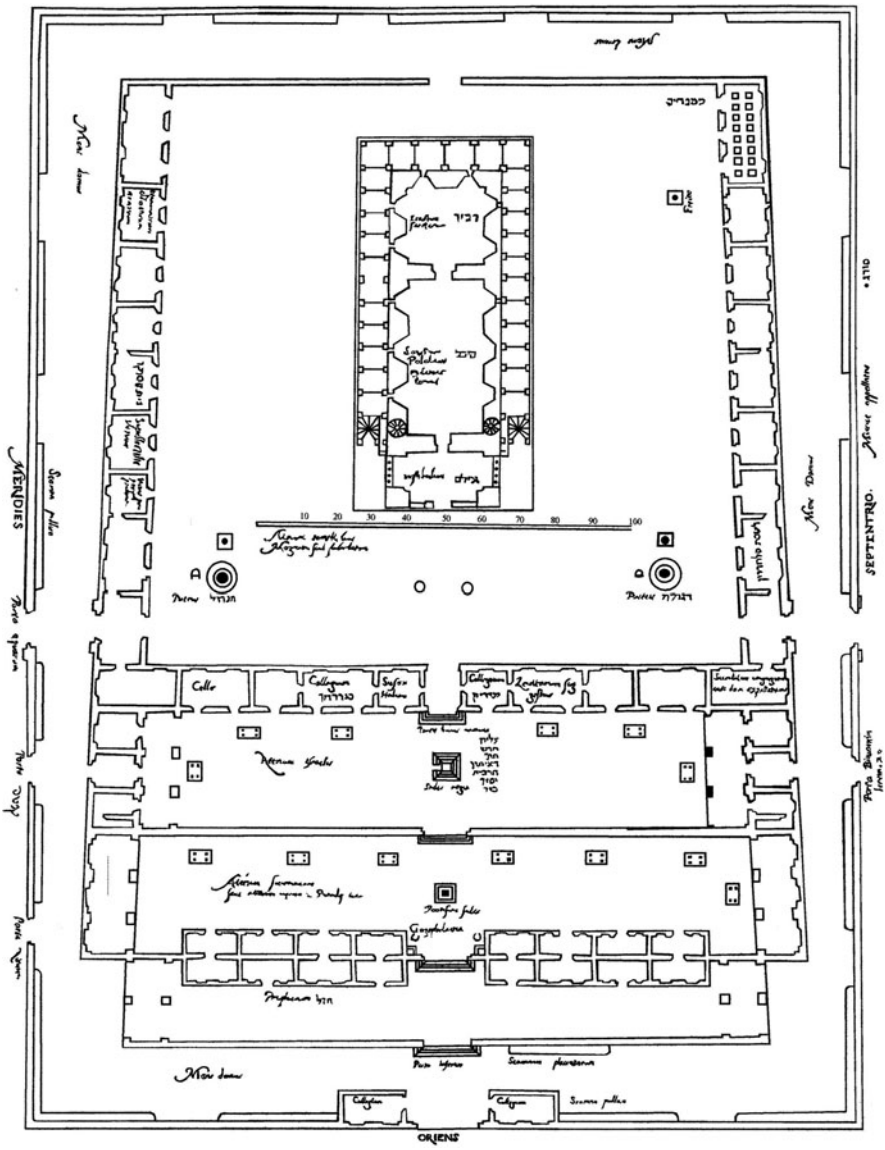

Fig. 4.4 Montano's reconstruction of the Temple of Solomon, from his "Exemplar" in volume eight of the Antwerp Polyglot[324] (Drawn by the author from Zur Shalev (2003), p. 64, with kind permission.)

