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THE GOLDEN RECTANGLE

This article is not for everyone. If you have an interest in working with numbers, then you might be interested in this. If you are not interested in numbers, then this is probably not for you. It is certainly not of major importance, though it does, I believe, show God's hand in history.

I have been doing some research into what is known as "the Golden Rectangle" or "the Golden Section" or "the Golden Mean" and what is at times even called "the divine proportion" or "the sacred ratio". This is a very special and unique ratio which is found in nature. It has been known since antiquity and is evidenced in art and in architecture. Thus it is seen in the construction of the Parthenon in Greece and in the Great Pyramid at Gizeh (or Giza) in Egypt. It is also seen in some modern constructions, such as the "United Nations Building" in New York, which was built in 1952 ... the ratio of the height of that building to the length of its base is 1.618 : 1. In nature this ratio is also found in natural spirals, like "the nautilus shell", a snail-like sea creature. It is also found in the whorls of a sunflower, the arrangement of leaves on a branch and in the scales on pine cones (which scales also follow what is known as "the Fibonacci sequence").

Simply put, this is a ratio between two lines. The Golden Section divides a straight line in such a way that THE RATIO of the smaller part of the line to the greater part of the line is exactly the same as the ratio of the greater part to the whole line. You can probably find articles about this subject in any number of reference works. For example, Webster's Dictionary states:

> "golden section n(1875) : a proportion (as one involving a line divided into two segments or the length and width of a rectangle and their sum) in which the ratio of the whole to the larger part is the same as the ratio of the larger part to the smaller."

Funk & Wagnalls Encyclopedia has the following short article:

> "GOLDEN SECTION, in mathematics, geometric proportion in which a line is divided, or sectioned, into extreme and mean ratio.V1203301
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> When a line AB is sectioned at a point C in such a way that AC/AB = CB/AC, the section represents extreme and mean ratio. This ratio has the numerical value 0.618 . . . , which can be derived as follows: If AB = 1, and the length of AC = x, then x/1 = (1 - x)/x. Multiplying both sides of this equation by x gives x2 = 1 - x; therefore, x2 + x - 1 = 0. This equation can be solved by using the quadratic formula (see ALGEBRA), which yields the equation x = (- 1 + square root(5))/2 = 0.6180339. . . .
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> Some historians assert that the properties of the golden section aided the Pythagoreans in discovering irrational numbers, actually their geometric equivalents -- incommensurable lines. It is certain, however, that since antiquity many philosophers, artists, and mathematicians have been intrigued by the golden section, which Renaissance writers called the divine proportion. It is widely accepted that a rectangle with sides in this ratio exhibits a special beauty." (end of quote)

If you design a building to be a rectangle in such a way that, when viewed from above, the sides reflect "the Golden Rectangle", then the length of this building will be 1.618033989 times longer than the width. And the width will be "exactly" 0.618033989 times the length (i.e. rounded off to 9 decimal places). An example of such a drawing would be a width of 5000 millimeters and a length of 8090 millimeters ... something I tried on my computer CAD program.

This is THE ONLY RATIO where the same decimal fraction multiplied by "itself plus one" is equal to one. That is: 0.618033989 multiplied by 1.618033989 is equal to one (actually it is equal to 1.000000001 ... an error of one billionth of one unit, because we've rounded off to 9 decimal places). That is why you may see that this ratio is given as "0.618033989" or it may be given as "1.618033989". These fractions are frequently abbreviated as 0.618 and as 1.618. This is because the ratio of 0.618 : 1 is exactly the same as the ratio of 1 : 1.618. This is not true for any other number. It is truly unique.

Okay, so much for the mathematics. Now here is what is interesting.

Suppose you design a rectangular building with the sides exhibiting this "Golden Rectangle" ratio. Now suppose you have the longer two sides running from due east to due west, and the shorter two sides running from due north to due south. Now supposing you look out of one of the south-facing windows on the longer side of this building (assuming you are outside of the tropics and in the northern hemisphere) ... you would see the sun rise each morning to your left (i.e. in the east), and it would set every evening to your right (i.e. in the west).

