A PEDAGOGICAL

THE CONSTRUCTIVE GEOMETRY OF PYTHAGOREAN SPHAERICS: PART I

by Pierre Beaudry [A3-47-2/PB_001]
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"{*I alluded to the sphere of the planetary system, constructed of the planetary spheres, and the five regular Pythagorean solids, each distinguished from the others by their own colors, the orbits sky-blue, and the bands in which it was implied that the planets ran round, white; all transparent, so that the Sun could be seen suspended in the center*}." Johannes Kepler, {Mysterium Cosmographicum}

INTRODUCTION

In the earlier efforts of mankind to discover the truth about Man, Nature, and God, Pythagoras became the first Greek philosopher to lay the basis for a science of astronomy, which he had derived from the discovery of a principle of proportionality between God the creator, Nature, and man, and which he expressed by a constructive geometry of Sphaerics that became known as the {harmony of the spheres}. I will demonstrate here that the crucial development of classical geometry adopted by Pythagoras and his school represented a pre-Euclidean form of constructive geometry which was centered on the study of crucial paradoxes that emphasized the examination of anomalies associated with the problems of relationships between sense-perception and a provable physical principle of proportionality within the Celestial Sphere of the universe. In fact, Pythagoras had responded to a similar question raised by Lyndon LaRouche in his recent paper on George Wallace.

"{*No adequate insight into the way in which the political mind functions were possible, without examining more deeply the way in which sense-perception and discovered physical principles complement and oppose one another within the individual mind generally, and the popular mind most emphatically. The achievements and pathologies of mass behavior within and among nations cannot be adequately understood without understanding the way in which the negative and positive features of sense-perception interact with the human will to action or passivity.*}" (Lyndon H. LaRouche Jr., {The Geometry of the Henry Wallace Nomination}, EIR, November 7, 2003,# 43. p.30)

The initial {*principle of proportionality*} began to be established as a physical principle, with the necessity to acquire mastery over nature beyond what was given to sense perception; that is, beyond empiricism, which had become the most important fearful religious cult of ancient times. This principle of proportionality was grounded as a {*physical principle*} when the first transoceanic-navigators began their travels around the globe, probably before the beginnings of the last ice age, at the earliest around 12,000 BC. Navigators required the means of determining directions on the high seas by way of measuring {*inaccessible distances*} that could not be established from sense perception.

1- KNOW YOUR LATITUDE

We have reported in an earlier pedagogical on how Thales of Miletus made use of what became known as the {*Thales Theorem*} to discover the height of the Egyptian Pyramids, the distances of ships at sea, and the size and distance of the Moon, etc., all of which were based on a physical principle of proportionality. Pythagoras further developed this same principle to demonstrate the idea of man as the microcosm of the universe. It was precisely the proportionality of the {microcosm} to the {macrocosm} that became later expressed by the Christian notion of Man created in the Image of God, from which was derived the Divine Proportion as developed by Pacioli and Leonardo da Vinci. In practical terms, this idea of proportionality, which had been applied to transoceanic travel, served as the most crucial marker to establish the beginnings of scientific knowledge. The

first result of applying this principle is exemplified in the discovery of latitude.

Pythagoras had established his Astronomy on the original accomplishments of the Egyptians, who, themselves had received their legacy from Atlas, the original Trans-Atlanticist founder of ancient Astronomy, and the first inventor of the celestial sphere, which, according to Jean Sylvain Bailly, can be dated at about 4,000 BC. Thus, only when men were able to measure the latitude and longitude of their travels, as a means of establishing proportionality to be applied to the Sphere of the Earth, were transoceanic travels made possible, not before. It was this principle of proportionality, between the Sphere of the Heavens and the Sphere of the Earth, which established concretely the very first technology of scientific knowledge. It was only from that moment that accurate calendars became established, and that a cognitive epistemological dividing line had been drawn between knowledge and belief.

Pythagoras discovered what latitude he lived at by simply measuring the angle that the Pole Star of the Heavenly Sphere made with the horizon (altitude) from where he lived. When he later traveled south to Egypt, Pythagoras found that his discovery had been set in stone by the students of the great astronomer-architect, Imhotep "One who comes in peace", the prime minister of King Zoser, and the builder of the first Egyptian pyramid, the Step Pyramid (Third Dynasty, c. 2,650 BC).

The architect of Khufu (Cheops) (c. 2,550 BC) later designed the pyramid as a great observatory of eternity. This was expressed by a ray of light projected from the Pole Star, Alpha Draconis, which hit the north face of the pyramid precisely at a right angle, and penetrated it through a narrow {*observation shaft*} that led to the observatory chamber, in the center. On the other side of the Celestial Sphere's meridian circle, it was the ray of the dog star, Sothis (Sirius), which hit the south face of the Pyramid, also precisely at a right angle, and shone down through another {*observation shaft*} into the same observation room, but only at the precise time of crossing the meridian, at that elevation, thus, marking the beginning of the Egyptian year, the opening of the Nile flooding season.

This extraordinary moment of mapping proportional events from the {moving image of eternity} was the most wonderful legacy of ancient Egyptians to future generations of mankind. Unfortunately, this knowledge

was rapidly turned by pyramidiots into a cult of the dead for freemasonic-satanic worshipers. Further reading on this subject can be found in {*Khufu: the Great Observatory of History, I, II, III*}, in [99-21-4/PB_001]; [99-42-4-/PB_001]; 99-44-7/PB-001].

What the Khufu Pyramid marker represented, among other things, was that {*the altitude of the Pole Star is the latitude of the observer*}, that is, precisely 38 degrees in the center of the observatory room of the Great Pyramid. However you don't need to travel to Egypt to rediscover this. A simple astrolabe instrument, in the form of a protractor with a plumb line attached to its middle section, and pointed to the Pole Star, would establish the required angle measurement, wherever you are on the Northern Hemisphere. This discovery of latitude was the initial discovery that led Pythagoras to later investigate how all of the planets, including Earth, reflected a universal gravitation principle around the Sun. Thus, Pythagoras transformed the Pole Star of the Egyptian priesthood of the Cult of Isis into the Pole star of the Mariner-Discoverers, and established the initial groundbreaking work of what was later to be called the Solar Hypothesis.

2. HOW TRUTH CAN BE REACHED THROUGH THE LIES OF SENSE PERCEPTION

"Make me thy lyre, even as the forest is:"
What if my leaves are falling like its own!"