As stated previously, Newton's comments on Villalpando were a mixture of both support and criticism. Like Villalpando, Newton strongly believed that Ezekiel's vision of the Temple was the same plan as Solomon's Temple. Also, like Villalpando, Newton reconstructed the structure of the Temple to reveal it to be mathematically perfect. However, his floor plan and description of the Temple were remarkably

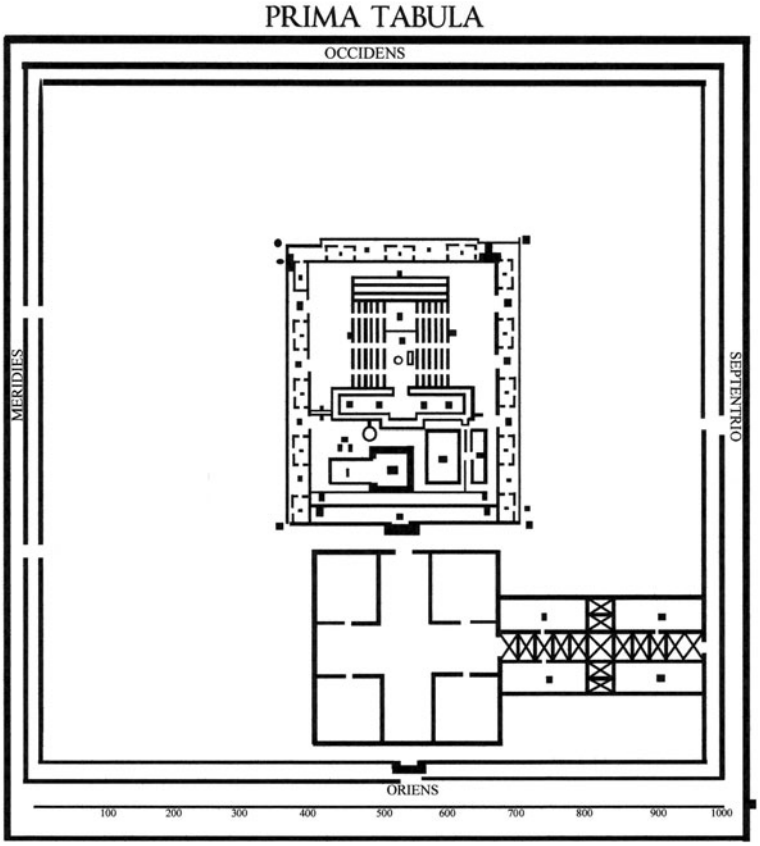

Fig. 4.5 Claude Perrault's floor plan of the Temple from Louis Compiègne de Veil's translation, from Hebrew into Latin, of *The Code of Maimonides, the Mishneh Torah* originally published in 1678[329] (Drawn by the author from Louis Compiegne de Veil, 1683, unpaginated.)

different from Villalpando's, despite being derived from the same source, that of Ezekiel. He believed that Villalpando's errors in his design had primarily originated from his failure to take advantage of Jewish sources and from his misinterpretation of the Latin texts.[330] Newton pointed to the Latin text that Villalpando had used as being sometimes different in its translation to the Hebrew texts. For instance, in the Latin version in Ezekiel 42:3, Villalpando translated "colonnades united" to be a triple colonnade but according to Newton in the Hebrew text it translated to "colonnade against colonnade three times" indicating three storeys.[331]

Villalpando created his grid plan of the Temple precinct from what Newton considered an "incorrect translation"; Newton also said that his plan "has no support and is lacking in reason".[334] Villalpando interpreted Ezekiel 40:19–20 as meaning the length of the atrium from the south to the north to be the distance between the gates, a hundred cubits, and this divided the area of the precinct into small atriums or ante

