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Spenser's "golden squire" and "golden Meane": Numbers and Proportions in Book II of *The Faerie Queene*

The essay interprets Spenser's arithmetical and geometrical metaphors of temperance in their primary, mathematical sense, and argues that the "golden squire" used to measure out a "mean" of temperance refers to the masonic triangle, particularly the so-called "golden" or "royal" square, based on the Golden Section 0.618, used widely in medieval architectural design. The Golden Mean as a geometrical representation of temperance is first used in Book II in the description of the mutual relations between the three sisters and their male partners in the Castle of Medina, and later in the famous and notoriously obscure stanza on the geometrical design of he Castle of Alma. Here the Golden Section diagram is found to contain all the geometrical and numerological elements from the design of the Castle, thus reinforcing its significance as an architectural emblem of the human body and soul internally harmonized through temperance.

*T*HE PITIFUL SIGHT of the dead bodies of Sir Mortdant and Amavia, with their little son playing unwittingly in his parents' blood—a tragic "image of mortalitie" depicted at the outset of Book II of *The Faerie Queene*—provokes Sir Guyon's philosophical comment on the state of man, in whom the "fierce tyrannie" of raging passion "robs reason of her due regalitie, And makes it seruant to her basest part" (Book II, Canto i, 57). The reference is to the "foule intemperance," the foil to the titular virtue of Book II, divided in accordance with tradition into basically two types of excesses: the irascible and the concupiscent,[1] and illustrated consistently by the pairing of Sir

Guyon's adversaries throughout his quest.[2] Here, at the beginning of
the Book, the tragic end of Mortdant's incontinence and Amavia's
inordinate grief inspire Sir Guyon's definition of temperance, seen
as a rational mean between two main types of excesses of man's
lower functions:

> But temperaunce (said he) with golden squire
> Betwixt them both can measure out a meane,
> Neither to melt in pleasures whot desire,
> Nor fry in hartlesse griefe and dolefull teene.
> Thrise happie man, who fares them both atweene:
>
> > (Book II, Canto i, 58)[3]

The chief focus of my essay lies in the exact nature of the geometrical
language employed by Spenser in Book II in highly significant con-
texts, with its conscious and consistent use of arithmological concepts
underpinning the main moral and philosophical concerns of the
poem. The understanding of temperance as a mean between the
extremes of the soul, a sort of well-balanced, moderate behavior in
which the rational faculty exercises control over the powers of the
body, is a well-established idea that goes back ultimately to the Aris-
totelian "mean virtue," conceived as a balance between the various
moral defects and excesses.[4] However, Spenser's use of the unambigu-
ously geometrical terms ("golden squire," "measure out a meane")
calls for a more specific interpretation of temperance than that ac-
corded by Aristotle's moral philosophy. Metaphors built on arithmet-
ical or geometrical concepts should not preclude but rather include
the more precise, technical significations, which is what the arithmet-
ical terms used in the poem mean in the first place. What follows in
this essay is an attempt to reconstruct the specific significances of
some of Spenser's arithmetical poetic figures found in Book II, first of
all in their literal and direct meanings, on whose concrete numerical
foundations further, more metaphorical connotations are built.

　　The practice of attaching abstract philosophical concepts to num-
bers, numerical operations, or geometrical figures is of course nothing
new, as is amply evidenced by the Platonic and Pythagorean tradi-
tions flowering in the Renaissance. Aristotle too, in his discussion
of the "mean virtue," illustrates his ethical concept arithmetically:

> . . . the equal is an intermediate between excess and defect. By
> the intermediate in the object I mean that which is equidistant

from each of the extremes. . . . For instance, if ten is many and two is few, six is the intermediate, taken in terms of the object; for it exceeds and is exceeded by an equal amount; this is intermediate according to arithmetical proportion.[5]

The philosopher's formalized expression of the "mean virtue" is indeed a simple "arithmetical proportion," in which the second term exceeds the first by the same amount as the third exceeds the second, that is, $a:b=b:c$, $2:6=6:10$, or $6-2=4=10-6$. It is the simplest type of proportion, and could well suffice as an arithmetical conceptualisation of Spenser's virtue of temperance, if the poet indeed followed only Aristotle. But Spenser's "meane" between the excesses and defects of the irascible and the concupiscible portions of the soul is—according to the poet's explicit statement—measured out with a "golden squire," and this reference to a precise technical instrument makes one suspect that there is more in the poet's "meane" than meets the eye.

The "squire" is of course a square (here altered to rhyme with "desire"), or a set-square, a flat metal right-angled triangle used in architectural design and geometrical drawing. Spenser uses this instrument as a *norma temperantiae*, an emblem of temperance, as observed by Alastair Fowler.[6] It was Fowler's predilection for numerological designs in *The Faerie Queene*[7] that led him to consider Spenser's "golden squire" in its primary geometrical meaning: "because it is used in the geometrical construction of the *mean proportional*, the square is a symbol for the virtue by which Guyon will continually make the *moral construction of the golden mean*"[8] (italics mine). Fowler is surely right in considering Spenser's emblem first of all as a geometrical concept, but the critic stops short here of developing this very concrete idea further to enfold the full implications of the "golden squire" and the "meane" measured by it. When it comes to arithmetical concepts and geometrical designs, one has to be more specific.

First of all, the function of the set-square as a mason's or an architect's tool is determined by its shape. The squares used for measurements in architecture and masonry can be of different types, depending on the shape of the right-angled triangle; more precisely, on the tangent value of the sides of the triangle, using the shorter arm as the base. The number of these types is not unlimited, and can range from a triangle with a tangent root $\sqrt{1}$ (a simple equilateral right triangle) to one with a tangent root $\sqrt{4}$ (so-called double square, in which the adjacent is twice as long as the opposite). In

between these extreme squares there is a series of intermediary trian-
gles, whose specifications have been worked out by a British architect
Harry Roberts. His outstanding studies on proportion in architectural
design, published posthumously in 1948 by his son Leonard,[9] became
known as the "R's Method" in architectural proportion. Roberts's
scale of related set-squares generated by changing the tangent values
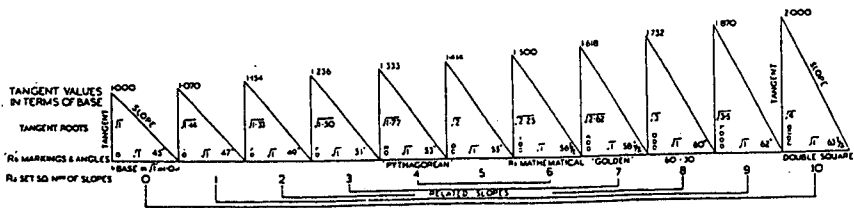of the triangles is given below :

Fig. 1. Harry Roberts's scale of set-squares.