Shelley, {*Ode to the west wind*}.

The ancient Greek school of Pythagoras (c. 580-504 BC) had developed a constructive geometry based on the Sphaerics of astronomical observations, which had been derived from earlier Egyptian observations as well as from an earlier civilization of transoceanic navigation, which descended from the Atlantis. In memory of Atlas, and of the Pythagorean school, which is derived from it, we will reconstruct here the essential steps that went into the discovery of what became known as the {Solar Hypothesis}, which was originally established at about 4,000 BC, through a series of astronomical observations relative to the motions of the planets.

The ordering principle of the multiply-connected circular action involved in these observations of, especially the outer planets, Mars, Jupiter, and Saturn, involved what was to be later called epicycles, which represented the apparent retrograde and prograde motions of the planets as they appeared to orbit around the Earth. These are the singularities of back looping, which can be observed with the naked eye in the annual orbits of those three planets.

It is these anomalies of ancient constructive geometry, which we must identify as the crucial features of the pre-Euclidean forms of spheroid multiply connected circular actions. These anomalies formed, for the first time in human history, a body of doctrine based on the universal principle of gravitation within the solar system as a whole. However, in order to understand that Pythagorean doctrine, a number of difficulties have to be overcome.

First of all, the yearly occurrence of back looping, which was observed in all three planets, caused an obstinate resistance on the part of the believers of ancient times. The question was raised: "Why do all of the periods of the Mars, Jupiter and Saturn planetary cycles always coincide with the timing of the Earth, that is, 365.25 days each year?" The priesthood of Isis answered this by saying that {*seeing is believing*}, and that, since all of the back looping cycles of Mars, Jupiter, and Saturn, were in such a close correspondence with Earthly years, this confirmed that all of the planets orbited around the non-moving Earth, and thus was established the obstinate "empirical proof" that Earth was the center of the world.

Secondly, another stumbling block appeared to be caused by the fact that no writings of Pythagoras were ever found, and most of his students and commentators have left us with a mish-mash of mystical garbage instead of a scientific method. We must, therefore, resort to reestablishing the truth, not based on original documents, but based on what an astute investigator and a creative mind is able to establish as truthful, given only his likely discoveries of principle and his observations. From this vantagepoint, we can begin investigating the Pythagorean doctrine of the {harmony of the spheres}.

3. THE HYPOTHESIS OF THE INVISIBLE CELESTIAL SPHERE

Pythagoras hypothesized that a transparent-non-visible Celestial Sphere, which was represented by the canopy of the stars, projected shadows of a false image of the universe, onto the {*sensorium*} of our visual perception, but that such a projection was harmonically proportional to the orbiting Sphere of the Earth, which was also transparent and non-visible. We must then proceed to investigate how Pythagoras was able to interpret the significance of those spherical shadows, and discover that they were {lies}, that is, mere deformed traces of astronomical truths that were left behind by the pathways of the apparent motions of the planets, a situation much like the inverse of Plato's Cave. In this connection, it is interesting to note the paradoxical derivation of the Greek term {koilos}, which meant both cave and the concave part of a circumference, that the latin translated later into {coelius} meaning the celestial vault.

As Plato had emphasized in his Timaeus, the significance of such an investigation of the heavens lies in the discovery of such a proportionality, which exists between the apparent movement of the stars and the movements of human reason created in the image of God. Plato stated the principle of proportionality thus:

"... {*God created and bestowed vision upon us so that we, contemplating the orbits of intelligence in the heavens, might put them to use by applying them to the orbits of our reason, which are related to them*}…" (Plato The Timaeus. 47 b.)

Pythagoras did precisely that, and, as far as we know, became the first astronomer, in recorded history, to understand the ordering principle of the planets moving within the heavens, as if from the inside of a series of concentric transparent or crystalline spheres, the largest of which had an extremely large diameter and appeared to contain thousands of fixed stars. Inside of that larger sphere were seven other concentric spheres, one for the orbit of each planet, including the Sphere of Earth's orbit. It is crucial to emphasize here that such orbital spheres of the heavens were not visible, that is, they were not meant for our eyes, but were meant to be transparent to our minds, such that none of them should obstruct the understanding overview of the harmonic whole. There was such coherence between those spheres that Pythagoras, like Kepler after him, attributed musical harmonic

proportions between them that became known as the {harmony of the spheres}, a music that could only be heard by our minds. Such harmony of proportionality was implied because the visible traces of the stars seemed to be traveling everywhere on the inside of these surfaces without interfering with each other, as if they were all well ordered harmonically from the same invisible axis, or the same universal principle.

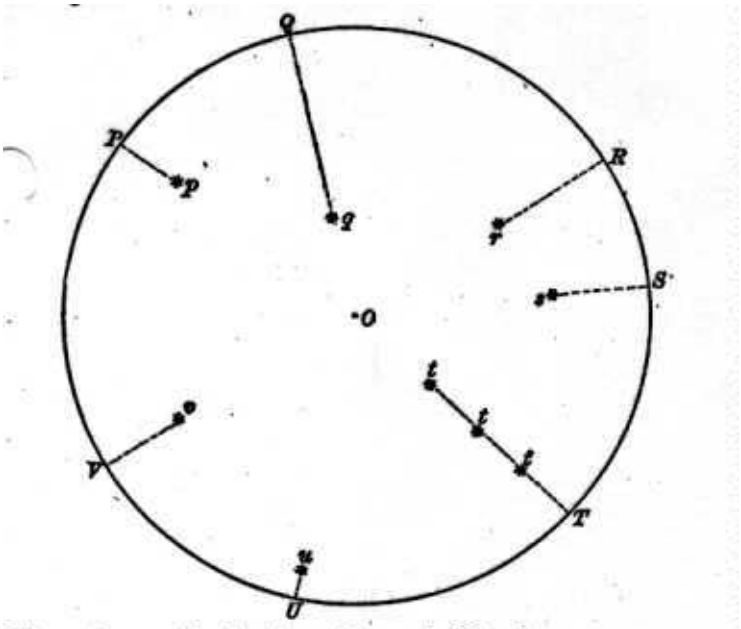
Let us then imagine the way in which the relationship between the {*orbits of intelligence in the heavens*} relates to the {*orbits of our reason*}, and discover how, in that process, Pythagoras organized a relationship between his perception of the stars with a physical principle of their motions. Conceiving himself as a central source of light projecting rays outward, everywhere inside of the sphere of the fixed stars, Pythagoras perceived those stars as mirrors, rotating daily around a Polar Star, all of which reflected back to the center of the sphere and projected their shadows, from their diverse positions in space, onto some location on the Celestial Sphere. See Figure 1. [Illustration provided by Simon Newcomb, {*Popular Astronomy*}, Mac Millan & Co, London, 1883]

STEP ONE

In a first step, Pythagoras projected himself observing the stars from the center of the Celestial Sphere. Seeing oneself in the process of discovering is a most important feature of the discovery itself, because, contrary to the prevailing school of thought, the human element is, in fact, an essential component of the principle involved. From that standpoint, a scientific discovery is always subjective and never objective. No true discovery could ever be made without the inclusion of the observer.

