Structural Arithmetic Metaphor in the Oxford "Roland"
The Meaning of Numbers in the Middle Ages

Chapter One

IN THE EVALUATION OF AESTHETIC FUNCTIONS, modern practice tends to distinguish rather sharply between knowing in a cerebral way and perceiving in a sensual way. It is generally felt today that metaphor, or indeed any figurative or symbolic device, should function to bring abstract concepts within the range of human comprehension by making them perceptible to the senses. The usage of a numerical symbol, as the number five is used in the *Vie de Saint Alexis* to express the concept marriage, would constitute a reversal of this process, for the number is an abstraction in itself and symbolic only by reason of an arbitrary, and for us rather silly, assignation of meaning. Furthermore, the number is so buried in the structure of this poem as to be inaccessible to the imagination without recourse to some very cerebral arithmetic calculations. Clearly, the specific medieval point of view which deemed it worthwhile to construct a poem in the manner of the *Alexis* is so far removed from the modern attitude that a frame of reference must be supplied to explain the artistic validity of the procedure.

An examination of the several streams of tradition of which the practice was a product will show to what extent numbers were fundamental realities in the minds of medieval men and how essential they were to any artistic creation that pretended to harmonize with that finite totality which was their world.

Since the history of number symbolism lies somewhat outside of the range of studies on the Old French epic literature, a summary exposition of this topic will be given here, derived in the
main from the work of Vincent Hopper, which is one of the most comprehensive studies to date on the subject.\textsuperscript{1}

Hopper defines three distinct ways of viewing numbers derived from three major sources which later coalesced into medieval number philosophy (pp. ix, x). The first, which he labels "elementary," is derived from the identification of certain fixed natural groups with their corresponding numbers. A hand would thus be five; a man, twenty (ten fingers and ten toes). The second had its origin in the Babylonian science of astrology, which held in awe as divinely ordained numbers derived from constellations, planets, and stellar revolutions. The third, he traces to the number theory of the Pythagoreans, which "fixed the relationship of the numbers to one another and, accordingly, the places of the astrological aggregates in the Cosmic Order."

**Elementary Numerical Associations**

As man progressed from that first activity of counting which would be the distinction of \textit{one} from \textit{many} he must surely have isolated the concept \textit{pair} from his observance of the numerous dualities and antitheses of nature: day and night, man and woman, sun and moon, and, at a later stage, perhaps, good and bad. He then had at his command three numerical concepts: 1, 2, and many, and the idea \textit{many} came to be identified with the concept of 3. Hopper suggests that this may have occurred "because 3 is the first integer to which the idea of \textit{many} may be applied, or because the \textit{many} word became incorporated as the third integer in a more advance system" (p. 4). He offers as evidence of this stage of reasoning the singular, dual, and plural, and the positive, comparative, and superlative systems in numerous languages.

Hopper defines the 3 identified with \textit{many} or \textit{all} as the "cumulative" or "statistical" 3 still viable in the logic of modern inductive reasoning: a single occurrence is not significant, a second occurrence may be coincidence, but a third occurrence suggests that a law is in operation. An outgrowth of this half-instinctive
mode of reasoning is the rationale of the widely-held superstition that what happens twice must happen a third time (and that will be all) (p. 5). Myth and folklore abound in three wishes, three tries, three suitors.

Perhaps because of the implication of all in the statistical 3, perhaps because of numerous simple analogies in the physical and social world, the number three is, according to Hopper, the most ancient and universal number of deity (pp. 6-8). At the suggestion of the family triad, man, woman, and child, and, by extension, of the total idea of generation, parallel celestial families were invented to direct and control matters of generation on earth. Osiris, Isis, and Horus are the most famous of such triads. Observable tripartite divisions of the physical world: heaven, earth, and the underworld; heaven, earth, water; the rising, midday, and setting sun; or spring, summer, and winter, the three divisions of the Indian year; all gave rise to triads or trinities of deities to control each of the threefold domains. The gods of the sky, of the atmosphere and the earth in the Rigveda, the Sumerian Anu, Enlil, and Enki (later Anu, Baal, and Hea), the Greek Zeus, Hades, and Poseidon; the Egyptian Horus, Ra, and Atun are such deities. The concepts of birth, life, and death have produced the Greek fates, Klotho, Lachesis, and Atrafos; the Scandinavian Norns, Urd, Verdandi, and Skuld; and the Indian Brahma, Vishnu, and Siva. Hopper concludes his discussion of the elementary conception of 3 with the observation that, at the dawn of history the number “had already robed itself in manifold meanings, and bore a ruling and godly aspect from which man was not soon to escape” (p. 8).