The scale begins with the equilateral square (No. 0, tangent $\sqrt{1}$,
angle 45°), and by gradually extending the arm of the triangle other
squares can be achieved, including the Pythagorean triangle (No. 4,
tangent $\sqrt{1.77}$, angle 53°), another triangle called by Roberts the
"mathematical" square (No. 6, tangent $\sqrt{2.25}$, angle 56.5°), also the
figure referred to as the "golden square" (No. 7, tangent $\sqrt{2.62}$,
angle 58.5°), and finishing with the "double square" (No. 10, tan-
gent $\sqrt{4}$, angle 63.5°). In short, the series represents the full scale of
possible set-squares used in architectural design, so that any architect
or mason involved in measurements must use one of these squares
as the main instrument to determine the governing proportion of
a building.

Indeed, different squares were used by different architects and ma-
sons at different times. For example, the famous "Baal's Bridge
Square" found near Limerick in Ireland and dated to the year 1507,
was an equilateral right triangle, corresponding to No. 0 in Roberts's
series. In the construction of the Chartres Cathedral various types of
squares were employed by different master masons who supervised
the successive stages in the building of this extraordinary monument.[10]
The set-square was referred to by the Gothic masons as their "most
precious instrument," and its hypotenuse (the square's slope) repre-
sented the master mason's favorite measuring foot.[11] Armed with the

square whose legs were at a certain ratio (the tangent value in Rob-
erts's scale), the mason could replicate a specific proportion by
applying a string or straight-edge across the hypotenuse of the square.
The tool could therefore control not only the metrology of a dimen-
sion, but also the proportion of a building, which depended on the
type of the square used. As time went on, the square became a symbol
of the stone guilds in the Middle Ages, and has come down to us
today via the Freemasons' Lodges and their emblems and procedures,
like the compasses and other masonic trappings. In the symbolism of
modern Freemasonry the square signifies right doing, honesty, and
truthfulness,[12] just as in everyday parlance "square" means "just, hon-
est, fair" (O.E.D.). The phrase "by the square" means "extremely
accurate, precise, exact," also in the ethical sense, as is illustrated by
an epigram engraved on the Limerick square: "I will strive to live
with love & care, Vpon the level, by the square."[13] The masons'
measuring square and the Freemasons' emblem of truthfulness and
exactness is a forerunner of today's plastic triangles used by architects
on their drawing boards, and by schoolchildren in their geometry
classes.

But among the squares used by medieval masons there was one
exceptionally favored, corresponding to No. 7 in Roberts's scale, and
traditionally referred to as "golden." The Golden Square is con-
structed on the basis of an incommensurate proportion approximating
0.618, designated by a Greek letter *phi* (Ø), and is achieved geometri-
cally by forming a double square to represent 2, and by employing
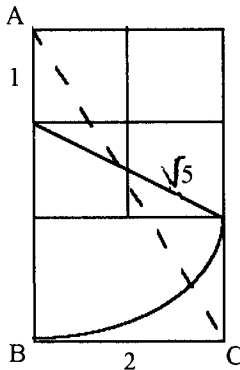the diagonal $\sqrt{5}$, as shown below:

Fig. 2. The Golden Section diagram.

The triangle ABC is the Golden Square (No. 7 in Roberts's series),
whose arms are at the ratio:[14] BC:AB=2:($\sqrt{5}$ +1)=Ø=0.618. The

set-square based on the Golden Section was widely used in the Middle Ages by the master masons of Chartres,[15] as well as in the English Gothic architecture. A historian of architecture Bernard G. Morgan, for example, studied the designs of the royal master masons of the Plantagenet dynasty, from mid-thirteenth to the early sixteenth century, and calculated that the standard set-square used by the Plantagenet kings' master masons, what he calls the "Royal Canon" triangle, was only within one-third of one degree of that of the "Golden Number" triangle, and in fact the two were so nearly similar that they can be counted as one and the same.[16] In other words, the canonical square, the main measuring tool in surveying the chief buildings of the English Gothic over several centuries, was based on the Golden Section and the *phi* ratio.[17] Morgan reconstructed the geometrical properties of the canonical golden square on the basis of a representation carved on the tombstone of Hugh Libergiers, master mason of Reims (d. 1263), as shown in figure 3.

Concerning the significance of the Golden Section in medieval architecture, Morgan writes the following:

> The immanence of the canonic and general triangles in the master mason's square suggests that these figures may have played a formative role in the design of the great medieval monuments. . . . In this instrument lay the unifying factor in medieval building organization; its inherent geometrical relationships infused the design with a *resonant proportionality* and made possible the *sympathetic interlocking of every part in a concordant whole.*[18]
>
> (italics mine)

In other words, the Golden Section present in the shape of the master mason's square and consistently applied as the main measuring tool, ensures exceptional harmony and beauty of proportion, probably not attained by any other system of harmonic design in architecture. The elusiveness of the aesthetic appeal of the *phi* ratio used in the design of a building is something of a puzzle, and probably has to do with the irrational, incommensurate nature of the Golden Mean. A clue to the unique character of the Golden Section can also lie in the fact that the properties of the *phi* ratio extend beyond the aesthetic and harmonic aspect of the architectural design, and apply also to proportions existing in the morphology of growth in living organisms:
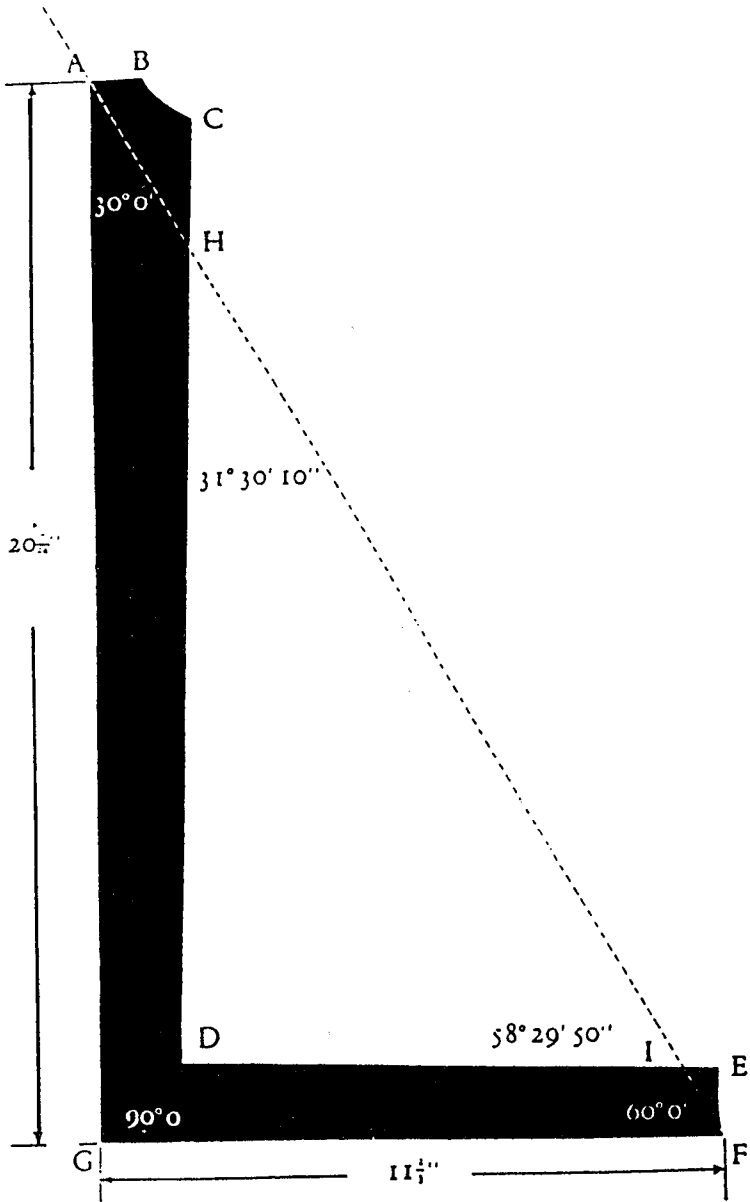
Fig. 3. Bernard B. Morgan's reconstruction of the square used by Hugh Libergiers.

plants, animals, including man. This last circumstance should be of
some relevance in connection with the Castle of Alma in Spenser's
poem, understood as an allegory of the perfect human body (see
below).