From that vantagepoint, Pythagoras imagined himself embracing the whole of creation, from its center, as if he were acting in imitation of the Creator. In that capacity, that is in {Imago Dei}, he required several things, which are always essential for such scientific experiments. **Figure 1**. He required: 1) a subject of the observation, standing on Earth as the center of the universe at O; 2) the object of study, the stars marked p, q, r, s, t, u, v; 3) the shadows of those stars at P, Q, R, S, T, U, V, onto the surface of the Celestial Sphere; and 4) the relationship connecting those shadows to the

sphere as a whole, p-P-O, q-Q-O, r-R-O, s-S-O, t-t-t-T-O, u-U-O, v-V-O, and to the observer in particular.



[Illustration provided by Simon Newcomb, {Popular Astronomy}, Mac Millan & Co, London, 1883.]

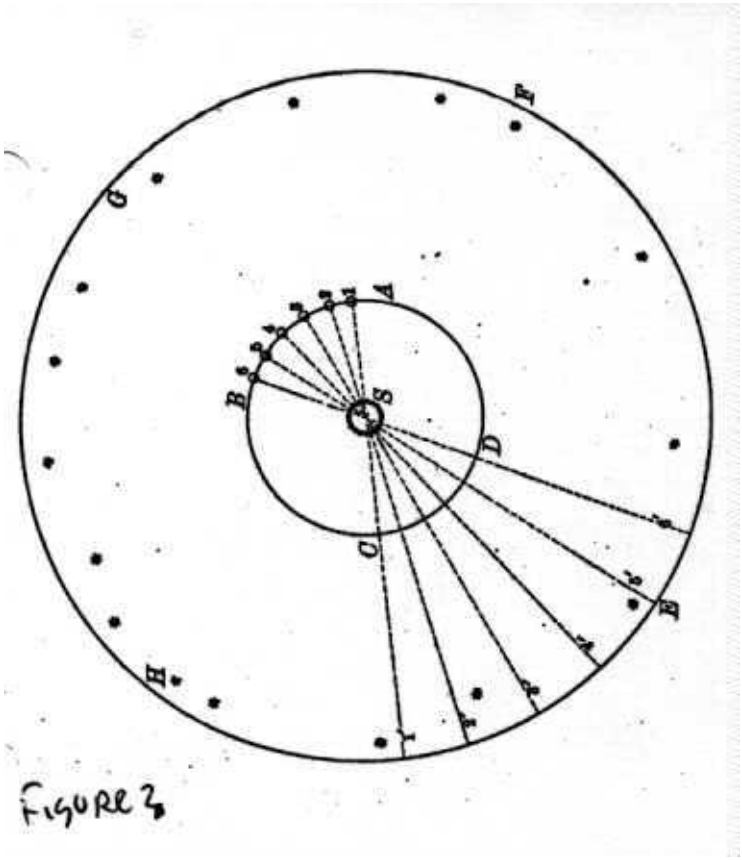
Figure 1. The projection of stars on the celestial sphere.

STEP TWO

In a second step, which also included the first step, Pythagoras realized that, as an observer, he could transport himself, to the Sun, and from there, he could look back to the Earth and observe, in an opposite direction, and project the reflected image of the Earth onto the Celestial Sphere, a projection which would not only be diametrically opposite to that from which he previously saw the Sun, but which would also include all of the conditions that were implied in that first set of observations. This is how Pythagoras began to understand the complex domain by inversion, self-consciously, since the truth always struck him as being the inversion of what appeared to be true to sense perception. This step is very important, because it represents what can be called the {Axiom of Self-Conscious Inversion}. It acts as a sort of pivoting function between Step One and Step Three.

STEP THREE

A third step, which included the two previous steps, was required to complete the epistemological conditions validating this Pythagorean principle of proportionality. This third step represented the boundary condition, the closure of the entire process. Imagine that, from outside of the Celestial Sphere Pythagoras had been observing himself determining his observations from the Earth as center, and from the Sun as center. In other words, he was observing the whole from both inside and outside of the Celestial Sphere, simultaneously. He was both the central principle and the encompassing principle of his experiment, as from a vision of God who is everywhere the center and the circumference. An example of such a projection is given in Figure 2, which establishes the apparent annual motion of the Sun against the interior of the Celestial Sphere.



In this projection, Pythagoras located the Sun in the center at S, and the apparent motion of different observations from the Earth, which is moving in the orbit ABCD around the Sun, and is marked by the numbers 1, 2, 3, 4, 5, 6. These observations, registered at intervals of about every 15

days, made the Sun appear in six different but inverted positions, as in a mirror image, at points 1', 2', 3', 4', 5', 6', on the surface of the Celestial Sphere, EFGH. Pythagoras was able to ascertain that during each of the two week intervals, between observations, the apparent motion of the Sun had moved against the Celestial Sphere by an angle proportional to the actual angular motion of the Earth around the Sun. From his inside-outside position of the Celestial Sphere, Pythagoras was able to determine that his successive observations had established that the annual motion of the Earth around the Sun was proportional to the annual motion of the Sun around the Celestial Sphere as seen from the Earth. Thus, the Celestial Sphere was understood to be proportional to the Sphere of the Earth.

Under such circumstances, Pythagoras would have been able to establish what can be called an {Axiom of Self-Conscious Inversion}, that is an axiom of truth by which, as we shall see below, the principle of proportionality abolishes the Ptolemaic system of epicycles and establishes that all of the planets orbit around the Sun, including planet Earth.