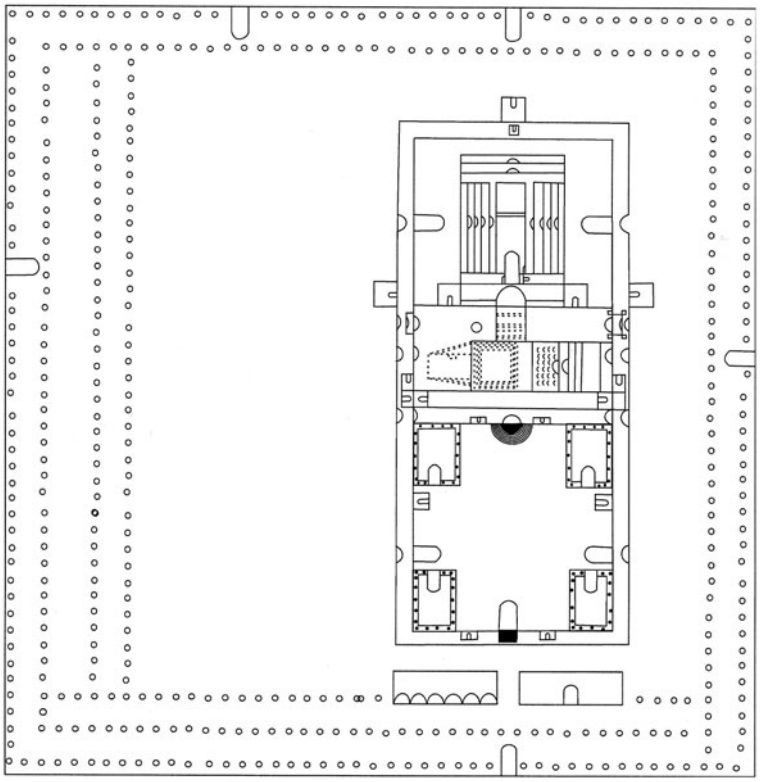

Fig. 4.6 Constantin L'Empereur's floor plan of the Temple from Guglielmus Surenbusius; Mishnah sive Legum Mischnicarum liber qui inscribitur Ordo Sacrorum. . ., 1702[332] (Drawn by the author from James Stevens Curl, 1991, p. 89, with kind permission of Professor James Stevens Curl.)

rooms, one larger one that formed the temple atrium and seven exterior to it (see Fig. 4.7). These ante rooms are divided from each other by triple colonnades of fifty cubits in width. Newton pointed out that not only are these ante rooms not mentioned in Ezekiel, but that the thirty chambers that are next to the sides of the gate and that are expressly mentioned by Ezekiel are absent. However, Villalpando recognized that in his reconstruction these chambers were impossible if the spaces of the gates were not counted, but this went against the text of Ezekiel. In addition, Newton also claimed that Villalpando's grid plan cannot be accepted

> unless we want to move away from the proportion of Moses' atrium that surrounds the immediate temple and the altar, which was established by Villalpando himself as being a length over double its width.[335]

These criticisms, based on Villalpando's interpretation of the Biblical texts, challenge the entire basis of his reconstruction. The triple colonnades that Newton claimed were a mistranslation were important to Villalpando's plan. First, they portrayed man/Christ as the cosmological man, emphasizing the microcosm-