Could the foregoing evidence suggest then that when Spenser
evokes the "golden squire" to "measure out a meane" of temperance
he uses the term first of all in its literal sense: as a reference to the
mason's instrument, employed to determine the design of a building
according to a precise, clearly defined proportion. I believe that
Spenser's "golden squire" is first of all what it originally meant: a
measuring tool to find the unique proportion based on the *phi* ratio,
rather than a general "mean proportional" as Fowler and others have
suggested.[19] That is to say: the canonic, golden design *is* a "mean
proportional" (or Euclid's "mean and extreme ratio"), but it is a
very specific manifestation of this mean, based on a unique subtlety
of the incommensurate ratio approximating 0.618. This specification
should prove important in view of the allegorical castles described by
Spenser in Book II, notably the Castle of Medina and the House of
Alma, to whose widely debated symbolic significances the geometri-
cal concept of the Golden Mean can offer a very revealing clue. I
find it difficult to believe that Spenser, with his wide-ranging knowl-
edge of classical, medieval, and Renaissance traditions, and with his
attention and sensitivity to matters of harmony and proportion in
poetry, should not to have used his "golden squire" primarily in its
exact, geometrical sense.[20] The poet's reference to the specific type
of a mason's measuring instrument with which to "measure out"
temperance would then suggest a peculiar, off-center, yet very natural
and harmonious "golden" mean, rather than a simple arithmetical
mean in the Aristotelian sense. Although it would be difficult to
assess precisely the extent of Spenser's knowledge of the arcana of
architectural design, the poet's unquestionable indebtedness to Pla-
tonism and Pythagoreanism can well account, in part at least, for the
visible presence of symbolic numerology in his poetry, so convinc-
ingly revealed by scholars such as Alastair Fowler, A. Kent Hieat, and
David Chinitz.

It should be noted, however, that there seems to be nothing espe-
cially "mystical" or "metaphysical" in Spenser's use of the "golden
squire" and the "meane" measured by it, just as there is nothing
necessarily "symbolic" in the canonic design based on the Golden
Section used by the English royal master masons. As Morgan's study
of the architectural design in medieval England has shown, the set-
square based on the *phi* ratio was in common use among the late

medieval master masons primarily to solve problems of practical nature.[21] Considering the widespread use of the canonic square over several centuries in the construction of some of the most spectacular English monuments, it can I think be assumed with a fair degree of probability that the instrument with its specific, "golden" proportion was still known and used in Spenser's time. The indebtedness of Elizabethan architecture to the Gothic tradition is a widely accepted fact among historians,[22] and the continuity of the medieval architectural style should also have included the use of proportion and the instruments to design it.

Was it then the "golden squire" with its given geometrical characteristics that was used by the poetic "master mason" Spenser in the construction of the allegorical houses in Book II of *The Faerie Queene?* And is the "meane" thus arrived at a truly "golden" one, determining with its *phi* ratio the nature of temperance symbolized by these houses?

The first approximation to the image of the human body internally harmonized through temperance is the Castle of Medina from Canto ii. This is where Sir Guyon and the Palmer bring the "lucklesse baby" Ruddimane, his hands drenched in the blood of his unfortunate parents, Sir Mortdant and Amavia (Book II, Canto ii, 3–4). The Castle and its chief dweller Medina are announced very suggestively in the argument to Canto ii as representing "the face of golden Meane"[23]—clearly an extension of the same concept involving the "golden squire" used to "measure out a meane" mentioned only four stanzas back. The Castle is inhabited by three sister engaged in conflicts with each other, and Spenser is very specific about the nature of relations existing between them:

> Therein three sisters dwelt of sundry sort,
> The children of one sire by mothers three;
> Who dying whylome did diuide this fort
> To them by equall shares in equall fee:
> But strifull minde, and diuerse qualitee
> Drew them in parts, and each made others foe:
> Still they did striue, and dayly disagree;
> The eldest did against the youngest goe,
> And both against the middest meant to worken woe.
>
> (Book II, Canto ii, 13)

The "diuerse qualitees" involved on the one hand the lack of sociability and general discontent of the eldest sister Elissa (Greek *elasson,*

"too little"), clearly representing the Aristotelian deficiency, and on the other hand the inordinate conviviality of the youngest Perissa (Greek *perisson*, "too much"), corresponding to Aristotle's ethical excess. Between them was Medina (Latin *medium*, the "mean"), a "sober," "modest," and "comely curteous Dame," to complete the picture of the philosopher's "mean virtue" balancing the extremities of the soul. Spenser's conception of temperance as moderation of psychological and moral extremes is therefore largely worked out in Aristotelian terms, but there are Platonic elements involved in it as well.[24] These can be seen first of all in the resemblance of the three sisters to the three portions of the Platonic soul (Perissa, the concupiscible; Elissa, the irascible; and Medina, the rational), and also in the fact that Medina is not simply the Aristotelian arithmetical mean between the two extremes, but also their union.[25] In other words, the middle sister is not only a part of the human soul, but through the particular type of her relationship with the other sisters she also bears upon the nature of the whole, ensuring, or at least struggling to, its harmony and balance.