According to Hopper, the concept of the number four had its origin in the dawning awareness of the four directions: toward the sunrise and the sunset and then toward the points of the verticals to the path of the sun (pp. 8, 9). The conception of the four winds would naturally follow, and the widespread prevalence among primitive cultures of the equal armed cross, the swastika, and other cruciform emblems lends credence to the theory as do also the supports of the heavenly roof in the figures of four mountains, four pillars, or the four women of Egyptian
cosmogony. In any event the idea of the "fourness" of earth is such a universal commonplace that its origins must also have occurred in that elementary stage of arithmetic reasoning when the concrete associations of number were more real than abstract.

For modern arithmetic, by far the most significant advance in the associational stage of arithmetic reasoning was the discovery that the fingers and toes could be used as counting devices. As a far-reaching consequence of this ancient realization, the decimal system of counting was born, where, as Hopper observes, the integers of the decade take on the semblance of immortal essences, and the possibility of infinite repetition of digits provides for infinite variation of fundamental number symbols (pp. 9, 10).

He notes as an interesting example of usage of decimal counting to determine literary form, the numeration of the twenty-eight poems of the so-called Thousand Songs of Thebes of ca. 1300 B.C. The poems are numbered from 1 to 10 and then 20, 30, 40, etc. to 100 and then by hundreds to chapter 1,000, which is actually the 28th chapter. Hopper continues: "Every member of the decade is thereby repeated 3 times and the contents of chapter 80, for example, will be found to refer to the sanctity of the number 8." A very early figurative usage of the repeated digit is to be found on a Cainite tablet which states that "if Cain is avenged 7-fold then Lamech 70 and 7." "Centuries later," Hopper continues (pp. 9, 10): "Thomas Aquinas [Expositio II in Apocalypse 14] in his solution of 666, the number of the beast in Revelations, discusses 6 in relation to unity, 6 in relation to the denarius, and 6 in relation to the hundred."

It is of special import to the present study to note that the concept of the repeated digit on which Saint Thomas relies for his interpretation of 666 would have received reinforcement from the columnal decimal system of notation which, by his time, was well established in Europe through the use of the abacus. An improvement on this ancient device was invented by the mathematician Gerbert (956-1003), who was to become Pope Sylvester II, and who taught at Bobbio and Reims. Gerbert's invention comprised a board divided into thirty columns, three
being reserved for fractions, while the remaining 27 were divided into groups of three columns each, designated S (singularis), D (decem), and C (centum). Addition, subtraction, and multiplication were carried out very much as today by simply placing disks marked with signs for numerals in the appropriate column. Thus a 4 in the S column would mean 4, in the D column, 40, and in the C column, 400, and so forth. No zero was necessary.

Naturally, in a decimal system the number ten as the symbol of the entire method of numeration achieves importance in itself and acquires connotations of completeness and finality, as do its multiples, one hundred and one thousand. The case of the Thousand Songs of Thebes, cited previously, stands as an expression of such feeling in literary form as do the ten books of hymns celebrating the chief gods in the Rigveda. In the Judeo-Christian world, the Ten Commandments of the Old Testament have conferred divine authority on the number.

It would be natural also to expect that since the idea of completeness is conveyed by 10, the number nine would suggest "almost completeness" and the number eleven, "excess." Hopper cites as an example of the former the 9–10 relationship in the Iliad and the Odyssey, where Troy, besieged for nine years, fell on the tenth; and where Odysseus wandered for nine years to return home on the tenth (p. 10). The evolution of the concept of 11 as the number of excess is of special import to the present study and will be treated in detail in a later section.