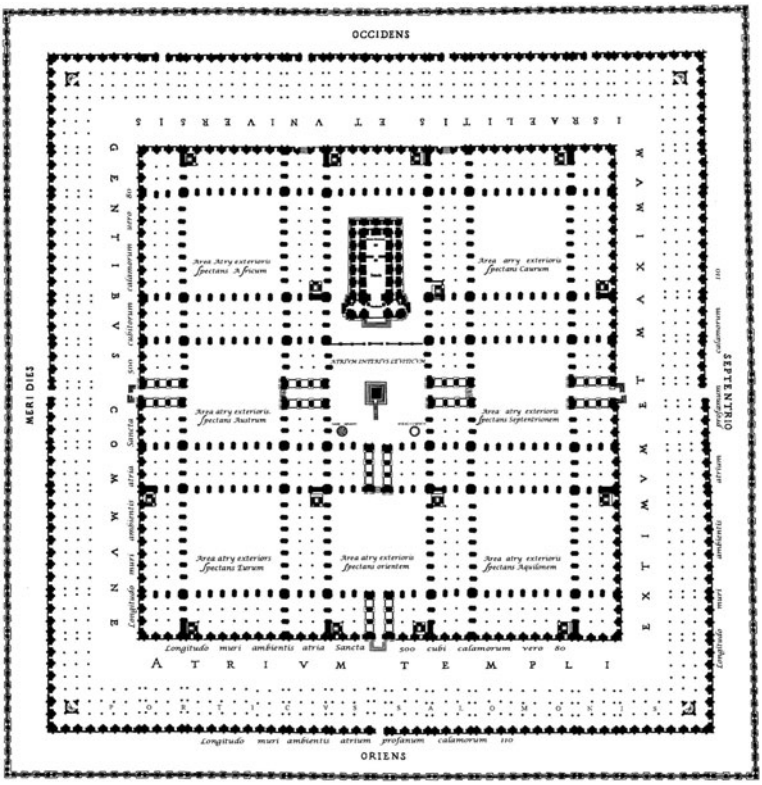

Fig. 4.7 Villalpando's reconstruction of the temple[333] (Drawn by the author from Villalpando and Prado, 1604, vol. 2, unpaginated.)

macrocosm analogy. Second, they divided the gridded plan into the seven small ante rooms and the temple atrium, which Newton considered to be "lacking in reason", and their creation, went against the proportions of the Temple atrium that Villalpando had himself established. These triple-colonnaded atriums not only formed a considerable part of Villalpando's reconstruction, they are also significant for the plan of the astrological plan of the macrocosm. Their removal from his plan changed his reconstruction to an unrecognizable degree. Furthermore, Newton referred to Villalpando's reconstruction as a "fantasy".[336] In fact, there was not much about Villalpando's reconstruction that appealed to Newton. This begs the question as to why Newton did consider Villalpando as "the best (and) the most eminent commentator on Ezekiel's Temple".

In Yahuda MS 14[337] Newton accepted that this plan prefigured the plan of the Temple and the proportions of the temple, which were double than that of the Tabernacle as proven in detail by Villalpando, but which Villalpando himself seemed to have forgotten when constructing his own floor plan. In addition, Newton agreed that the perfect architectural harmony of the Temple represented in microcosm the

perfect harmony of the macrocosm. However, Newton misread Villalpando's geo-centric plan of the microcosm-macrocosm; he considered it to be a heliocentric system. Newton accepted Villalpando's symmetrical layout of the camp around the Tabernacle, but he also misread the heraldry of the tribe's standards. Newton took the symbol of Dan to be the eagle, when it was in fact a scorpion, which made the four corner standards of the tribes of Israel the symbols of the Evangelists (Newton, 1999). For both Newton and Villalpando the Temple of Solomon was the divine plan of God and represented the microcosm of the universe.

Stonehenge as Prytanæum

Newton's concept of the Prytanæum did have ancient precedents, but in the seventeenth century the image of the Temple had been brought into a public debate by Villalpando's reconstruction, which also promulgated the concept of the Temple as a microcosm of the macrocosm.

Newton claimed that the Prytanæum was universal in the ancient religions and which was evident in England, Denmark, Medes and Persia, Ireland and throughout the ancient world.

> In England near Salisbury there is a piece of antiquity called Stonehenge which seems to be an ancient Prytanæum. For it is an area compassed circularly with two rows of very great stones with passages on all sides for people to go in and out at. Tis said that there are some pieces of antiquity of the same form & structure in Denmark. For its to be conceived that the Vestal Temples of all nations as well as of the Medes & Persians were at first nothing more then open round areas with a fire in the middle, till towns & cities united under common councils & built them more sumptuously. In Ireland one of these fires was conserved till of late years by the Moncks of Kildare under the name of Briget's fire & the Cænobium was called the house of fire.[338]

A lot has been made of the fact that Newton described Stonehenge as one of these ancient Prytanæum.[339] However, he only mentioned it once and the concept of Stonehenge as an ancient Temple had been well established by Inigo Jones in *The Most Notable Antiquity of Great Britain Vulgarly called Stone-Heng on Salisbury Plain Restored*[340] published in 1655 and John Webb in *A Vindication of Stone-Heng Restored*[341] published in 1665.

Jones surveyed Stonehenge in 1620 at the request of King James,[342] and he continued to work on his "architectonical scheme" up to his death in 1652. *Stone-Heng Restored* was edited by Webb and published three years after Jones' death. Jones' original notes for the book are missing, thus it is impossible to say how much of the work is Jones' and how much is Webb's.[343] Nevertheless, the work is significant in that it reveals both Jones' and Webb's attitude towards the connection between Classical composition and the celestial symbolism of the ancient style of Temple and the Temple of Solomon.