But how exactly is Medina trying to achieve this harmonious union between the three different elements? If the middle sister were to function like the "golden Meane," as Spenser suggests, her relations with the other sisters should reflect the Golden Proportion, which in the simplest form describes such a system of relations in which the ratio of the smaller part to the greater part corresponds to the ratio of the greater part to the whole,[26] as shown below:

$$a \quad\quad\quad\quad | \quad\quad b$$
$$c$$
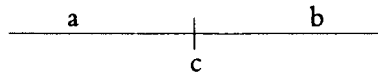
in which $a:b=b:c=\emptyset \ 0.618$

Such a system of relations between the sisters could have been indicated, for example, by saying that the youngest Perissa's conviviality and cheerfulness were tempered by the sobriety of Medina, just as the latter's moderation was used to draw out the sulking eldest Elissa to make her more sociable. The idea of the Golden Proportion used to combine the extremes into a harmonious unity was a well-known philosophic concept, as exemplified by the *locus classicus* from Plato's *Timaeus*:

So god, when he began to put together the body of the universe, made it of fire and earth. But *it is not possible to combine two*

things properly without a third to act as a bond to hold them together.
And the best bond is one that effects the closest unity between
itself and the terms it is combining; and this is best done by *a*
continued geometrical proportion. For whenever you have three
cube or square numbers with a middle term such that the first
term is to it as it is to the third term, and conversely *what the*
third term is to the mean the mean is to the first term, then since *the*
middle becomes first and last and similarly the first and last become
middle, it will follow necessarily that all can stand in the same
relation to each other, and *in so doing achieve unity together.*[27]

(italics mine)

Plato describes a unity of a most intimate and subtle nature, in
which the *phi* ratio expresses a most natural, indeed "golden"
relationship between the parts and the whole through an asym-
metrical mean.[28]

However, instead of the "golden Meane" to govern the Cas-
tle of Medina, Spenser offers us a slightly more complicated
picture of sibling relations. In his description of the nature of
family argument in the castle the poet departs significantly from
the Platonic pattern in two important respects: first, he makes
the two lower faculties of the soul struggle against each other,
in addition to both of them fighting against reason as is usually
the case,[29] and second, he makes what looks like a deliberate
deviation from the postulated ideal of the "golden Meane."
Here are the key lines:

The eldest did against the youngest goe,
And both against the middest meant to worken woe.

(Book II, Canto ii, 13)

The system of sibling relations thus defined clearly looks like a pro-
portion, in which the "ratio" of the eldest sister to the youngest is
the same (or analogous) as the "ratio" of the eldest and the youngest
to the middle sister. This proportion is repeated and reinforced in
the symmetrical conflict between the sisters' male partners, Sir Hud-
dibras, Sansloy, and Sir Guyon, respectively: the first two knights
fought "with deadly hate" against each other, and then turned "with
greedy forse" against Sir Guyon, making "three combats ioyne in

one, and to darraine a triple warre with triple enmitee" (Book II, Canto ii, 26). The above schema of the mutual relations between the three parties can also be presented as an algebraic formula: $c:a = (c+a):b$, in which c stands for the eldest sister, a for the youngest, and b for the middle one.

Now let us apply the "golden squire" to "measure out" this "golden Meane," as Spenser himself invites us to do. Let us assume for the purpose of argument that the formula $c:a = (c+a):b$ reflects the classical Golden Section, with Medina (b) as the "golden Meane," represented numerically by *phi*, approx. 0.618; the "froward" eldest Elissa (c) representing 1; while the "forward" youngest Perissa (a) referring to 1 minus 0.618, that is, 0.382. On the left-hand side of the equation we then have the following: $c:a = 1:0.382 = 2.617$, that is, $\emptyset^2$, whereas on the right-hand side of the equation we have $(c+a):b = (1+0.382):0.618 = 2.236$, that is, $\sqrt{5}$.

As is seen, on the left-hand side we have the *phi* number to the second power, while on the right-hand side we have a square root of 5, which of course shows that for the given values of a, b, and c related to the *phi* ratio the formula is *not* an equation.[30] With the proportion for the sibling relations being visibly unequal, the three sisters of the Castle of Medina are indeed out of balance and harmony, with Medina struggling to achieve the "golden Meane," but ultimately failing to do so.

The unbalanced proportion worked out in arithmetic terms accords well with the atmosphere dominating in Medina's castle as described in the poem: full of discord, strife, and disagreement, to the extent that only the sobriety and strong mental effort of the middle sister prevent the shaky equilibrium from falling apart completely. Even Sir Guyon himself, *the* Knight of Temperance, is unable "with goodly means to pacify" the "hardy" Huddibras and the "vnruly" Sansloy, and instead of abatement and peace between the extremes there is a "straunge sort of fight," with "three combats ioyne in one," which Sir Guyon is unable to stop. Evidently, in the Castle of Medina the knight's temperance is still a virtue *in statu nascendi*, and it is not until later in Book II that Guyon comes anywhere near this inner harmony, symbolized by the orderly design of the House of Alma in Canto ix. In the earlier cantos Sir Guyon is acting "rather simple-mindedly and unselfconsciously," as W. R. Davis has observed,[31] proceeding himself "from sense to feeling to understanding," following the Platonic triadic pattern of the vegetative, the irascible, and the rational elements of the soul.

The Golden Mean in Canto ii, representing an early phase of Guyon's quest, is therefore still uncertain and provisional, as evidenced by Medina's only partial success in mediating and harmonizing the differences and extremes symbolized by her two sisters and their matching companions. Her direct intervention into the male fight in order to end "their deadly cruell discord" marks the climax of the canto, the turning point at which some sort of temporary and fragile peace is established in the castle. Interestingly enough, the decisive moment of Medina's intervention occurs exactly at the "golden point" of the canto: the stanza-total of 46 multiplied by *phi* (0.618) gives us 28 with a fraction, and it is at this point that the "mean" Medina manages "with sober speaches" to suppress the "fury mad" of the warrying parties, and establish provisional accord:

> But louely concord, and most sacred peace
> Doth nourish vertue, and fast friendship breeds;
> Weake she makes strong, and strong thing does increace,
> Till it the pitch of highest prayse exceeds:
>
> > (Book II, Canto ii, 31)

The precarious nature of the peace thus hard achieved, and the uncertainty of the "golden Meane" of temperance at this point of Guyon's adventure are soon evidenced by the extreme difficulty with which Medina manages to hold concord between her sisters during the feast at the castle. Discord and lack of balance, displayed in the earlier formula of sibling relations, are now seen in the continued impropriety in the behavior of the two "froward sisters" and their companions at the table. The "deficient" Elissa, "discontent for want of merth or meat," sat next to humorless and sulking Huddibras, while the "excessive" Perissa, "full of disport, still laughing, loosely light," was accompanied by "the bold Sans-loy, fit mate for such a mincing mineon" (Book II, Canto ii, 35–37). Against this disorderly background the fragile order is maintained with great difficulty by Medina, who strives hard to appease and harmonize the opposites:

> Betwixt them both the faire Medina sate
> With sober grace, and goodly carriage:
> With equall measure she did moderate
> The strong extremities of their outrage;
> That forward paire she euer would asswage,

When they would striue dew reason to exceed;
But that same froward twaine would accourage,
And of her plenty adde vnto their need:
So kept she them in order, and her selfe in heed.

                                    (Book II, Canto ii, 38)

Such a precarious order is a far cry from the image of perfect
harmony between the extremes of the soul, symbolized by the Castle
of Alma later in the Book at the highest point of Guyon's quest. The
atmosphere at the table in the Castle of Medina is very tense, awk-
ward, and unenjoyable for the guests, devoid of any relaxation and
ease, with the hostess's whole effort put into "attempering" the unso-
cial and unruly sisters: generally, into the maintenance of difficult
control instead of harmony. The House of Medina with its provi-
sional "face of the golden Meane"[32] is thus only the first, imperfect
approximation to the true image of the Golden Mean, displayed
spectacularly in Canto ix in the allegorical details of Alma's House
of Temperance. It now remains to be seen whether Spenser-master
mason's "golden squire" and its unique proportion can determine
the structure and meaning of the building visited by Guyon at the
climax of his search for temperance.