Hopper concludes that, although in more sophisticated epochs the numbers which have been discussed may receive additional connotations, their elementary meanings are seldom lost: 3 is "all" (beginning, middle, and end), "best" (superlative), "holy" (triads of gods); 4 is the number of earth; 10 is completeness and perfection; and 9 is all but complete (p. 11).

Astronomical Associations

The pattern of thought which associates number with the observable groups of the everyday world extends naturally to
association with the movements of the heavenly bodies. However, since such movements seem to be ordered and controlled by unseen powers, the numbers observable in them take on the qualities of divine essences empowered by active forces. The essences then become objects of worship in themselves and the knowledge and manipulation of them becomes a special prerogative of the controlling gods and their priests. Thus, as Hopper mentions, the supreme secret which the Babylonian god Ea taught to his son was called the “number” and the goddess Nisaba is characterized as “she who knows the significance of numbers and carries the tablet of the stars” (p. 12).

The most easily observed of the celestial movements would obviously have been the cycle of lunations; and the four periods of the moon’s phases—waning half, full, waning half, dark—would reiterate the elementary quaternity of earth and give prominence to a division of time into four periods of seven days each, which doubtless accounts for the fact that the seven-day week is universally the most prevalent. That the seventh day came to have a baleful aspect is attested in a Babylonian calendar mentioned by Hopper which lists as evil days the seventh, fourteenth, twenty-first, twenty-eighth, and also the nineteenth, which is the forty-ninth (7 x 7) from the first of the preceding thirty-day month (p. 13). Thus, in resting from the labors of creation on the seventh day, the Hebrew Jahveh acted in conformity with the Babylonian tradition of the baleful seventh.

The observations by shepherds and navigators of the seven stars in the Bear and the Pleiades, surely gave further prominence to the number seven. Hopper maintains that the seven stars of the Bear, the constellation visible throughout the year, probably provided the pattern for the seven gods of the Brahmanas who preceded the flood and the seven wise ones saved after the flood who wrote down the secrets of divination, magic, and wisdom, as well as for the seven Hathors of Egypt, the seven seers of Vedic ritual, and the seven sages of Greece (p. 15). He concludes that seven thus became, in one aspect, “a number of wisdom and godliness.”

Of far-reaching significance to the number mysticism of even
modern times was the descent of the seven stars of the Pleiades below the horizon for forty days every year, for this period coincided with the rainy season in ancient Babylon and was a time of storm, flood, and general tribulation, all attributed to the exile of the beneficent stars. The understanding of forty as a number of exile is reflected in the forty years of Hebrew wandering in the desert, the forty days spent by Moses on Mount Sinai, and the forty days of Lent, and is viable today in the word ‘quarantine’, which stems from the forty-day period of isolation in the port of Rome. Another result of the descent of the Pleiades was the attribution of evil significance to the number seven, for while the seven stars were absent, they were cursed for their merciless and destructive influence.

The special import of the manifold connotations of the number seven to the argument of the present work will be discussed in detail later. For the present, it will suffice to note that the ambivalent feelings with regard to the number, originating in the ambience of man’s earliest astronomical observations, flourish in abundance in the Old Testament. Perhaps the most striking exemplification of the good and bad qualities of the number seven is to be found in Genesis 41, where Pharaoh dreams of seven fat kine and seven good ears of corn swallowed up by seven lean kine and seven thin ears. Joseph interpreted the dream to mean seven years of plenty followed by seven years of famine in Egypt. From the concept of the rest of Jahveh on the seventh day, there arose the idea of the six ages of the world comprising six days of a thousand years plus a seventh of eternal rest. In the genealogies of the descendants of Adam, the number seven is prominent in both the good line and the bad. Thus, seven names are mentioned in the line from Cain to Lamech, who lived 777 years, and it is stated in Genesis 4:24 that “if Cain be avenged 7 fold, truly Lamech shall be avenged 70 and 7.” The good Enoch, however, is also the seventh in the genealogical tree, and the tree of life of seven branches with seven leaves each became the seven branched candlestick of the Hebrew menorah. The righteous in Israel are named as 7,000, there are seventy nations, seventy children of Jacob, and seventy judges of Sanhedrun.
The eighth day, conceived as a day of plenty after fasting or purification after cleanliness, is also the day of circumcision, and after a period of $7 \times 7$ or 49 years, the fifieth is holy.

