ARCHITECTURE

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CATEDRAL de CIUTADELLA
Menorca, Spain

This issue's limited edition print by Ladd P. Ehlinger is of the Cathedral of Ciudadella (also spelled Ciutadella in Spanish), an ancient city on the west end of the Island of Menorca. Menorca (the "little one" in Catalan, its' primary language) is one of the four Balearic Islands (also spelled Minorca in Castillian or Spanish as we call it). The other three islands are Mallorca (the "large one", also spelled Majorca in Castillian), Formentera and Ibiza. Menorca is about a 20 minute jet flight and lies east southeast from Barcelona in the Mediterranean. The island has been inhabited by man since prehistoric times, and has served as a provisioning trading outpost and base for pirates because of its strategic location in the middle of the Mediterranean sea lanes. Today it is mostly fishing and tourism that drive its economy.

In the first days of the year 1287 a fact of capital importance changed the course of the history of the island of Menorca: the conquest of the Muslims in Menorca by the forces of the King of Aragon. Menorca was thus re-incorporated into the Christian orbit tied to European civilization definitively through the language, the religion, the laws and the customs, by a Christian and Mediterranean king, Alfons the Liberal, of Aragon on the Iberian peninsula.

The king, Alfons III, wanted to give grace to the good occasion that happened with the conquest of Menorca on February 2, the feast of the Purification of Our Lady, so he had celebrated a mass in thanks in Ciudadella. And in that thanksgiving act he gave the Church of Ciudadella an investiture of the highest importance, so it was constituted the rector with the primary position and authority over all the churches of the island.

The new church built by Alfons III, S. Levantó, is in the location that was occupied by the main mosque of the Muslim medina and the minaret on the east served as the base of the tower steeple. The works of the nine bays were begun almost all at once and as they unfolded through the XIV century in a diverse rhythm, the theme was already partly in service and apparent in the first decades of the century. They express several ecclesiastical concepts in the side altars of these bays of the church.

At the end of the century, the King Joan (John) confirmed his predecessor's authorization, Pere the Ceremonious One, to condemn some houses with the intention of enlarging the church that was still under construction. Even so, the church is tightly constricted site-wise and is difficult to see in its entirety as the city of Ciudadella has very narrow streets as do most Gothic cities.

Why Menorca? Genealogy. The author's grandmother's (paternal) ancestors came to New Orleans in the early 1830's from the city of Maó (also spelled Mahon in Castillian) on the other end of the island. It is an interesting place well worth seeing with a long and colorful history — for instance, Maó is the place where mayonnaise was invented (the French stole it) as a sauce for the plentiful lobster in the waters surrounding Menorca, and a woman from Maó is said to be a "Mayonnesa".

The Divine Proportion - A Theological Investigation

(In the continuation of my investigation of the irrational number Phi (Φ), and it's relationship to art and architecture, I'd like to diverge a little bit in this newsletter into the history of Phi, and it's relationship to religion).

There is a reason the irrational constant Φ (1.6180339...) is called "The Divine Proportion". The term was coined by Luca Pacioli, circa 1400, in a book called "The Divine Proportion", which first associated a connection between Φ and the incomprehensibility of God. Interestingly, it was a young Leonardo DaVinci, a close friend of Pacioli's, who provided the illustrations for the book. DaVinci later used the Divine Proportion extensively in his artwork, from the Mona Lisa to The Last Supper, and through Leonardo DaVinci, Φ was a pervasive influence in the enlightenment of the time. For those who have read Dan Brown's book, "The DaVinci Code", his exploration and explanation of Φ's influence of the times is actually fairly accurate (though the rest of the history in the book is most likely fiction).

But Φ has always had a close tie to religion, from it's first known inception as a defining proportion of the Egyptian Pyramids, to its first known geometrical definition by Euclid (AC/BC = BC/AB), around 300 B.C, and well beyond. It appears in the proportions of the Parthenon, and most other Greek temples, as well as in Roman architecture (notably, the Pantheon, and the Coliseum), Gothic Architecture, and even up into the birth of Modern Architecture, with such architects as Le Corbusier employing it regularly in his designs, though "Corbu" did so with much complaint, as he disliked rounding the measurements so that workers could actually build what he drew.

Φ is found extensively in nature, from the shapes of leaves, number of branches, and the way plants grow, to the

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shape and proportion of the human body and other living creatures. Therefore, a great deal of the historical use of Φ in art and architecture prior to Pacioli's thesis may be just the recognition of and tribute to its prevalence in nature (as created by God), as well as for this proportion's appeal to the human eye. Many people suggest that Φ's prevalence in humanity's history is primarily unconscious -- and that the proportion of Φ is programmed into our nature, so naturally our creations would reflect that.