This {Axiom of Self-Conscious Inversion}, however, is not to be confused with the visual illusion that sailors sometimes apprehend when, on a calm sea, they have the impression that it is the shore line which is moving and not their ship. This is not the case here. Although it can be stated, as the Newtonian astronomer, Simon Newcomb, did, that: {*If an observer in unconscious motion sees an object at rest, that object will seem to him to be moving in a direction opposite to his own, and with an equal velocity*}." This visual illusion is not the principle we are addressing here.

Our purpose here is not to confirm sense certainty by establishing how the epicyclical motion of a planet, or the general relativity of perception, can be accounted for. The issue is to grasp the {*higher powers*} that are required in the subjective potential of human mentation, specifically with respect to the relationship of sense perception to an efficient causal principle. In other words, the initial combination of observations of a Celestial Sphere was established for the purpose of transoceanic navigation upon the non-visible Earthly sphere, and the angular proportions between the Celestial Sphere and the Sphere of the Earth provided transoceanic navigators with the necessary shadows to guide them, both as to direction of travel and for the purpose of ordering observations within a timetable that became the first astronomical calendar.

4. THE FIVE PLATONIC SOLIDS AND THE HARMONY OF THE SPHERES.

According to Kepler, Pythagoras had established the spheres of the heavens following the spherical arrangements of what later became known as the five regular Platonic solids. It was from that initial Pythagorean-Platonic Sphaerics construction that Kepler wrote his book {Mysterium Cosmographicum}. He expressed his finding of the Pythagorean constructive geometry as follows:

"{***I alluded to the sphere of the planetary system, constructed of the planetary spheres, and the five regular Pythagorean solids, each distinguished from the others by their own colors, the orbits sky-blue, and the bands in which it was implied that the planets ran round, white; all transparent, so that the Sun could be seen suspended in the center. The sphere of Saturn was represented by six circles, which by their common intersections, three at a time, signified the position for the vertex of the cube, but intersected two at a time over the position of the center of a face of the cube. The outermost of the spheres of Jupiter was shown by three circles, its innermost by six circles, and the outermost of Mars again by six; but the innermost of Mars, just as were both those of the Earth, and the outermost of Venus, were each sketched out by ten circles, of which five met twelve times, every three twenty times, and each pair thirty times. The innermost sphere of Venus coincided with the outermost of Jupiter, that of Mercury with the innermost of Jupiter. It was a not unpleasing spectacle, of which the elements, though not an exact likeness, may be seen in the third engraved figure which follows***." (Johannes Kepler, {***Mysterium Cosmographicum The Secret of the Universe***}, Abaris Books, New York, 1981, p.61)

Neither time nor space allows me to comment on this extraordinary finding at this point, but I intend to do so in a future report. Suffice it to say that the spherical composition of the five Platonic solids were, for Pythagoras, the ultimate expression of the proportionality between the "{*orbits of our reason*}" and the "{*orbits of intelligence in the heavens*}."

5. THE INVISIBLE ARM OF PYTHAGOREAN SPHAERICS

Outside of the apparently fixed patterns of stars, rotating around the region of the Pole Star, there are seven other celestial bodies, which are moving in apparent wandering motions across the sky. The apparent motions of the sun and of the moon, among the stars, describe what also appeared to be circular motions, inside of the celestial sphere, from east to west during the period of a day, a month, and a year, respectively. Their motions are always forward, and in the same direction, but this is not what appears to be the case for the motions of the five other planets: Mercury, Venus, Mars, Jupiter, and Saturn.

Mercury and Venus appear to "oscillate", while Mars, Jupiter and Saturn appear to form the pathways of epicyclical motions, back looping motions, which include a prograde (easterly) motion, and a retrograde (westerly) motion, plus two apparent stationary positions between the two opposing motions, every year, during the course of one full cycle. People who did not understand the principle of their motions called those planets the "wandering " stars. There is no doubt that Pythagoras did understand their principle, and was able to make the following observations of Mars, Jupiter, and Saturn with the naked eye, and make a record of it:.

Figures 3 and 4. These drawings were reproduced by Astronomy professor at the French Ecole Polytechnique and director of the Observatory of Paris, Francois Arago. The pedagogical drawings represent the orbits of Jupiter and Saturn, spanning the period of 1708 to 1737.