As the seasons progressed from summer to autumn and winter, so you would notice the sun rising further south each day than before and also setting further south than the day before (the days are getting shorter). And as the seasons progressed from the winter solstice towards spring and summer, so you would notice that the sun would again rise further east than the day before and it would also set further west than the day before (the days are getting longer).

Now let's suppose this building has a flat roof with a flagpole at each of the four corners. And let's suppose that you watch the sunrises and the sunsets from the top of this roof. Here is what you could see:

As the sun rises in the east, so the flagpole on the south-eastern corner of the roof will cast a shadow across the roof. And as the sun sets in the west, so the flagpole on the south-western corner of the roof will cast a shadow across the roof.

Now at the summer solstice the sun is over the Tropic of Cancer, twenty-three-and-one-half degrees north of the equator. At the winter solstice the sun is over the Tropic of Capricorn, twenty-three-and-one-half degrees south of the equator. And at the spring equinox and the autumn equinox the sun is directly over the equator.

Now let's get back to our "Golden Rectangle" building. Supposing you draw two straight lines on the flat roof, joining the diagonally opposite flagpoles ... join the south-east corner to the north-west corner, and join the south-west corner to the north-east corner. The diagonal lines will form acute angles with the longer sides that runs from east to west. All four acute angles formed in this way will be identical. If you measure this angle, you'll find that it is between thirty-one degrees and thirty-two degrees. For precise calculations each degree is further sub-divided into sixty equal parts, called "minutes". Precise measurement of this angle will show that it is equal to 31 degrees and about 45 minutes (though it is easy to obtain readings that may fluctuate by as much as "20 minutes", which is after all only one third of ONE degree ... drawing your diagonal line from the one side of your two-inch thick flagpole instead of drawing it from the precise middle of that two-inch thick flagpole is sufficient to cause these kinds of fluctuations in the fractions of one degree for a roof with a diagonal line of about 100 feet in length.

So we now know that the diagonal lines on the roof of our "Golden Rectangle" building will form angles of about thirty-one-and-three-quarter degrees with the straight line joining the two southern most corners of the building.

Now let's look at two particular days in the year ... the spring or vernal equinox (March 21) and the autumn equinox (September 23). On those two days the sun is directly over the equator. So how could you possibly achieve the following:

On these two equinox days you want the sun to rise in the east in such a way that the flagpole on the south-eastern corner of your roof casts a shadow STRAIGHT TO THE DIAGONALLY OPPOSITE FLAGPOLE at the north-western corner of the roof. And then you also want the sun to set in such a way that the flagpole on the south-western corner of the roof casts a shadow STRAIGHT TO THE DIAGONALLY OPPOSITE FLAGPOLE on the north-eastern corner of the roof. In other words, on those two days you want the sun to rise and also to set at an angle of thirty-one-and-three-quarter degrees to your building.

How could you possibly achieve this feat? Remember that the ratio of the length to the width of your roof is fixed by the "Golden Rectangle" ratio, and you cannot change this.

There is ONLY ONE WAY that you could achieve this feat ... that at the very start of spring, and again at the very start of autumn, the sun rises precisely diagonally across your building with the "divine proportions" and it also sets precisely diagonally across your building on those same evenings. Without any kind of calendar at all you would in this way know PRECISELY which day is the start of spring and which day is the start of autumn. And remember, this "divine ratio" has been known at least since the Great Pyramid was built in Egypt.

WHAT IS THAT WAY?

THAT WAY IS TO BUILD YOUR HOUSE WITH THIS "GOLDEN RECTANGLE" RATIO EXACTLY THIRTY-ONE AND THREE QUARTER DEGREES NORTH OF THE EQUATOR!

So are you now guessing the answer to the puzzle?

You see, JERUSALEM is PRECISELY thirty-one-and-three-quarter degrees north of the equator. In the 1911 11th Edition of the Encyclopedia Britannica, in the article "Jerusalem" it is stated that Jerusalem lies "31 degrees and 47 minutes" north of the equator and "35 degrees and 15 minutes" east of Greenwich. Those "31 degrees and 47 minutes" are the precise angle that the diagonal line across a "Golden Rectangle" forms. Keep in mind that each "minute" of one degree of latitude is only about 2024 yards (with only very minor fluctuations to this figure). So any city will automatically cover "several minutes" of one degree of latitude.