Hopper remarks that "probably the earliest year was that of 12 lunations with a 13th month later intercalated from time to time, this carrying with it an inauspicious and baleful aspect" (p. 19). In any event, he maintains that twelve signs of the zodiac were discovered as the appointed rulers of the months and that twelve stars selected as objects for devotion soon were doubled to a set for the Northern Hemisphere and one for the Southern, following the principal of the dualism of good and evil. An expansion of the pattern and similar dualistic reasoning led to the establishment of two sets of twelve divisions for the hours of the day and the night. The twenty-four stars of the Northern and Southern Hemispheres became the twenty-four judges of the living and the dead who perhaps live on in the twenty-four elders of the Book of Revelation.

Hopper points out that duodecads have been prominent in every ancient civilization and cites as examples the twelve spokes in the wheel of the Hindu Rta, the twelve gates of hell where Egyptian Ra must spend the twelve hours of night, the twelve tribes of Israel, the twelve labors of Hercules, the twelve gods of Greece and of Rome, and the twelve tables of Roman law (p. 21). Obviously, through its association with temporal divisions, the number receives prominence in the Old Testament in the ordering of administrative functions. Thus David (I Chronicle 24:25) divides the sons of Aaron into twenty-four orders so that no hour of the day or night be neglected, and twelve captains are appointed (one for each month), each ruling over 24,000 men.

To what extent the prevalence of the duodecads is related to the duodecadial system of counting practiced by the Babylonians and Chaldeans is a subject worthy of consideration. This system based on twelve units, which survives today in the division of the circle into 360 degrees, is much more flexible than our decimal system, for since the number twelve is divisible by two, three, four, and six, it can be fractioned into a half, a third, a quarter, and a sixth. In contrast, a system based on ten digits
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Can only be divided by two and five, or fractioned into the half and fifth. The survival of remnants of the duodecadial system into the Middle Ages (and into modern times, for that matter) has, when it comes into conflict with the prevailing decimal system, produced some amusing arithmetic dilemmas. As will later become apparent, the unwieldy decimal system posed insoluble paradoxes when Christian number philosophy attempted to derive the Trinity from unity. Without a workable system for the notation of fractions, it is simply impossible to divide one or ten or one hundred, and so forth into three parts.⁷

Hopper suggests that a new stage in the history of number symbolism was inaugurated in the later apocalyptic writings of the Hebrews, which sought in the great astrological numbers such as four, seven, and twelve, interrelations which would serve as fundamental patterns on which prognoses of the future could be based (p. 30). Thus, the quaternity of earth, as evident in the cardinal points, winds, seasons, phases of the moon, and so forth, was conceived as a manifestation in the observable microcosm of an archetypal pattern in the macrocosm and justification for the assumption that four is the number of earth, time, and life in this world. The significance of such numbers was felt to be occasionally perceptible to a highly devout elite but completely knowable only to God. Thus, St. John, endowed with such perception, can say (Revelation 7:4): “And I heard the number of them that were sealed: and there were sealed 144,000 [i.e., an extension of 12 x 12] of all the tribes of the children of Israel.”

Pythagorean Numbers

While the symbolism of the astrological numbers was being elaborated in Africa, on the north shore of the Mediterranean a somewhat different way of considering numbers seems to have originated independently in the sixth century B.C. among the adherents of the cult of mystic philosophy led by Pythagoras.⁸ Little is certainly known about Pythagoras or his followers, and
the information we have regarding their number theory comes to us through the comments of Plato and Aristotle and later philosophers. The so-called Pythagoreanism known to the Middle Ages is in fact that corpus of mathematical writing by the Neo-Pythagoreans, who, between the first century B.C. and the fifth century A.D., perpetuated the tradition of the now vanished writings of their predecessors which they had received through Plato. Such men were: Philo the Jew, Nicomachus of Gerasa, and Plutarch, of the first century A.D.; Plotinus, Diogenes Laertius, Porphyry, and Iamblicus, of the third century; and Proclus, Macrobius, and Capella, of the fifth century.