Jones perceived Stonehenge to be a Roman Temple constructed of Tuscan columns and dedicated to Cælus, god of the sky. He considered that

> the Romans for so notable a structure as Stone-Heng, made choice of the Tuscan rather than any other Order, not only as best agreeing with the rude, plain, simple nature of those they intended to instruct, and use for which erected; but also, because presuming to challenge a certain kind of propriety therein, they might take occasion thereby, to magnify to those then living the virtue of their ancestors for so noble an invention, and make themselves the more renowned to posterity, for erecting thereof, so well ordered a building.

Besides, the Order is not only Roman, but also the scheme (consisting of four equilateral triangles, inscribed within the circumference of a circle) by which the work Stone-Heng formed was an architectonical scheme used by the Romans.[344]

Jones constructed a composition for the Temple that had little real relation to the structure; it consisted of four equilateral triangles within a circle, the overlaying equilateral triangles formed a four-sided tetragon and the six "columns" in the centre formed a hexagon (see Fig. 4.8). He related this architectonical scheme to Book Five, Chap. VI of Vitruvius' *De architectura,* where there is a plan of a theatre. Jones quoted Vitruvius as saying that at the base of the theatre (Fig. 4.9):

> let four triangles be inscribed of equal sides and intervals, which may touch the extreme part of the circumference; by which figures also, astrologers from the musical harmony of the stars ground their reasonings as concerning the description of the twelve celestial signs.[346]

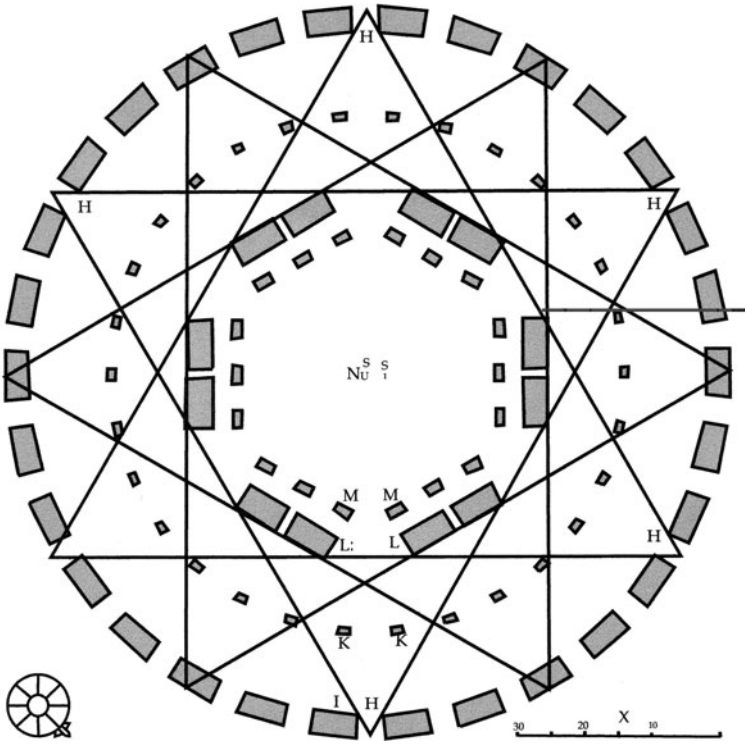

Fig. 4.8 Inigo Jones' architectonical scheme for Stonehenge[345] (Drawn by the author from Inigo Jones, 1655, pp. 58 and 59.)