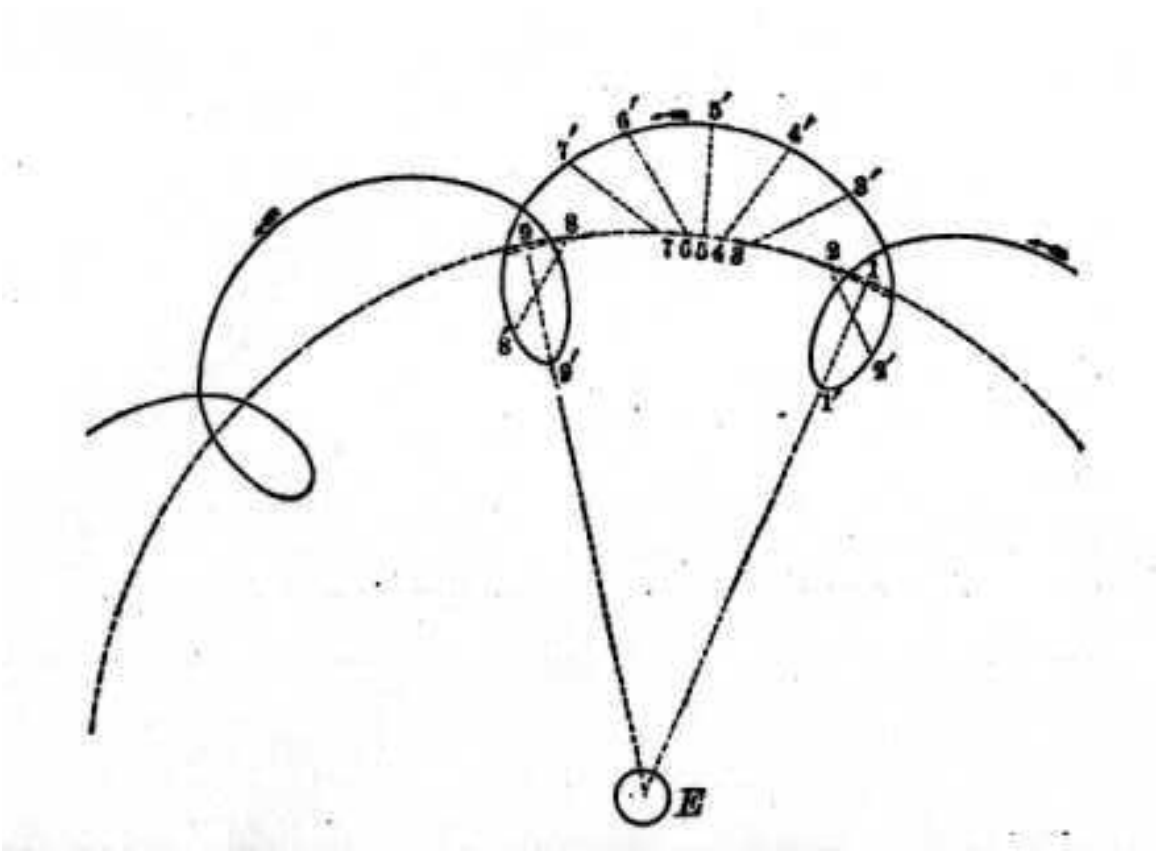


Figure 3. The apparent orbit of Jupiter inside of the celestial sphere during a period of one year as perceived by an observer on earth.

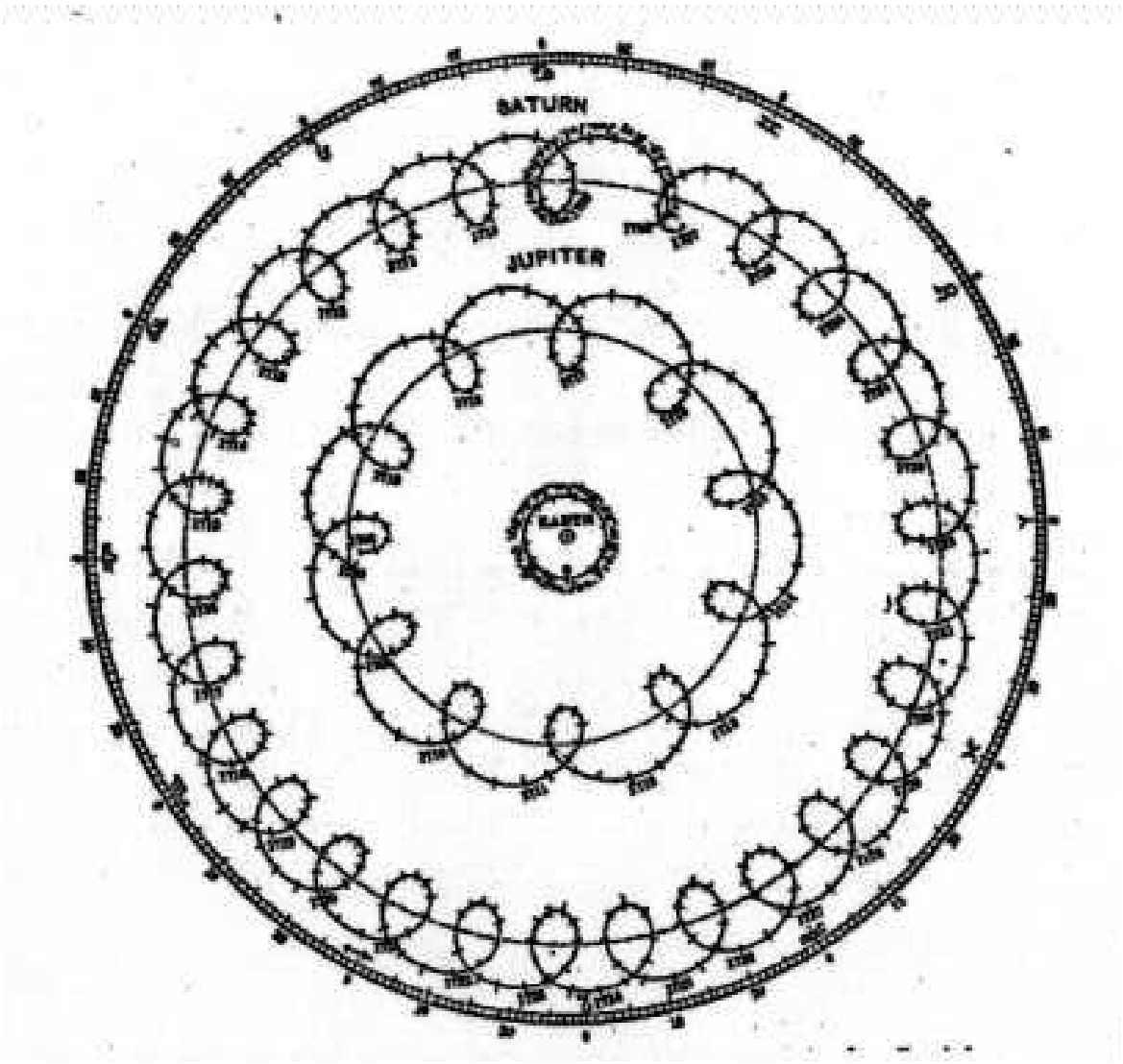


Figure 4. The complete orbits of Mars, Jupiter, and Saturn as perceived by an observer on Earth, 1708-1737, after Jacques Cassini.

Observe that Jupiter, **Figure 3**, appears to be making a series of loops around an ideal circle marked by, 1, 2, 3, 4, 5, 6, 7, 8, 9, and that the planet, in the different apparent positions of 1', 2', 3', 4', 5', 6', 7', 8', 9', seems to be carried by the radius of an INVISIBLE ARM whose center is rotating around the circumference of this ideal circle [dotted circular line]. This arrangement illustrates the special relationship between the sense perception anomalies of the observations, that is, their shadow effects of universal

gravitation inside of the solar system as a whole, with the constructive geometry that typify the effects of a universally unseen cause.