According to Hopper, the two principles of Pythagoreanism most influential in medieval number philosophy were the exultation of the decade as containing all numbers and therefore all things and the geometric conception of numerical relations (p. 34). Perhaps the most succinct (if not entirely sympathetic) statement of their mathematical philosophy is that which Hopper cites from Aristotle’s *Metaphysica* A.5:

> The first to take up mathematics [the Pythagoreans] thought its principles were the principles of all things. Since of these principles numbers are by nature the first, and in number they seem to see many resemblances to the things that exist and come into being . . . since again they saw that the modifications and ratios of the musical scales were expressible in numbers they supposed the elements of number to be the elements of all things, and the whole heavens to be a musical scale and number. And all the properties of numbers and scales which they could show to agree with the attributes and parts of the whole arrangement of the heavens, they collected and fitted into their scheme, and if there was a gap anywhere, they readily made additions so as to make their whole theory coherent.⁹

Aristotle’s skepticism was evidently prompted by the Pythagorean cosmic theory which posited a universe comprising a central fire around which revolve earth, sun, moon, planets, and the six stars, resulting in a total of nine spheres, to which
they added an invisible counterearth to bring the number to the completeness of the decade. (In the light of modern science, where mathematics has so often led to discovery—Mendeleev's table of atomic weights would be a case in point—the reasoning of the Pythagoreans does not seem so faulty!)

The geometric conception of numbers provided the link between their abstract and concrete qualities. The number one was conceived as the point; and the number two, since it could be viewed as extension between two points, was equated with the line. The number three, then, was seen as the triangle; and, since this configuration was the first in the series with concrete form, the triangle was held to be the basis of all perceptible objects, and the number three was thus called the first real number. Then, since four points can be construed in a pyramid, the number four was called the first solid and, through the suggestions of its shape, was also equated with fire. The first four numbers were thus conceived as the archetypal numbers since by means of them the point, line, surface, and solid could be represented.

Reasoning from the arithmetic and geometric qualities of numbers, the Pythagoreans then proceeded to endow them with philosophic properties. The monad was deemed the first principle from which all other numbers flow and, since its figuration was simply a point and not a construct perceptible to the senses, was considered an essence rather than a being. It was called the father of number and equated to God as the basis and creator of numbers. In it were combined the qualities of both odd and even, and male and female, for when added to odd numbers it produces even, and to even, odd. Although called the great Even-Odd it was, nevertheless, considered more odd (good) than even (not good).

In similar vein the number two was called the mother of numbers but, like one, was deemed to be a principle rather than a number because, as in the case of the point, the line is not concrete. The number two, however, stood lower in the hierarchy of philosophic quantities than the great monad, for it was felt to have the somewhat negative properties of diversity, separation
from unity, and, because it was divisible, mutability. It was held to be more nearly related to matter and existence and thus not equated with essence or idea, and it was associated with the notion of excess and defect.

A set of oppositions embodied in the first principles, one and two, ran somewhat as follows: the monad was held to represent the intelligible, the immortal, the right side, the day, the east, the sun, and equality, while the duad was associated with the sensible, the mortal, the left side, the night, the west, the moon, and inequality.

Since limit and unity were desiderata in the Pythagorean system, the numbers following after the first two principles were generally considered good or bad, depending on whether they were odd or even. Even numbers were called feminine because they were "empty in the center" and always divisible. Therefore, they were the weaker. Odd numbers were called masculine and considered the "masters" of the feminine "slaves," since, when added to even, they always produced odd. The even numbers were, because of their divisibility, generally associated with the infinite, a concept rather repulsive to Greek thought, while the odd connoted finite limits, rest, and completeness. The fact that the progression of the odd numbers from the monad always produces squares (i.e., one plus three equals four, plus five equals nine, plus seven equals sixteen, etc.) no doubt served to further enhance the esteem in which they were held within this system of reasoning.

Three, the first real number and the first of the masculine, finite, and God-like odd numbers, was felt to symbolize all reality, that is, the beginning, the middle, and the end. It restores to harmony the unity of one and the diversity of 2 of which it is the sum, linking them by this means into a single and complete order. In the logic of the Pythagorean triad can be seen the basic philosophy of the Christian Trinity, and in the fifth century of our era we find Proclus maintaining (Elements of Theology 50.148) that "every divine order has an internal unity of threefold origins from its highest, its mean, and its last term."