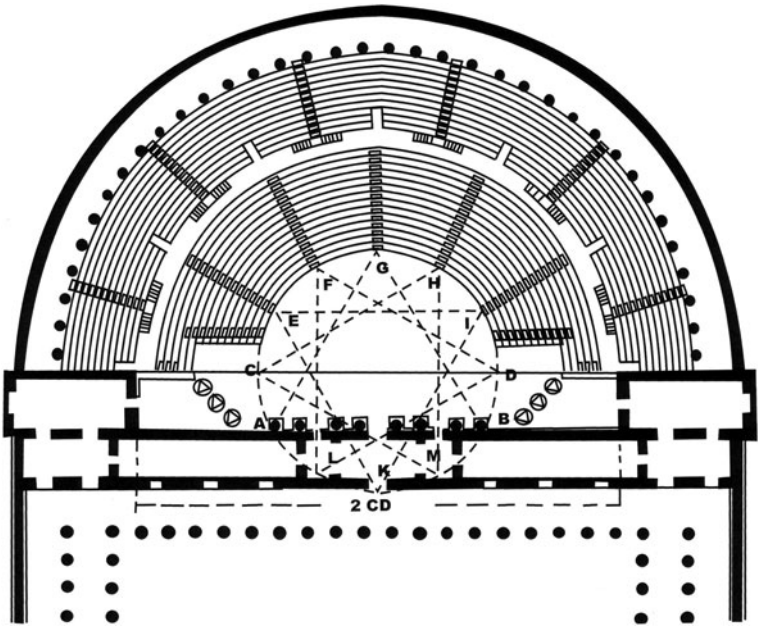

Fig. 4.9 Vitruvius' plan of the theatre[347] (Drawn by the author from Vitruvius, 1960, p. 147 with kind permission.)

The composition within the circle of Jones' architectonical scheme consists of triangles, tetragons and a hexagon. Jones quoted French humanist and commentator on Vitruvius, Guillaume Philandrier, as saying "The astrologers make use of three sorts of figures; the triangle, tetragon and hexagon".[348] For Jones,

> Now this Antiquity consisting of several stones, orderly disposed into one entire work, in imitation, as it were, of those several stars which appearing to us in the heavens in the form of a circle, are called the celestial crown; and the wholly designed by those schemes wherewith astrologers use to describe celestial bodies.[349]

In the Temple of Stonehenge, Cælus, the god of the sky was worshipped through sacrifices which were performed around a fire. The significance of the fire is reflected in the structure of the columns or upright stones, "all the upright stones in this Antiquity are pyramidal like flames, in imitation of those ethereal fires, wherewith the heaven is adorned".[350] Jones' description of this ancient "Temple" Stonehenge parallels Newton's concept of the Prytanæum. Furthermore, Jones related his architectonical scheme to the Temple of Jerusalem. This architectonical scheme that the astrologers used to describe the celestial bodies,

> being all jointly made use of by the architect for conformation of this sacred structure, it is not impossible Stonehenge was so composed, because dedicated to Cælum. Yea further, (if lawful to compare an idolatrous place with so divine a work) was not the Temple of Jerusalem adorned with the figures of Cherabim, that thereby the Nations of the Earth might know it was the habitation of the living God? And, why not in this manner this temple composed by astrological figures, that after Ages might apprehend, it was anciently consecrated to Cælus or Cælum Heaven?[351]

Although Newton developed these ideas, the concept of ancient Temples, including Solomon's Temple, representing the microcosm was well established in the seventeenth century.

Stukeley published *Stonehenge a Temple Restor'd to the British Druids*[352] in 1740. His researches stem back to 1721–1724 and there are existing manuscripts that contain his field work from this time.[353] He compared Stonehenge to the fabric of Solomon's Temple and found that it was built using the cubit. This cubit of the Druids was the same as the Egyptian and Hebrew measurements of the Bible.[354] Stukeley examined the measurements of Stonehenge and the Druidic cubit; his examination could have been stimulated by Newton's study on the ancient cubit entitled *A Dissertation upon the Sacred Cubit of the Jews,*[355] although this was published posthumously in 1737. The original paper is entitled "De magnitudine cubiti scari" and is part of a much larger manuscript; it is loosely dated late 1670s–1690s, and it is possible that Stukeley was aware of this work. However, Stukeley, who was always keen to align himself with Newton, did not mention him having any interest in Stonehenge in his biography of Newton, nor did he mention discussing ancient measurements with him. It does appear likely that Newton was only interested in Stonehenge as an example of the ancient Prytanæum of England and nothing more.