The question that Pythagoras must have raised at that point was: "What is the principle that moves that INVISIBLE ARM, and directs it into generating this apparent pathway of Jupiter in the night sky?" The answer is not self-evident, but we shall see that it has something to do with the triple relationship between the Earth, the observed planet, and the Sun. Follow the changing position of the radius from 2-2' to 3-3', and so forth, until you reach the position of 9-9'. On the one hand, the small portion of change from 2 to 3, on the ideal circle, represents the non-linear segment of about forty days along the fictitious pathway of Jupiter around the sun, which is not perceived.

On the other hand, the epicyclical portion 2'-3', represents the same period of the apparent pathway of Jupiter around the earth, which is perceived by the observer. This situation creates a very special kind of anomaly, which causes an ambiguity between the circle and the epicycle, that is to say, between the observation made from the Sun (not perceived), and the observation made from the Earth (perceived).

What does that mean? Someone might have an objection here and interject: "You can't make an observation from the sun!" That objectioner might be convinced that the only place you can make observations from is Earth. That is called empiricism, or passive religious belief, but it is not science. That objection implies that if you are not there to see it, "with your own eyes", it does not exist. This is no joke. The objection is very real, and its fallacy cries out: "HELP! I AM AN EGOCENTRIC." So, let's restate the question: "What is the difference between making an observation from the Sun or an observation from the Earth?" The answer is: "The difference is the same as the difference between believing and knowing."

What is the problem here? An empiricist can only believe the truth when he sees it, he cannot know it when he does not see it. {*Seeing is believing*}. An empiricist does not see those relationships of proportionality with his mind. That was the {*crucial anomaly*} caused by early man's observation of the seven planets. Furthermore, how can the lie of the {*apparent motions of the planets*} lead you to the truth of the so-called {*true motion of the planets*}? Again, the question underlying this objection is: "How can I think in terms of proportionality?"

The multiply connected motions between the circle and the epicycle create an anomaly such that the direction of the INVISIBLE ARM, between those two positions carries the actual proof of the Solar Hypothesis, which is the first proof of universal gravitation before the advent of Kepler. That is to say, the discovery that the radius of curvature of the epicyclical pathway of a planet is always pointing to the Sun during the entire period of its orbit. This could have been experimentally verified even in the days where no sophisticated astronomical instruments existed. In other words, Mars, Jupiter and Saturn will appear to be orbiting around the earth, but as if an INVISIBLE ARM were carrying them from a direction which is always oriented toward the Sun! This is a very curious, but crucial singularity, which requires a significant moment of reflection.

Let us look very closely at **Figure 3**. First of all, take note of the position of the INVISIBLE ARM at 1-1'- E. This is the most important moment of observation during the entire cycle. Why? Because it is the only one of two times during the entire cycle of the planet when the apparent position of the planet on the epicycle at 1' is also in line with the Earth and the position of the INVISIBLE ARM on the circle at 1. The only other position showing that is 9-9'-E. No other position shows that. Now, why is this significant? What is so special about that position which occurs only twice during the entire cycle of one year, at the beginning and at the end of the cycle. Those two periods of observations always occur at the time when the planet is in opposition with the Sun, that is, when the Earth comes between the planet and the Sun. That is also when the priests of the Cult of Isis clamor to the Prince of Darkness: "{seeing is believing}".

Thus, in the case of Jupiter, when the INVISIBLE ARM points in the direction of the Earth, as shown in the positions of 1-1'-E, and 9-9'-E, the Sun is also lined up behind the Earth, but is not visible. However, whenever the planet is in conjunction with the Sun, that is when the Sun is between the Earth and the observed planet, the INVISIBLE ARM points everywhere away from the Earth. This is a very singular and important shadow to look at from the point of view of WHAT IS NOT THERE. This is a fact that was also very well known to ancient astronomers, in Egypt as well as in Greece during the period of Thales, Pythagoras, and of Plato later. Thus, the essential feature of the discovery lies in what is not there.

This was the crucial element of observation that was required in order to establish the beginning and the end of a planetary cycle, but this was also the crucial period of time, in that cycle, when the Solar Hypothesis was waiting to be discovered, every year, year after year, since the beginning of time. Everything else in the series of astronomical observations of those planets was based on that.

Pythagoras was able to derive two things from this. One is that the planetary cycle begins and ends at approximately the same place in the night sky. The other is that the complete cycles of Mars, Jupiter, and Saturn invariably occurred at a time when the Sun was in opposition to the planet. Thus, he was able to calculate that the moments of opposition of a planet with the Sun were defining a calendar: that the year of Mars was 1 Earth year and 322 Earth days, that the year of Jupiter was about 11 Earth years and 317 Earth days, and that the full cycle of Saturn took 29 Earth years and 174 Earth days. It was from these crucial observation of opposition that Pythagoras was able to assert that the earth and the outer planets were actually orbiting around the Sun, and that the epicycles of those planets were not their real motions but were entirely dependent on the moving position of the Earth with respect to the Sun and the planets.

The secret of the first understanding of the universal role of gravitation in the Solar System, thus came to be, when the centering direction of the INVISIBLE ARM of Pythagoras, that is when the radius of curvature of the epicycles of the planetary orbits around the Sun, reflected proportionality between sense perception and an unseen but efficient unseen physical principle that always caused the same relationship between the Planets, the Sun and the Earth to occur. Pythagoras then had to come to the most truthful but unbelievable conclusion that it was the Earth, which was moving around the Sun, and not the Sun moving around the Earth.

On the other hand, observations of the inner planets of Mercury and Venus yielded different results. The center of their motions around which they appeared to oscillate was also entirely in the direction of the Sun. While Mercury appeared to oscillate from 16 to 29 degrees during a period of 88 days, Venus appeared to oscillate at about 45 degrees on each side of the Sun, during a period of 225 days. The ancient Egyptians, the Chinese, and the Indians also made these observations as far back as 3,000 BC. It is therefore absurd to find that, centuries later, Claudius Ptolemy had rejected these solid ancient observations demonstrating the central function of the

Sun, and went as far as to place the orbits of Venus and Mercury between the Earth and the Sun. We shall indicate later why such a crude and deliberate mistake was made.