The tetrad as the last of archetypal numbers was viewed with
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special favor because it produces the decade, either as the sum 
(one plus two plus three plus four equals ten), or as the number 
of points in the sides of the figured representation of ten as a 
triangular number.

In the Pythagorean system, the numbers five and six were 
both associated with the idea of marriage as being either the 
sum or the product of the first feminine 2 and the first masculine 
3; and, as would naturally be supposed, the number five, being 
odd, was considered the masculine marriage number, while the 
even number six was the feminine and was indeed called the 
number of Venus by Capella (De Nuptiis 7). Worthy of note 
is the fact that it is in the fifth book of the Republic that Plato 
speculates so extensively on the properties of the “marriage 
number,” which is apparently derived from the 3, 4, 5, right 
triangle, whose hypothenuse was 5 and whose area was 6!

Plato (Timaeus 38) designates the number seven as the 
“moveable image of eternity.” Seven was also deemed to be 
the virgin number, since it neither generates (a square, cube, 
etc.) nor is generated within the decade. Thus, by reason of its 
isolation, it shared somewhat the respect ascribed to unity and 
bore fittingly the weight of symbolic meaning which it had re­
ceived through astrological associations as a great lunar number, 
since the sum of the first seven numbers equals 28—the number 
of days of the lunar cycle! It was also known as the number of 
harmony and, through its association with the seven tones of the 
musical scale, the seven vowels, and the seven stars of the 
Pléiade, was called by Plutarch the “lyre of the muses” (Sur 
l'E de Delphes 4).

The special reverence reserved for the number ten derives, of 
course, from the fact that, in the decimal system of counting, all 
other digits are incorporated in it; and it seems to represent a 
kind of resolution of multiplicity into a higher order of unity. 
Porphyry calls it comprehension because it comprehends “all 
differences of numbers, reason, species, and proportions.” The 
multiples of ten by itself (100, 1,000, and so forth) were called 
the “boundaries” of number with similar unifying properties 
ascribed to them; and, since all higher numbers are generated by
the members of the decade, they were felt to derive their special qualities from their unit progenitors.

The Pythagoreans had little quarrel with either the traditional elementary or the astronomical significances of numbers, and the fact that the two concepts could be easily harmonized can be seen in the manner in which the arithmetic properties of 7 were found to be in accord with its astronomical association. Similarly, the philosophic logic of the triad was but a reiteration of the age-old elementary association of three with the idea of all deity as comprising beginning, middle, and end.

Transmission to the Middle Ages

Such in outline was the vast body of numerical lore which Western civilization had at its disposition at the dawn of the Christian era: an accumulation of beliefs and associations stemming from that first awareness of the difference between the one and the many in the prehistory of man's thought which gathered accretions from his observations of phenomena in the heavens and in the world in which he found himself and which received final sanction from his inquiries into the nature and combining properties inherent in the numbers themselves.

Hopper stresses the fact that perhaps the most influential figure in the transmission of this lore to the culture of Western Christendom was Philo the Jew, that great scholar of biblical exegesis whose writings in the first century after Christ established the principle of allegorical interpretation of the Hebrew scriptures and were to serve as the model of biblical commentary not only for the Jews, but for all of the fathers of the Christian church, both Greek and Roman (pp. 46-49).

Philo was essentially an Alexandrian who believed that the physical world was a manifestation of the ideas inherent in the Logos, that great depository of all the patterns of all the forms. The world perceptible to the senses was for him a kind of "forest of the symbols," a metaphor used by both Origen and Baudelaire, whose true meaning can be known by analyzing correspondences
or the allegorical significance of the perceived manifestations. Allegorical exegesis of the sensible world is thus the way back to essence from appearance, and number is especially helpful in this procedure, for as Plotinus says (Enneades 6.6.4-5) "number exists before objects which are described by number." Number, then, was a sort of window in the sensory world through which the essence of the patterns in the Logos could be perceived. (Solomon, whose wisdom was being recorded at about the time of Philo, is thus presumed to have said that God disposed all in number and measure and weight.)