Villalpando, Jones, Newton and Stukeley applied the norms of Vitruvius to the ancient Temples. For Villalpando, Jones and Stukeley the norms of Vitruvius were derived from pure natural reason. Both Jones and Stukeley defined Stonehenge in classical terms and believed that these norms of architecture were derived from nature. Villalpando clearly distinguished sacred architecture from the profane architecture of Vitruvius. He claimed that "Sacred architecture constitutes the origin of architecture, and the profane one is like a copy, or better still, as a shadow of sacred architecture".[356] The purpose of Vitruvius, who Villalpando described as "the pioneer of our architects," was to equip the architect with the norms of architecture. But Villalpando's purpose was to examine the origins of architecture and to extract the norms of architecture that were derived from God's plan and promulgated by the Scared Scriptures, and this natural order was followed by Vitruvius in his *Ten Books on Architecture*. Villalpando's reconstruction envisaged the Temple to be a building that encapsulated the entire formal grammar of classical architecture, which begins with the harmonic ratios. In Babson MS 0434, Newton only mentioned Vitruvius by name once, but he considered how the Temple was built to the "proportion of the architecture"[357] and these proportions parallel Vitruvius' norms.

Maimonides' Floor Plan of the Temple

The floor plans in Babson MS 0434 and the other plan in *Chronology* are concentric, with the altar of the Temple in the centre. Newton criticised Villalpando for not taking advantage of the Jewish sources and for misinterpreting the ones that he did use.[358] He also criticised Louis Cappel and Arias Montano for departing from rabbinical material.[359] However, he did not elaborate on how they departed from the material.

Newton was very selective on the Jewish sources he used and Newton's most notable departure from the Jewish sources was in the plan of the Temple, particularly, as laid out by Maimonides in *The Code of Maimonides: Book Eight: The Book of Temple Service*.

Maimonides' description was about the Temple of Jerusalem, not necessarily the Temple of Solomon. He claimed:

> The Temple building erected by Solomon is clearly described in the Book of Kings. Furthermore, the building to be erected in the future, even though it is discussed in the Book of Ezekiel, is not fully described and defined therein. Therefore, those who build the second Temple in the days of Ezra followed the pattern of Solomon's Temple and adapted some of the particulars described in Ezekiel.[360]

He all the sources for his reconstruction and although there are differences in the detail and the grandeur of the buildings of the second Temple precinct, it was built on the same foundations as Solomon's.

There are many differences in the plan of Maimonides' Temple to that of Newton's, such as the numbers of chambers and the heights of parts of the buildings. Nevertheless, there are two significant differences between the plans which, in both cases, are attributed to Solomon. These are the design of the altar and the layout of the floor plan of the Temple precinct.

Maimonides claimed that the dimensions of the altar were very precise and that the design was handed down from one generation to another since the time of Solomon.[361] It was thirty-two cubits in breadth and width, and ten cubits in height. However, some of the cubits in height were sacred cubits (that equal six palms) and others were the vulgar cubit (that equal five palms). This mixture of sacred and vulgar cubits made the altar fifty-eight palms in height.[362] For Newton, the altar of Solomon was twenty sacred cubits in breadth and width and the height was ten sacred cubits.[363] He claimed that the altar remained the same for the second temple and even until after the time of Alexander the Great,

> but later, upon not understanding the mathematical expression 'to carry the length to the width,' the words of Ezekiel were interpreted erroneously as if the length and the width of twelve cubits had itself to be measured from the centre of the altar. And thus, adding twelve cubits to the correct dimensions, they built an altar of thirty-two cubits of length and width in the base.[364]

However, Newton did not mention Maimonides as being one of the "laters". Apart from the size difference there was one important feature that Newton did not mention; a ramp for the priest to be able to serve at the altar. Maimonides' ramp was a massive thirty-two cubits in length, sixteen in breath and rose to a height of nine cubits; it was situated on the southern side of the altar.[365] Ten cubits is close to five metres and according to the Book of Exodus "Neither shalt thou go up steps unto Mine altar".[366] Newton did not indicate how the priest would have been able to serve at the altar, yet this was a significant feature in the design and ritual of the Temple.