    Indeed, Canto ix represents a "golden point" of the entire book
considering the stanza-total,[33] marked by the attainment by Guyon of
the inner harmony symbolized by the orderly design and management
of Alma's Castle. That Spenser's main agenda in Canto ix is the
perfect man with a harmonious soul and temperate body is presented
clearly in the opening lines:

Of all Gods workes, which do this world adorne,
There is no one more faire and excellent,
Then is mans body both for powre and forme,
Whiles it is kept in sober gouernment;
                                    (Book II, Canto ix, 1)

The idea finds its detailed realization in an extended allegory of a
well-designed and well-governed castle, the House of Temperance,
whose description opens with the famous stanza 22, representing a
rare poetic feat of symbolic, geometrical and numerological ambi-
guity:

The frame thereof seemd partly circulare,

And part triangulare, O work diuine;
Those two the first and last proportions are,
The one imperfect, mortall, feminine;
Th'other immortall, perfect, masculine,
And twixt them both a quadrate was the base,
Proportioned equally by seuen and nine;
Nine was the circle set in heauens place,
All which compacted made a goodly diapase.

                                        (Book II, Canto ix, 22)

It is by far the most often discussed stanza of *The Faerie Queene*,[34] and its exceptionally elusive character is no doubt partly responsible for its popularity. For the very same reason the interpretations offered to date are all highly tentative, and as a rule most of them fail to consider *all* the elements in the design of Alma's Castle understood as a whole, concentrating instead on detailed analyses of individual elements taken separately. Alaister Fowler, for example, considering the overall impact of the above description, observed the following:

> While not among Spenser's greatest, these lines nevertheless are a *tour de force* of ambiguity, for they can simultaneously be approached either as an architectural description of Alma's Castle or as a geometrical description of the human body, or as generally elusive arithmology, or as step-by-step instructions for a specific geometrical construction or arithmetical operation.[35]

I argue that the significations enumerated by Fowler are not mutually exclusive, but can be bound together into a "both/and" rather than an "either/or" formula, using again the mason's "golden squire" to account for the analogies between the building, the human body, the geometrical design, and the arithmetical operation. It will also be contended that Spenser's "golden Meane" is again a precise arithmetical concept, and not merely an elusive metaphor as is usually understood (see note 21).

The placing of the stanza in the poem provides the first clue. It has been argued that number 22 was accorded special reverence largely due to its correspondence to the number of characters in the Hebrew alphabet.[36] Jerry L. Mills also pointed to number 22 in connection with the vertue of moderation and various related events

from the Old Testament, drawing upon Stephen Batman's comments on Isidore of Seville in 1582, a source that may have influenced Spenser.[37] Without questioning the validity of these textual associations let us observe that the description of the overall design of Alma's Castle marks one of the "golden points" of Canto ix: the stanza-total here is 60, and the two "golden points" determined by the *phi* ratio are stanzas 37 and 22 (60x0.618=37, and 60x0.382=22.9), as visualized below:

1		22		37		60
		0.382		0.618		

I find looking for the geometrical Golden Means with their constant asymmetrical ratios at least as fruitful and revealing, both numerologically and substantively, as Fowler's search for the arithmetical means within books and between stanza-totals in corresponding books.[38] Of the two "golden points" in Canto ix, stanza 22 is of course the more important as an introduction to an extended allegorical description. On the other hand stanza 37 marks a transition (begun in fact in stanza 36) from the description of the Castle itself to its social life and games, with "the gracious Alma" and the ladies Prays-desire and Shamefastnesse appearing ceremoniously in the court.

Let us now recall that the particular geometrical and numerical elements listed by Spenser in stanza 22 include a partial circle, a triangle, a "quadrate" (i.e., either a square or a rectangle, *O.E.D.*), numbers 7 and 9, and a diapason, that is, a musical octave. In my view the main problem here is to find a comprehensive formula to combine all these elements into a coherent, logical, and harmonious unity. Taken separately, or in partial combinations, the three geometrical figures are usually understood as parts of the human body (the circle for the head, the quadrate for the torso with outstretched limbs, the triangle as the lower body with legs astride),[39] or as the three traditional souls of man (the circle for the rational soul, the square for the sensitive soul, and the triangle for the vegetative soul).[40] The number 7 refers invariably to the seven planets, governing different parts of the body,[41] while number 9 describes the nine spheres of the Ptolemaic Universe, as well as the nine angelic hierarchies.[42] Finally, the "goodly diapase," a musical term, signifies the perfect harmony of the entire structure.

By far the only attempt to unify all the above elements into a single arithmetic formula is that devised by Vincent Hopper in his article from 1940.[43] Hopper regards stanza 22 as a detailed instruction for

the mathematical demonstration of the "mean proportional," following—as he says—"Spenser's own definition of the castle as a "House of Temperance" together with his earlier references to the golden mean as the measure of temperance (Book II, Canto i, 58; Canto ii, 2)."[44] Consequently, Hopper demonstrates Spenser's "mean proportional" as a right-angled triangle inscribed in a semi-circle whose diameter is the hypotenuse of the triangle:[45]
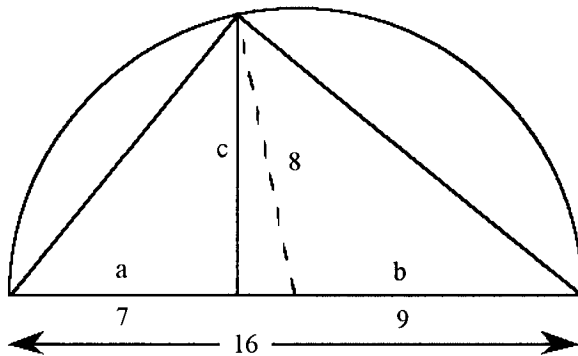

Fig. 4. Vincent Hopper's geometrical reconstruction of the Castle of Alma.

In this construction the "frame" of the Castle appears indeed "partly circulare" and "part triangulare," and "twixt them both" there is the quadrate 16, "proportioned equally by seuen and nine" (7+9=16). The radius of the circle is 8, which is the octave, or the "goodly diapase" of the concluding line. "In sum [writes Hopper], the 'House of Temperance' is a combined human, geometrical, and arithmetical image of the mean proportional."[46]

The main value of Hopper's schema is no doubt its simplicity in accommodating all the figures and numbers mentioned by Spenser, but one is left wondering about the specific meaning of the postulated "mean proportional" as demonstrated in the diagram. The arithmetic mean between 7 and 9—the radius 8—cannot be the "mean proportional," and the geometric mean between 7 and 9 is $\sqrt{63}$, line c, "joining the two numbers at one end and the two figures at the other."[47] But no special meaning is attached to this number, neither by Hopper himself nor by the Renaissance tradition,[48] and the said mean, described as "golden" by Spenser, remains as elusive as before, like the irrationality of the number $\sqrt{63}$ in the proposed schema. Also, Hopper's diagram, for all its ingenuity in combining arithmetically all the relevant numerical and geometrical elements from stanza 22, fails to provide a clue to the actual "frame" and design of Alma's

House, to say nothing of the proportions of the human body symbolized by the castle. In short, the schema as it stands is faultless as far
as geometrical and arithmetical properties are concerned, but nothing
in its construction even remotely, directly or indirectly, resembles
the architectural design or the proportions of the human body, which
is what Spenser no doubt intended in the description.