Within this pattern of reasoning then, Philo was justified in seeking a message in the numbers of the Hebrew scripture and for applying in his interpretations all the baggage of symbolic meaning which previous cultures had handed down to him. Thus, when he found what seemed to be Pythagorean elements in the books of Moses, it was natural for him to conclude, as Hopper notes, that the Greeks had gotten their learning from these books at an earlier age (p. 47). In this manner divine authority, which had hitherto been limited to the astrological numbers, was now conferred on Pythagoreanism.

Philo combed the scriptures line by line for significant numbers, and none seemed to have been too complicated for his ingenuity to reduce to the archetypal principles. The early Christians, meanwhile, in their simplicity and directness, seemed unconcerned with the sophisticated manipulations of number symbols, but did unwittingly contribute to their propagation by finding in the writings of the Old Testament foreshadowings and prophecies which gave support to the divinity of Jesus as a long awaited Messiah. The doctrine of the fulfillment of the scriptures made it inevitable that units of time and patterns of numbers which had persisted through the old records be repeated in the recordings of the new events. Thus, it was only natural that, for example, the number of days of Christ's temptation should be stated as forty after the model of the forty days of Elija's solitude, the forty days of trial by flood, and the forty years of Hebrew wandering, and so forth.

Later, when the Christian community attracted to its fold men
of scholarly and philosophical leaning, these minds, bent on the creation of a consistent body of Christian theology, naturally operated in the manner suggested by the ambience replete with philosophic interest in numbers in which they were nurtured. Such were Clement of Alexandria and his pupils Origen and Hippolytus, as well as Irenaeus, Tertullian, Justin Martyr, and Ambrose. These men, following the lead of Philo, began to write allegorical exegeses of the biblical texts and to interpret the numbers in accordance with all the information at their disposition.

Of paramount importance were problems concerning the numerical composition of the godhead, a matter which seems to have bothered the first-century Christians not at all but which later, under the threat of the Arian heresy, gave promise of splitting the religious construct into an ambivalent duality. A subordinating, yet unifying, readjustment in the Father and Son concept was badly needed, and a great step toward the accomplishment of it was the identification of the Son with the Logos which Philo had posited. The final resolution of the problem was attained, however, with the statement of the Trinity, in which the Holy Ghost would participate as the Third Person, together with the Father and the Son. No doubt the solution was a happy one for the men of that age as well as for those of ages to come, for the idea of a Trinity was consonant with the ambience of Pythagorean distrust of duality and reverence for the triad as a second kind of unity; and, in general, the construct satisfied the universal human compulsion to expect after two an inevitable three of completeness and finality. It also had the practical advantage of providing a replacement with minimal disruption for the age-old triads of gods, whose followers were soon to be converts to the new religion.

The fact that God created the world in six days and rested on the seventh had occasioned much speculation by Philo, who reasoned that 6 was a perfect number "since it is the first number which is equal in its parts, in the half, and the third, and sixth parts [that is, it equals the sum of its divisors three, two, and one] and since it is produced by the multiplication of two unequal factors, two and three. And the numbers two and three
exceed the incorporality which exists in the unity because the number two is an image of matter being divided into two parts and dissected like matter. And the number three is an image of a solid body, because a solid can be divided according to a threefold division.”

Mortal beings were thus measured by the number six, and the blessed and immortal by the number seven, which God sanctified by making his seventh creation that of light. Hopper summarizes Philo’s remarks in the *Creation* on the sacred number seven, noting that the prominence of this number is explained by its archetypal position as “lord of the universe,” the image of God “being one, eternal, lasting, immovable, himself like to himself, and different from all other beings” (p. 48).

The analogy of the creation led to much speculation regarding the duration of the world and, starting with the statement in the ninetyeth psalm that a day with the Lord is as 1,000 years, that interval was established as the length of the age. There was fairly general agreement among the early fathers that the limit of the world would be 6,000 years, but the fact that Christ was resurrected on the eighth day, that is, the day after the seventh, occasioned some consternation which ultimately was resolved by Augustine, who reasoned that, after the six earthly ages, the seventh day of rest symbolized the culminating Eternal Rest, which would have no evening. The eighth day, then, represented a return to original life, not taken away, but made eternal (Hopper, p. 77).