The layout of the floor plan of the Temple precinct of Maimonides was significantly different from that of Newton. Like Newton's plan, the Temple precinct was square and the walls were five hundred cubits in length on each side. However, the

Great Court that included the Temple and the altar was one hundred and eight-seven cubits from east to west; and one hundred and thirty-five cubits from south to north. Maimonides placed the Great Court

> not exactly in the centre of the Temple Mount. It was further from the southern wall of the Temple Mount than from any other side, and closer to the western wall than to the other side. Between it and the northern wall there was a greater distance than between it and the western wall, and between it and the eastern wall a greater distance than between it and the northern wall.[367]

Clearly, Maimonides' floor plan, with the ramp of the altar on the southern side, would have ruined the symmetry that was paramount to Newton's floor plan.

Notably, Maimonides' plan could not be considered a motif of the microcosm since it was not concentric and had no "hearth" in the centre. The concept of the "hearth" in the centre of the concentric Temple was an important concept for Newton for several reasons. The concentric plan of the Temple with the priests sacrificing at the centralised altar recalled the original rituals of Noah. It represented the sacred sacrificial fire of the true ancient religion which had knowledge of the universe. Additionally, the sacred architecture of the Temple represented knowledge of the universe; within its design was encoded the cosmic harmonies which were applicable to the heliocentric system. Finally, the Temple plan held the esoteric knowledge of God's universe; thus, with Newton's exoteric knowledge of the universe through the *Principia,* the metaphysical and the physical were brought together in number, weight and measure.[368] In the Book of Wisdom, God has ordered "all things in measure, and number, and weight".[369] For Newton, the metaphysical could be understood through the rituals and prophecies of the Temple which were expressed or enacted within the harmonic and geometrical architecture of the Temple, and were applicable to the heliocentric system. The physical could be understood through the geometry of the heliocentric system which was expressed in the *Principia.* Maimonides' off-centre model of the Temple did not fit this image, but Newton did not dismiss the model, he just ignored it.

Conclusion

The concepts that were begun in the *Origines* on the corruption of the church were never fully refined by Newton, even though he returned to the topic repeatedly throughout his life. However, he strongly linked the loss of ancient knowledge of natural philosophy with the corruption of the church. This ancient knowledge had been preserved in the rituals of the Prytanæa, whose sacrificial altar, the hearth, the centre of their worship represented the structure of the heliocentric solar system. Their temples, the Prytanæum, embodied the truth of natural philosophy and their purpose was to represent God's cosmos to the people. For Newton, the plan of Solomon's Temple was an example of one of the Prytanæum, the plan had come from God through Moses, and had been preserved by the prophets in the Biblical texts.

In the mid-1680s, the Temple became the hieroglyph for the universe and the sacrificial altar, the hearth as the sun became dominant in Newton's unpublished papers; this coincides with his writing of the *Principia*. In the Sacred architecture of the Temple was encoded the cosmic harmonies of the planetary motions, the ancient knowledge of the heliocentric frame of the universe – in short the Temple held the esoteric knowledge of the universe.

Measurements and the act of measuring are extremely important elements of the Biblical description of both the Temple and the Apocalypse. Ezekiel and John the Divine are guided around the Temple and the New Jerusalem respectively by an Angel who measures both the buildings. The measurements in both cases are the most dominant feature of the building and in Newton's reconstruction of the Temple in Babson MS 0434 he emphasised the importance of the measurements by demonstrating how they fit together. The measurements are in cubits. Cubit means elbow, a vague description which lacks any precision. To make matter worse there were many types of cubit: Roman cubit; Greek cubit; Arabian cubit; Simple Egyptian cubit; Royal Egyptian cubit; Memphis cubit; Babylonian cubit etc. In the Temple, there is a distinction between the sacred cubit and the vulgar cubit. The Biblical measurements could provide the proportions of the Temple, but without knowing the size of the cubit in modern measurements it was not possible to know the correct scale of the Temple. Newton executed a meticulous study of the cubit to further understand the dimensions of the Temple.