Although Ptolemy created this conscious fraud upon ancient astronomy, the simple fact that the two apparent positions of the radius at 1-1'-E, and 9-9'-E, of **Figure 3,** indicate that the sun and the outer planets, Mars, Jupiter, and Saturn are in opposition only twice during the Earthly year, is a sufficient proof that there exists a universal principle of gravitation for the solar system as a whole, and that this principle is based on proportionality, and not on the belief that the Earth is at the center of the world. In other words, the geometrical nature of the epicyclical motion is so well ordered, even when it is deformed, that if merely two of the positions of the INVISIBLE ARM of each of the three planets, Mars, Jupiter and Saturn, are observed to be directed toward the Earth, year after year, at the same time that they are directed towards the Sun, it is sufficient to conclude that all other positions which are directed away from the Earth are in fact directed to the sun. That is how the lies of the deformed shadows of our sense perception in relationship with a non-visible principle of universal gravitation of the planets, reflect Heliocentrism.

This must have been a very exciting discovery for Pythagoras, because, in each of those observations, the three outer planets seem to come to a dead stop for a significant amount of time, as if to alert the observer and warn him: "Hey, wake up! There is a crucial discovery to be made here." Thus, the INVISIBLE ARM of Pythagoras demonstrates that the Solar Hypothesis is geometrically constructable, for each of the outer planets, from the vantage point of only two yearly observations each, and made by any astute ancient astronomer from the Sphere of the Earth concentric to the Celestial Sphere.

6. GRAVITATION AND THE THREE-BODY PROBLEM.

Let's formulate the same problem in a different way: "How do we know this Pythagorean construction reflects the true motion of the heavens?" The INVISIBLE ARM of Pythagoras has implied the existence of three different motions. The first motion was a circular motion, which represented

the ficticious pathway of the planets, Mars, Jupiter, or Saturn, moving around the Earth, and which was marked in **Figure 3** by the numbers 1,2,3,4,5,6,7,8,9. The second motion was the epicyclical motion of the same planets representing their apparent pathways, also around the Earth, and marked by the numbers 1',2',3',4',5',6',7',8',9'. Neither of these pathways, taken separately, or together, are real, and Pythagoras knew that. They are both lies. However, the two motions taken together are actual reflections of deformed shadows showing how the lies point to the truth, by suggesting a third motion, which is not visible. In other words, we are dealing here with three motions, a ficticious motion, an apparent motion, and an invisible motion.

The great merit of Arago's pedagogical construction, resides in the fact that it allows you to think about these three motions together as a single one; that is, as the single motion of an invisible sweeping and rotating arm, one end of which points to a planet, say, Jupiter, which appears to be going around the Earth, and is visible only at night, the other end points at the Sun moving along the ecliptic, which is visible only during the day, and the third motion is the rotating of the arm as a whole, which reflects the motion of the Earth, which is invisibly orbiting around the Sun. Viewed from that triple vantagepoint, the arabesque of the prograde and retrograde motion of Jupiter is merely the effect of the orbiting motion of the Earth around the Sun with respect to Jupiter. The Solar Hypothesis becomes fully discovered when you are able to locate the principle expressing the proportionality of these three motions implied in the INVISIBLE ARM of Pythagoras.

The sweeping and rotating INVISIBLE ARM has the effect of acting as the metaphor of the harmonically proportional relationship of a triple motion between: 1) the observed Planet with respect to the Earth; 2) the same Planet with respect to the Sun; and 3) the Earth with respect to the Sun and that planet. Thus, the three-body problem is resolved in such a way that the {lies}, which they make up reflect harmonic recurrence that causes them to be constantly proportional to one another. Another indication proving this point is the following. When the Earth and another planet are on the same side of the Sun, their motions are in the same direction. However, when the Earth passes on the other side of the Sun from that planet, the motion of the planet is in the opposite direction. Between these two directions there is an apparent stationary point where the observed planet appears to stop moving altogether, and that is when the Earth passes on the opposite side of the Sun with respect to that planet Thus, Pythagoras was able to establish the motion

of the Earth around the Sun by realizing that the back looping of a planet meant that the Earth was passing from one side of the Sun to the other.

7. DRAWING THE LINE BETWEEN KNOWLEDGE AND BELIEF

The dividing line between knowledge and belief was the first line of battle between astronomy and astrology. Ancient mariners knew that battle ground very well because it was that dividing line which made the difference between their chances of arriving at their chosen destination or getting lost on a sea without a shoreline. That battle line was also the same which separated people who knew that the Earth was spherical without the use of sense-perception, and those who believed that the Earth was flat because it appeared such to their eyes.

The following example should make clear the point that the crucial issue of politics, past, present, or future, has always been, as LaRouche identified, the problem of representing how human sense perception can relate to provable discoveries of principle. Let us return to the question of latitude. If you lived on a flat earth, the question of latitude would not matter much to you, since the latitude would be everywhere the same. However, if you lived on a sphere, no matter where you traveled, north or south, from where you live, there would be no way you could not fail changing latitude. What does that tell you about directions and the shape of the planet you are living on? The first thing this tells you, is that the Earth is round. But the shocking thing about this roundness is that you cannot see it, you can only know it by deriving it from the sky, and which you can only do by inversion.

The difficulty in conciliating knowledge of the curvature of the Earth as opposed to the evidence of sense perception is a matter of religious belief of a specific type. The issue is, in fact, a matter of accepting or rejecting a false underlying assumption, which takes the characteristic of a passive religious belief. Such a passive reaction pertains to the tradition of the satanic cult practices instituted by freemasons and fundamentalist types of the Elmer Gentry variety. For example, to state that {seeing is believing} is a satanic emotionally dead statement. It is a bestialized statement, a mere voice repetition of what appears to be in front of you. All animals do that and cannot do anything else.

On the other hand, what is the emotion that takes you over when you contradict your sense perception to discover that the Earth is actually spherical? If you are excited about this paradox, you are a real human being. It is that moral difference that pertains to human beings alone. That is a crucial difference between man and animal. Man asks himself immediately: "Is this really true?" On the other hand, the bestialized person asks: "Will people believe me if I say this in public?" This is what led freemasons to devise two doctrines, one for the elite and another for the vulgar.

It is not because you can repeat in words what you see with your eyes, and what you hear with your ears, that you are different from the animal. Can you imagine an entire population reduced to simply talking about and confirming what they see, everyday, day in and day out, and nothing else? Such a population would be in a complete state of bestiality, like a herd of human cattle. Then, the question becomes: "Why is it that for hundreds of years, after Pythagoras had made the discovery of the Solar Hypothesis, was the Ptolemaic system of Geocentrism made to prevail, in spite of the known truth? I will attempt to answer this question as clinically as possible.