Indeed, it remained for Augustine to give that final approval of number symbolism which was needed for its perpetuation in Western Christendom. “Augustine is everywhere fascinated by the properties of number,” remarks Hopper (p. 79), who cites from the *City of God* 11.30: “We must not despise the science of numbers, which, in many passages of the holy scripture, is found to be of eminent service to the careful interpreter. Neither has it been without reason numbered among God’s praises ‘Thou hast ordered all things in number, and measure, and weight.’ ”

Hopper cites at length from Augustine’s interpretation of the flood legend in the *Contra Faustum* 12.38 to provide an example
of his ingenuity in allegorical exegeses (pp. 80, 81). A part of his citation is given here to show the kind of model for the manipulation of number symbolism which the medieval poets and architects and artists had before them as guides for their own artistic creation.

Omitting, therefore, many passages in these Books, where Christ may be found, but which require longer explanation and proof, although the most hidden meanings are the sweetest, convincing testimony may be obtained from the enumeration of such things as the following: — That Enoch, the 7th from Adam, pleased God, and was translated, as there is to be a 7th day of rest into which all will be translated, who, during the 6th day of the world's history, are created anew by the incarnate Word. That Noah with his family, is saved by water and wood, as the family of Christ was saved by Baptism, as representing the suffering of the Cross. That this ark is made of beams formed in a square, as the Church is constructed of saints prepared unto every good work; for a square stands firm on any side. That the length is 6 times the breadth and 10 times the height, like a human body [prostrate], to show that Christ appeared in a human body. That the breadth reaches to 50 cubits; as the apostle says, "Our heart is enlarged" (II Corinthian vi.2), that is, with spiritual love, of which he says again, "The love of God is shed abroad in our hearts by the Holy Ghost, which is given unto us" (Romans v.5). For in the 50th day after his resurrection, Christ sent his Spirit to enlarge the hearts of his disciples. That it is 300 cubits long, to make up 6 times 50; as there are 6 periods in the history of this world that it is, 30 cubits high, a 10th part of the length; because Christ is one height, who, in his 30th year gave his sanction to the doctrine of the gospel, by declaring that He came, not to destroy the law, but to fulfill it. Now the 10 commandments are known to be the heart of the law; and so the length of the Ark is 10 times 30. Noah himself, too, was the 10th from Adam.

It should not now be difficult for us to imagine that the medieval poet, with such examples before him, would be con-
strained to imitate in the microcosm of his poems, those creative procedures which, as he had learned, God had used to produce the great macrocosm. Of first order in importance would be a structure or a kind of armature composed of numbers which bore some relation to the import of the story he planned to tell, for he was imbued with the idea that number exists before objects which are described by number, and that in the great creation, as he had learned from Nicomachus in his *Introduction to Arithmetic* 1.6. 1–2, "the pattern was set like a preliminary sketch by the domination of number préexistent in the mind of the world-creating God." Whether or not the numbers would be discernible to his audience was of no importance to such a poet. What must have only mattered to him was his knowledge that, since the thing he wished to create had been made in the proper manner, it would be good, and in harmony with all creation.

1. Vincent Foster Hopper, *Medieval Number Symbolism*. See also Guy Beaujouan ("Le symbolisme des nombres à l’époque romaine," *Cahiers de civilisation médiévale* 4 [1961]: 159–69), who reviews briefly some unedited, twelfth-century tracts on numerical symbolism which were unknown to Hopper. Beaujouan mentions specifically the *Analytica numerorum* of Eudes de Morimond (d. 1161), of MS lat. 3324A of the Bibliothèque Nationale, and the *De sacramentis numerorum a ternario usque ad duodenarium* (completed between 1165 and 1170) by Guillaume d’Auberive and Geoffroy d’Auxerre, which is to be found in Luxembourg MS 60 along with a similar tract by a certain Thibaud de Langres. Karl Menninger, *Number Words and Number Symbols*, treats the subject from the point of view of language and signs. The book of Christopher Butler, *Number Symbolism* (London, 1970) could not be examined before this work went to press.