An alternative proposal to solve Spenser's numerological riddle
would be to follow the poet's own references to the golden mean,
and treat them literally for what they are: as relating to the specific
albeit incommensurate *phi* ratio contained in the mason's golden set-
square—an instrument to measure and determine the unique type of
proportion used in the design of a building. The properties of the
phi ratio are such that they not only reflect architectural designs
of exceptional harmony and beauty, but with similar consistency
determine the proportions in the structure of living organisms, including the human body. Indeed, the Golden Section seems to be
the chief formula for the proportional analogy between man and the
architectural design, an idea present in Vitruvius for example,[49] and
suggested by Spenser in the opening lines of Canto ix. Let us then
again approach the House of Temperance armed, mason-like, with
a golden square, as Spenser himself most probably was. Let me recall
that the Golden Section that should generate and determine the analogical proportions between the building and a human body is geometrically achieved as shown in figure 5.

First a diagonal $\sqrt{5}$ is drawn within a double square, then the
diagonal becomes a radius to mark off point B, and the double square
is extended into a larger square AEFD. What emerges finally is a
"golden" rectangle ABCD, in which $BC:AB=2:(\sqrt{5}+1)=\varnothing$, with
the triangle ABC representing the Golden Square in Roberts's series
and a canonic set-square of the royal master masons of the Plantagenet
kings. There is nothing mysterious, let alone mystical, in this diagram;
on the contrary, it is the simplest geometrical way to arrive at the
Golden Section, and its construction requires only a ruler, a pair of
compasses, and a few basic concepts of Euclidian geometry—all
within the grasp and possibility of medieval and Renaissance architects and master masons. In other words, the diagram would have
been known or else easily recognized as an operation to achieve the
canonic proportion by professional builders in those times, just as
it would have been known by Spenser, who was "thoroughly versed
in the mathematical sciences."[50] Let us also recall that the diagram is
the geometrical basis for Spenser's "golden squire" and the "golden
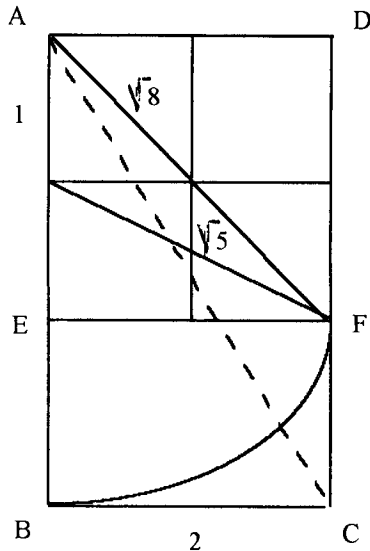Meane." Can it also determine the "frame" of the Castle of Alma?

Fig. 5. The Golden Section diagram as a geometrical design for the Castle of Alma.

The castle's design is "partly circulare" and "part triangulare"; there is surely a part of a circle in the Golden Section diagram, circumscribed by the diagonal $\sqrt{5}$, just as there is a triangle inscribed in the fragment of a partial circle, whose hypotenuse is the radius $\sqrt{5}$. "And twixt them both a quadrate was the base"—this indeed can be square 1, with which the construction of the Golden Mean begins, or else the larger square 2, or possibly even the entire golden rectangle ABCD, since "quadrate" can also mean a "rectangle" (*O.E.D.*). The "quadrate" in turn is "proportioned equally by seuen and nine," the numbers traditionally associated first of all with the planetary spheres and the angelic hierarchies, respectively. Now the arithmetic mean of 7 and 9 is 8, the number referring (as Hopper observed) to the octave, or the "goodly diapase" of Spenser's description, but 8 is also the sum of the squares of the two sides of the equilateral right triangle AEF in the Golden Section diagram. In this way number eight divides the square AEFD diagonally into two halves, just as Spenser's "quadrate" was "proportioned equally [that is, divided] by seuen and nine," that is, by 8 as their arithmetic mean.

With all the main geometrical and numerological components of Spenser's description of the House of Temperance thus falling into an arithmetically coherent design of the Golden Section, I venture that this could be what the poet himself intended: a more or less

explicit poetic reference to the architectural proportion, widely used
in Antiquity, the Middle Ages, and the Renaissance, offering a most
harmonious and natural division of parts in relation to the whole.[51]
Johan Kepler called the Golden Section "a precious gem, one of the
two treasures of geometry," the other "treasure" being the theorem
of Pythagoras.[52] The proportion governs many of the Greek, Roman,
and Gothic monuments, as well as composition in the paintings and
drawings of Piero della Francesca, Albrecht Dürer, and others. An-
other charm of the *phi* number, with its subtle, asymmetrical division
of the parts in a whole, is that it also characterizes the processes of
growth and development in the natural world. The Golden Section
ensures harmonious interrelations in the parts of an organism, albeit
not through simple addition and multiplication, but by means of a
special geometrical progression of the *phi* ratio, which binds the ele-
ments of an organism into a dynamic, creative unity, capable of
growth and expansion. The *phi* pattern can be discerned, for example,
in the spiral growth of a shell or sea-urchin, in the distribution of
leaves on a stalk, or of petals in a flower, in the structure of the
spider's web, in the scales of fish, and in countless other instances from
the natural world, where the *phi* ratio determines the morphology of
endless growth and reproduction of living tissues.[53]

But it is in the human body that the Golden Section finds its most
spectacular manifestation. For example, if the generative organs mark
the arithmetical center of a grown-up man, the navel, the original
source of life in a foetus, cuts the height of the body at the "golden
point" 0.618.[54] Numerous *phi* relationships govern other bodily pro-
portions; for example, between the consecutive bone-lengths of the
finger, hand, and arm. Each normal skeleton, writes M. Ghyka, re-
veals "a perfect symphonic design of the Golden proportion,"[55] as
does the harmoniously shaped human face. This is probably why
Vitruvius in the *De architectura* stated that the ideal architectural design
of a temple should be based on the proportions of a well-built human
body,[56] and the Renaissance artists such as Leonardo da Vinci or
Albrecht Dürer likewise based their bodily canons on the Golden
Proportion.

With geometry and numerical ratios to account for the structural
analogy between the natural world, the human body, and the archi-
tectural design, the Renaissance admiration for man as the most "fair
and excellent . . . of all Gods workes, which do this world adorne"
(*F. Q.*, Book II, Canto ix, 1) assumes thus a more concrete and tangi-
ble meaning.[57] In Book II of *The Faerie Queene* this structural analogy
includes also the character of man, internally balanced by temperance
with its "sober gouernment." Through his allusions to the masonic

instruments and geometrical concepts Spenser's particular poetic expression of the virtue of temperance likewise takes on a more precise meaning, with the arithmetical and geometrical analogies supplementing and enhancing the importance of the more abstract, philosophical, and moral concepts.