There is no other latitude anywhere in the northern hemisphere where this would be true. The Great

Pyramid is slightly further south than Jerusalem, as are all other notable buildings in Egypt. And while a building with the "Golden Rectangle" dimensions that is perhaps one or two degrees further south or further north than "31 degrees and 47 minutes" will appear to achieve almost the same effect (of the sun rising and setting diagonally across the building at the equinoxes), this will not be perfectly achieved ... it will only be an approximation.

THE LOCATION OF JERUSALEM, WHEN COMBINED WITH "THE GOLDEN RECTANGLE", IS PERFECT TO VISUALLY SHOW THE DAYS WHICH START THE SEASONS OF SPRING AND AUTUMN!

A large rectangle, in the proportions of the "Golden Rectangle", drawn on the ground or etched into a flat rock, with "flagpoles" at the four corners, if done in the area of Jerusalem, could achieve exactly the same result ... to unmistakeably identify the start of spring and the start of autumn by the shadows cast across this rectangle at sunrise and at sunset on those particular days.

Fifty miles further south or further north than Jerusalem this would not have been as precise as it is with the location that Jerusalem does have.

So I believe the location of Jerusalem at exactly thirty-one-and-three-quarter degrees north of the equator, when combined with the absolutely unique "Golden Rectangle" ratio, shows God's divine guidance and selection. Neither the Egyptians nor the Greeks, both of whom were knowledgeable in mathematics, got it so perfectly as did Jerusalem ... they didn't have the choice of placing their towns at exactly thirty-one-and-three-quarter degrees north of the equator. And even the site of ancient Babylon is "close to this latitude" but not exact ... Babylon was about one degree further north than Jerusalem. But Jerusalem's location is PERFECT when evaluated against the "divine proportion". As God has repeatedly stated in the Bible, Jerusalem is the city HE selected!

And unto his son will I give one tribe, that David my servant may have a light alway before me in JERUSALEM, THE CITY WHICH I HAVE CHOSEN ME TO PUT MY NAME THERE. (1 Kings 11:36 AV)

The "Golden Rectangle" ratio is unique amongst ratios, and it is found commonly throughout God's creation to display beauty and perfection. Man has copied this ratio since antiquity to create shapes and designs that are pleasing and attractive to the eye.

The above method of using shadows cast diagonally across a rectangle at sunrise and at sunset to identify the two equinox days in the year can be used at any latitude with rectangles of different proportions. But a rectangle with the proportions of "THE GOLDEN SECTION" will ONLY achieve this result at the precise latitude of Jerusalem.

Jerusalem, if we really understand it, has the perfect location. Its selection by God is proof of God's existence and guidance. God's annual Feasts and Holy Days all occur in the spring and around the autumn. And "the Golden Rectangle", known at least since the time that the Great Pyramid was built in Egypt (i.e. before Israel entered the Promised Land), when used in the area of Jerusalem, gives an absolutely reliable indication of the start of spring (and also of the start of autumn). All that was then needed was to take THE FIRST NEW MOON THAT COINCIDED WITH OR THAT FOLLOWED THE START OF SPRING and to pronounce that to be the first new moon (i.e. the start of the first month) of the year. You don't need to know anything about any "sequence of leap years within a 19-year cycle". You only need to know very precisely when spring starts.

Recall that houses typically had flat roofs in biblical times. It would have been very easy to set up a model of "the Golden Rectangle" on some section of such a flat roof, and to carefully monitor the start of spring. This could also be done at any latitude with rectangles of different proportions, but Jerusalem was set apart because only there could you reliably use a rectangle with the "divine proportions" to achieve this goal.

So is this perhaps another indication that we should really use Jerusalem in determining the calendar we use for the Feasts and Holy Days, rather than relying on when the new moons occur at OUR different specific locations around the world (as some people are doing)?

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