8. EMPIRICISM: THE OFFSPRING OF RELIGIOUS BELIEF.

The Pythagorean idea of this Solar Hypothesis was such a revolutionary idea that, if it were to have prevailed in the general population of ancient times, it would have meant the loss of control of accepted public opinion by the oligarchy and its priesthood of the time. This is why Claudius Ptolemy, who was warned against this danger by his priesthood of the Cult of Isis, was told to reject the new conception, which had been put forward by Pythagoras and his school, and to place the immovable Earth at the center of the universe, but only because it was more credible for the priesthood and the general population.

The Oracle of Delphi then established that there should be two types of beliefs: an esoteric belief for the elite priesthood, and an exoteric belief for the vulgar people. Neither of them were based on knowledge. Both beliefs were based on the degree of credibility of what is given to the human {*sensorium*}. The profession of faith of such a Satanic Religion was fully expressed in the fraudulent document called the {*Golden Verses of*

Pythagoras} authored by Syris and translated in French by Napoleon Bonaparte's cult master, Fabre d'Olivet, and which I have reported on elsewhere [A3-45-3/PB_001]. The essential point to understand about that Satanic doctrine of the Freemasonic Gnosis is that it could not have been conceived by Pythagoras, as we have proved the case above.

Such trash as Fabre D'Olivet's writings only work if people believe in it, that is, if people believe that knowledge comes from empirical sensory perception, or passive religious belief. It doesn't work if people, like Pythagoras, operate from the standpoint of knowledge. In fact, who would believe the paradox whereby what appears to be in motion is perceived as stable, while what is apparently in a state of rest is actually in motion? Who would be crazy enough to believe that? Similarly, who would be sane enough to know that it is true?

From the point of view of this paradox, the assertion of the Solar Hypothesis was a very daring proposition for the following reasons. First of all, the individual human mind is alone in establishing such a system, in which no visible evidence indicated that the earth turned around the sun. In other words, individual reason finds itself without the support, and without the collaboration of any physical facts that would contradict the general credibility of sense perception. On the contrary, even when reason is overwhelmed by the power of truth, the social conditioning of a people is such that the Solar Hypothesis is too much against appearances for it not to be rejected by public opinion. For this reason, this hypothesis was probably reinvented many times in the ancient past, but was rejected, as many times, because it completely disturbed the accepted order of things, the generally accepted public opinion based on sense perception.

Secondly, the individuals who placed the Sun in the center of the celestial motions took a very decisive and courageous subjective action that only a few people, in the span of a century or two, would dare to undertake against public opinion; because they believed much more in the power of the truth, and especially in the power of improving mankind, rather than being perceived as being correct and be accepted. That is to say, such individuals would not center the motions of the heavenly bodies on the apparently motionless earth, unless they had made the decision to give more credibility to their sense certainty, rather than to reason, and had discovered that, by such a decision, they could manipulate people's perceptions with beliefs

rather than challenge their minds with knowledge. After all, it is much easier to manipulate people into believing than to fight people into knowing.

It is well known that Pythagoras taught his disciples about the Solar Hypothesis, but that the oligarch rulers kept it away from the general population, because it "would have shocked the commoner,"and they would have lost control over them. The Pythagoreans fought against these would be Gods of Olympus, and for that reason, found themselves murdered in their school located in the house of the athlete Milo in Crotona, c.450 BC, for having told the truth.

Thus, the multiply-connectedness of the epicyclical form of the Solar Hypothesis was put forward, by the Pythagoreans, but was rejected as an unacceptable anomaly confronting the accepted {vox populi} of empirical sense perception with the power of subjective reason. This is why the late attribution of this discovery of the Solar Hypothesis to Copernicus and Galileo was such a controlled fraud, a Venetian Delphic operation run by Paolo Sarpi. These were also the reasons why the ordering of the planets with respect to the days of the week has been hidden from the general population for so long, and that their apparent absurd ordering has been further usurped and deformed by the use of Delphic lies, of pseudo-science, of astrology, of esoteric freemasons, or simply by people who felt threatened by it.

Thirdly, consider that the revolutionary aspect of this first Solar Hypothesis was an early form of anti-Euclidean manifold, a non-linear conception of space-time, which will be rediscovered, much later, with Kepler, the Roberval-Pascal school of constructive geometry leading to the Huygens-Leibniz-Bernoulli development of the calculus, of the evolute/involute curvatures of the catenary-tractrix, providing the conceptual basis for what Abraham Kastner, Carl Gauss, and Bernard Riemann developed later as multiply connected manifolds.

As LaRouche emphasized in his paper on {The Becoming Death of System Analysis}, "there never was a 'Copernican revolution' within the historical development of modern Europe. [Footnote] Through the pre-Roman (e.g. pre-Claudius Ptolemy), Hellenistic period of European civilization, the followers of Plato, and other scientists of that time, had established the so-called "Solar Hypothesis" on a valid empirical basis. In the domain of physics, this historically shaped emergence of Riemann's

revolutionary notion of an implicitly orderable series of multiply-connected manifolds, corresponds to what Plato identifies as a notion of HIGHER HYPOTHESIS."[EIR, March 31, 2000, p.20]

Indeed, as we have said, if these reasons were more than sufficient conditions for causing a major revolution by means of the HIGHER HYPOTHESIS of proportionality, as expressed by the Solar Hypothesis, a genius like Pythagoras would not have failed to discover the fact that, at only two specific moments of the year, at the point where they appear to stop moving, that is, when the motions change direction, the inversion of the radius of direction for each planetary motion, invariably, and repeatedly, year after year, did not point at the Earth, but was oriented toward the Sun, behind the Earth, as their center of curvature. Once these observations are compared with the variations of eastward and westward planetary motions relative to the Earth and their opposition to the Sun, then the proportionality is established.

In this way, the original ancient discovery of Pythagoras demonstrates that the motions of the planets have no meaningful existence, in and of themselves. They can only make sense with respect to the motion of the Earth in relationship to the Sun and the motion of the Sun around the ecliptic. That is how a three-body problem gets to be solved. The observed motions of the outer planets are thus harmonically conjugated with, the actual motions of the earth with respect to the Sun. Thus, it is this {harmony of proportion}, as Leibniz put it, which creates beauty and establishes the very validity of the Solar Hypothesis.

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