NOTES

1. Cf. Plato, *Timaeus*, trs. by H. D. P. Lee (Harmondsworth: Penguin Books Ltd, 1965), 69 B-C; *The Republic* (Harmondsworth: Penguin Classics, 1985), IX, 580 D-E.

2. Starting with Mortdant and Amavia, other pairs of characters illustrative of the two lower portions of the Platonic soul are Perissa and Elissa and their matching male companions, Sans-loy and Sir Huddibras, respectively, or the most elaborate examples of the two kinds of intemperance in the characters of the concupiscible, "watery" Cymochles, and the irascible, "fiery" Pyrochles.

3. Quotations throughout are from the edition of *The Faerie Queene* by A.C. Hamilton (London-New York: Longman, 1990, 1st edition 1977).

4. Aristotle, *The Nichomachean Ethics*, trs. by David Ross (Oxford University Press, 1980), II, 6–8.

5. Ibid., II.6, 37.

6. Alastair Fowler ("Emblems of Temperance in *The Faerie Queene*, Book II," in *Review of English Studies*, No. 11 (1960), 143) derives the emblem from Achille Bocchi, *Symbolicorum questionum libri quinque* (Bologna, 1574, emb.CXLIV, 145).

7. Spenserian scholarship owes an enormous debt to highly stimulating albeit sometimes too speculative numerological analyses by Alastair Fowler, especially in his *Spenser and the Numbers of Time* (London: Routledge & Kegan Paul, 1964).

8. Fowler, "Emblems of Temperance," 143.

9. A. Leonard Roberts, "R's Method. The Achievement of Proportion in Architectural Design," in *Architectural Design*, No. 18 (1948), September-October-November-December, pages (respectively) 197–199, 214–216, 246–249, 272–274. My personal thanks for specialised advice on matters of geometrical proportion in architecture are also due to the architect Neil H. Sholdice, and his thesis *Ordinance Systems: An Enquiry into the Use of Proportional Systems for the Ordinancing of Buildings with Reference to Incommensurate Examples in Ireland in the 18th Century* (unpublished M.A. Thesis, University College Dublin, 1991).

10. John James, *Chartres. The Masons who Built a Legend* (London: Routledge & Kegan Paul, 1982).

11. Ibid., 37.

12. *An Encyclopaedia of Freemasonry*, ed. Albert G. Mackay (Chicago-New York-London: The Masonic History Company, 1925), vol. II, entry "square."

13. John H. Lepper, Ph. Crossle, *History of the Grand Lodge of Free and Accepted Masons of Ireland* (Dublin: Lodge of Research, CC., 1925), vol. I, 28–30.

14.   The Golden Section, or Cut, is a variant of Euclid's Proposition 17, Book VI, which says that "if three lines be proportional, the rectangle combined by the extreme is equal to the square on the mean." The *phi* proportion also corresponds to Euclid's propositions containing "the extreme and mean ratio" (*The Thirteen Books of Euclid's Elements*, in: *Great Books of the Western World*, ed. by Mortimer J. Adler (Chicago: Encyclopaedia Britannica, Inc., 1990), vol. X, Book XIII, Propositions 1–11). Euclid's geometry was introduced into the Gothic architecture in the twelfth century (James, *Chartres*, 47).

15.   "the favourite ratio used throughout the building," James, *Chartres*, 114.

16.   Bernard G. Morgan, *Canonic Design in English Medieval Architecture. The Origins and Nature of Systematic Architectural Design in England, 1215–1515* (Liverpool: University Press, 1961), esp. 52–67.

17.   Among the buildings analyzed by Morgan in which the canonic (Golden) design was used are the King's College Cambridge, Westminster Abbey, cathedrals at Salisbury, Worcester, Bristol, Gloucester, Canterbury, Winchester, Bath Abbey, St.George's Chapel in Windsor—in a word, the flower and glory of English Gothic architecture.

18.   Morgan, *Canonic Design*, 67.

19.   Fowler, "Emblems of Temperance," 143. Fowler and Vincent Hopper are using the term "golden mean" in a figurative, and not strictly geometrical sense (e.g. "the moral construction of the golden mean," Fowler, "Emblems of Temperance," 143; see also his *Spenser and the Numbers of Time*, 281. Vincent Hopper too talks about "this ethical golden mean" in a general sense, "Spenser's 'House of Temperance'," *PMLA*, No. 55 (1940), 966).

20.   The employment of complex numerological patterns in the *Epithalamion* has been thoroughly analyzed in a classical study by A. Kent Hieat, *Short Time's Endless Monument: The Symbolism of Numbers in Edmund Spenser's "Epithalamion"* (New York: Columbia University Press, 1960). Spenser's familiarity with the concept of the Golden Section has also been convicingly argued by David Chinitz in his revealing article "The Poem as Sacrament: Spenser's *Epithalamion* and the golden section," *Journal of Medieval and Renaissance Studies*, 21(2), Fall 1991, 251–268. According to Chinitz the poem's "golden point" is the culmination of the poet's imperatives in lines 263–64.

21.   "But although masonry work is so dependent upon geometrical knowledge, there is no reason to believe that the master masons were unduly interested in the science beyond the limits of its applicability to the practical problems of his craft. This is not to imply that the geometrical procedures adopted by the master masons were quite devoid of symbolical or metaphysical overtones, but rather to suggest that such procedures were *essentially* generated by the need to solve practical problems of building, and any metaphysical connotations associated with them were acquired adventitiously in the course of time, and are superfluous to their basic nature and purpose." (Morgan, *Canonic Design*, 17–18).

22.   "The Gothic element . . . was responsible for nearly everything that is most interesting and alive about Elizabethan architecture. It is far more illuminating to regard the Elizabethans as working out and improving ideas inherited from their own Gothic tradition, rather than as bungling ideas which they had borrowed from

the continent." (Mark Girouard, "Elizabethan Architecture and the Gothic Tradition," in *Architectural History*, No. 6 (1963), 30).

23.   The term "golden mean" *(aurea mediocritas)*, denoting the middle way of temperance, prudence, and moderation, is used by Horace in one of his odes (*The Odes and Epodes*, ed. C. E. Bennett (London: William Heinemann Ltd., 1955), Bk. II, Ode x, 1.5).

24.   Cf. Fowler, *Spenser and the Numbers of Time*, 10.

25.   Cf. *The Faerie Queene*, footnote to Bk. II.ii.14, line 4, 185.

26.   Cf. Robert Lawlor, *Sacred Geometry: Philosophy and Practice* (London: Thames & Hudson, 1982), 44. Matila Ghyka, *The Geometry of Art and Life* (New York: Dover Publication, Inc., 1977), 3–40) gives a mathematical proof that only the *phi* number can hold this proportion:
in a:b=b:c   c=a+b, and so a:b=b:(a+b), or $(b:a)^2=(b:a)+1$. Now if b:a=x, then x, positive root of the equation $x^2=x+1$, is equal to $(1+\sqrt5):2=1.1618$ *(phi)*.