Since Pacioli's thesis, however, which essentially claimed Φ to be a tool of God, and brought the concept of Φ to the rational mind for a larger audience, an ongoing series of scientific and mathematical discoveries have reinforced the uniqueness of Φ, and its amazing prevalence in the structure of the world around us, and therefore reinforced many people's belief in Φ as the signature of God.

It was a later mathematician, an American, Mark Barr, in the early 20th century, who coined the symbol Φ to describe the proportion. It was done in commemoration of the Greek sculptor Phidius (c. 490 B.C.), whose works make use of the Golden Proportion. Whether he was aware of it at the time or not, the symbol Φ has come to hold a modern theological interpretation in God's relationship to the Fibonacci Series:

Where Φ is the intersection of 0 and |, where 0=Nothing, and | = a symbol of unity, or of God, then the Fibonacci Series' first 3 numbers are 0, 1, 1. So God, |, split nothing, 0, and was left with 1 and 1, and what to do? Well, put them together, of course: 2, 3, 5, 8, 13, 21, 34, 55, 89, etc. etc. etc., and create the universe. It's also interesting theologically to look at how Φ is derived from the Fibonacci Series as a mathematical formula:

$1/0 = \infty$
$1/1 = 1$
$2/1 = 2$
$3/2 = 1.5$
$5/3 = 1.666...$
$8/5 = 1.6$
$13/8 = 1.625$
$21/13 = 1.615..$
$f(\infty)/f(\infty-1) = 1.6180339....\ \Phi$

Note how the first division, 1/0, results in infinity, and it is not until infinity that the equation actually equals Φ. Therefore (some may say), God is infinite, and using Φ created something from nothing, and it is only through Φ that one may try to understand God -- though, of course, never actually reach it.

Humorously, it is almost a play on Douglas Adam's famous books: "The Hitchhiker's Guide to the Galaxy", where the answer to the Universe is 42, but nobody knows what the question is. Only in our reality, the answer seems to be Φ, since so much of nature is structured around it -- only nobody knows why.

Well, that's not exactly true. One of the reasons Φ is so prevalent in nature is because it is, mathematically, the most effective way to pack successive accretions of growth. For example, Sunflower seeds are packed on the flower in numbers approximating Φ, and in spirals that follow the Φ logarithm. Or, more familiarly associated with Φ, a sea shells spiral, which is actually more commonly closer to a natural log (e) spiral, which in section shows a Φ relationship in the thicknesses of the spiral from one layer to the next.

But there's quite a bit regarding Φ that still remains in the realm of mystery. The shape of our galaxy is in a Φ spiral. The average distance of the planets in our solar system, from one to another, approximates Φ. The relationship of an electron's magnetic moment to its spin angular momentum (or, it's g-factor) is related to Phi: $-2/\sin(\Phi)$, and so is the proton's g-factor: $-20/\sin(1/\Phi)$. One model of the universe theorizes it is in the shape of a dodecahedron, which is proportioned with Φ.

So, even though the mysteries of Φ may unfold; mathematically, scientifically, and inspirationally, the Divine nature of Φ will likely remain a mystery.

ARCHITECTURAL ANIMALS

Various animal names used in Architecture have totally different meanings:

Bat: a broken piece of any kind of masonry unit.

Beak: name given to any molding shaped like a bird's beak.

Bird's Mouth: angular notch cut in the end of a timber to fit a transverse timber that it abuts.

Bull's Eye: a small circular window or opening.

Bull's Nose: the projecting obtuse angle formed by two faces when the corner is rounded outwardly.

Cat Stone: an upright stone commemorating a fight in Scottish archaeology, the name being derived from "The British Cad or the Gaelic Cath".

Cat Step: same as Crow Step.

Cock: a mechanical device for controlling the flow of water or other liquid, as a ball cock, bibb cock, or stop cock.

Crab: a winch or similar machine for lifting weights, associated with a crane.

Crane: a machine for raising, lowering, and generally moving weights.

Cricket: a saddle shaped, dormer shaped roof to divert water around an obstacle, such as a chimney side facing the slope of a roof.

Crow Foot: a V shaped mark on a drawing to indicate where a dimension should be taken from.

Crow Step: any step of a stepped gable.

Dog Grate: a movable fire grate.

Dog Tooth: one of a pyramidal sculptured ornament in a series resembling teeth.

Dovetail: any piece or member having two flaring sides or edges, giving more or less a wedge shape.

Dragon Piece: a short tie beam at the corner of a building to receive the foot of the hip rafter and to resist its thrust.

Eagle: a pediment of a Greek building.

Egg & Tongue: an ornament applied to a convex rounded moulding consisting of alternating ovals (eggs), then grooves and then thin raised rims (tongues), then groove, then repeat.

Fish: a piece of wood or metal secured to the side of a beam to strengthen it.

Fly: the space above the stage in a theater.

Griffin: an imaginary creature half lion and half eagle used as ornament.

Horse: a beam or scantling supported on each end by a pair of legs; a handbarrow with four legs; a portable platform supported on brackets at each end.