27.   Plato, *Timaeus*, 31c–32a.

28.   In *The Geometry of Art* Ghyka calls the Golden Section "the most natural division of the whole, and most satisfactory to the eye" (8).

29.   The classical Platonic *psychomachia* is that of one (reason) against the two (the irascible and the concupiscible faculties), as described in the *Corpus Hermeticum*, for example:
For the soul must begin by warrying against itself, and stirring up within itself a mighty feud; and the one part of the soul must win victory over the others, which are more in number. It is a feud of one against two, the one part struggling to mount upwards, and the two dragging it down; and there is much strife and fighting between them. (*Stobaeus*, IIB, 4–8, in: *Hermetica. The Ancient Greek and Latin Writings which Contain Religious or Philosophical Teachings Ascribed to Hermes Trismegistus*, trs. by Walter Scott (Boston: Shambhala, 1985), vol. I).

30.   Interestingly, but probably only coincidentally, the *phi* ratio is related under a certain condition to the formula of sibling relations in the Castle of Medina: for c:a=(c+a):b with c=1 we have 1:a=(1+a):b, then b=a(1+a), and b=c=1 we have $1=a^2+a$, $a^2+a-1=0$, and a=$(\sqrt5-1):2=\emptyset$ *(phi)*.

31.   Walter R. Davis, "The Houses of Mortality in Book II of *The Faerie Queene*," in *Spenser Studies. A Renaissance Poetry Annual*, ed. P. Cullen and Th. P. Roche, Jr. (University of Pittsburgh Press, II, 1981), 125.

32.   Davis ("The Houses of Mortality," 127, 129) talks about "the insufficiency of the House of Medina," and about its "severe limitation."

33.   Whether the stanza-total of Book II is 683 (stanzas alone) or 688 (stanzas and proem), the golden point will always fall within Canto ix: 683x0.618=422 (stanza 7), or 688x0.618=425 (stanza 10). It should be observed, however, that there seems to be nothing specially significant in these stanzas, except maybe for the fact that stanza 10 contains the first reference in Canto ix (apart from the argument) to the House of Temperance ("They spide a goodly castle"). It is also interesting to note that there are in fact two "golden points" (one marked by the fraction 0.618, the other by 1 minus 0.618=0.382). This other "golden point" of Book II marks an important moment of Guyon's separation from the Palmer: 683x0.382=261, or 688x0.382=262, which corresponds to stanzas 19 and 20 of Canto vi, when "Guyon

was loath to leaue his guide behind" to fight against the odds by himself for a number of following cantos.

34. The critical exegesis of stanza 22, Bk. II, canto ix dates back to a pamphlet by William Austin, 1636, discussed in Carroll Camden, "The Architecture of Spenser's 'House of Alma'," in *Modern Language Notes*, No. 58 (1943), 262–265. Then followed another attempt by Sir Kenelm Digby, 1644, reprinted in *The Works of Edmund Spenser. A Variorum Edition. Book Two*, ed. Edwin Greenlaw *et al.* (Baltimore: The Johns Hopkins Press, 1933), Appendix XI. Of the twentieth-century interpretations worthy of especial mention in the present context are the already-quoted essays by V. F. Hopper and A. Fowler.

35. Fowler, *Spenser and the Numbers of Time*, 260.

36. Vincent F. Hopper, *Medieval Number Symbolism. Its Sources, Meaning, and Influence on Thought and Expression* (New York: Cooper Square Publishers, Inc., 1968, 1st edition 1938), 87; Ernst R. Curtius, *European Literature and the Latin Middle Ages*, trs. by Willard R. Trask (London: Routledge & Kegan Paul, 1979, 1st edition 1953), 505–6.

37. Stephen Batman, *Batman vppon Barthomome* (London, 1582), pp.417^v–418^r, quoted after Jerry L. Mills, "Spenser's Castle of Alma and the Number 22: A Note on Symbolic Stanza Placement," in *Notes & Queries*, No. 14 (1967), 456–7.

38. For example, for Fowler the Castle of Alma (II. ix) maintains a "mean position" between the House of Holiness (I, ix) and the Cave of Proteus (III, ix), that is, between "divine contemplation and the disordered flux of passion" (*Spenser and the Numbers of Time*, 15–17).

39. Cf. William Austin, *Haec Homo; wherein the Excellency of the Creation of Women is described, by way of an Essay*, 1636, discussed in Camden, "The Architecture."

40. As in John Trevisa's fourteenth-century translation of *De Proprietatibus Rerum* by Bartholomaeus Anglicus (*On the Properties of Things*, ed. by M. C. Seymour (Oxford: Clarendon Press, 1975), Liber tertius, Capitulum 7).

41. Cf. Sir Kenelm Digby, in *The Works of Edmund Spenser. A Variorum Edition*, 476.

42. Ibid.

43. Hopper, "Spenser's 'House of Temperance'," 964.

44. Ibid.

45. Ibid., 965.

46. Ibid.

47. ibid.

48. Cf. Fowler's commentary of Hopper's diagram, *Spenser and the Numbers of Time*, 283.

49. Vitruvius, *On Architecture*, trs. by F. Granger (London: Heineman, 1931), Bk. III, ch. 1:2, 3–5.

50. Fowler, *Spenser and the Numbers of Time*, 256.

51. Ghyka, *The Geometry of Art*, 8.

52. J. Kepler, *Mysterium Cosmographicum de admirabili proportione orbium caelestium*, 1596, quoted after Ghyka, *The Geometry of Life*, 44.

53. Ghyka, *The Geometry of Art*, esp. 8–12; Lawlor, *Sacred Geometry*, 56–59.

54. *The Geometry of Art*, p. 107; Adolf Zeising, *Neue Lehre von den Proportionen des menschlichen Körpers aus einem bisher unerkaunt gebliebenen* (Leipzig, 1854).

55.   Ghyka, *The Geometry of Art*, 97.

56.   Vitruvius, *On Architecture*, Bk. III, ch. 1:2, 3–5.

57.   Sir Kenelm Digby's comment (*The Works of Edmund Spenser*) from 1644 on stanza 22, Canto ix is maintained in the similar vein:
Certainly of all Gods works, the noblest and perfectest is Man, and for whom indeed all others were done. For, if we consider his *soul*, it is the very image of God. If his *bodie*, it is adornd with the greatest beautie and most excellent symmetry of parts, of any created thing: whereby it witnesseth the perfection of the Architect, that of so drossie mold is able to make so rare a fabrick: . . . Man is a little world, and of God himself. (474) and later: In Nature there is not to be found a more compleat and more exact Concordance of all parts, then that which is betweene the compaction and conjunction of the Body and Soul of Man: Both which although they consist of many and most different faculties and parts, yet when they keepe due time with one another, they altogether make the most perfect Harmony that can be imagined. (477)