From the desk of Pierre Beaudry

ASTROPHYSICS ON THE ROCKS

or

THE SIMULTANEITY OF ETERNITY IN THE DEVELOPMENT OF IDEAS

Class given to the Montreal LYM, 5.14.2009.

by Pierre Beaudry

"**To know history, wish to go where it happened, and hear, in informed imagination, the truly spoken voices of those who lived there in past times. We can, in a certain degree, do much of that, if our available resources permit this; but, whatever may be the case on those accounts, we must, at the very least, relive the past in our minds as if we had actually been there when it happened, such that we hear the voice of real history speaking to our mind's ears.**" Lyndon H. LaRouche.*A DOLLAR-BASED GLOBAL RECOVERY,* May 1, 2009. J918602L.wpd.)

1- THE DISCOVERY OF TRUE UNIVERSALS.

As Lyn showed, the best example of the Platonic process of generating the idea of simultaneity of eternity in history was expressed by Raphael in *The School of Athens*. I wrote a report on that, earlier this year, so I am not going into that today. However, what I want to develop with you is the fact that such a creative idea of time is also embodied in all true universal ideas, and that the most efficient notion of *universal* that I have found to illustrate that fact came to me from Blaise Pascal. There is an historical development of such an idea of universal, if fact there was even a debate on this issue during the Middle Ages. The notion was originally derived from Plato's *Parmenides* and the *Timaeus.* Also, both ideas of Raphael and Pascal have been transformed, and have been improved through the works of Nicholas of Cusa and through the method of artistic composition of Leonardo da Vinci, who expressed the same notion of universal as having the form of *cognitive causality through light and shadow propagation*. Pascal's idea of Universal is actually a beautiful paradox which recalls the catenary function that Leonardo used in his artistic compositions and expressed very poetically, with the experiment of his Camera Obscura. Pascal said of the universal:

> **"It is one in all places and all entirely in each place."**
> **(Il est un en tous lieux et tout entier en chaque endroit)** (*Pensées*)

Now wait a minute! How can something be entirely everywhere and entirely in each place at the same time? Isn't that a paradox? How can you multiply yourself like this by breaking yourself up into small pieces and remaining one globally at the same time? This is what Aristotelians and Cartesians cannot understand. Do the experiment of the Camera Obscura and you will see this paradox emerge in living colors. The totality of the scene in front of the box is reflected entirely and in each of the points on the surface of that box. That is quite an ironical paradox. The proof of it is that if you make a hundred holes on the surface of the Camera Obscura, you will see inside of the box a hundred times the inverted image of the scene in front of the box. Also, for Plato, Cusa, Leonardo, Kepler, Pascal, and Leibniz, this is how a universal idea works. Pascal further developed this idea of universal as a universal good which he also defined in his *Pensées* as paradoxical: He said:

> **"Universal Good is in us, is us, and is not us."**
> **(Le Bien universel est en nous, est nous-mêmes et n'est pas nous.)** (*Pensées*)

Again, we have a similar paradox: How can something be **"us"** and "**not us**" at the same time? What is the significance of **"us"** with respect to **"not us"**? What is the nature of their interaction? If you deal with "**things**" of sense perception, this statement doesn't make any sense. But if you think of "**ideas**," this makes perfect sense. What is the relationship of the **"us"** vis a vis the other, **"not us"**? How does the Good of one get

included inside of the other? The only way this can be done is in what Leibniz called "**felicity**"; that is to say, "**my own happiness is to make others happy**." That is the nature of universal good; that is the nature of the Peace of Westphalia.

Now the point I want to make with this is that those two Pascal characterizations are present in every discovery of universal physical principle. And in turn, every universal physical principle lives in the simultaneity of eternity; that is, lives simultaneously in the past, present, and future at the same time. Now, how do you integrate this Pascal qualification of a universal into the simultaneity of eternity?

As Lyn indicated, the most ancient form of investigation in the universal aspect of the universe is the art of astronavigation, or the ancient science of creating astrophysical calendars. Within the context of discussing the dynamics of language-cultures, in an NEC meeting of April 20, 2009, Lyn had emphasized that special feature for the classical Platonic idea of the Recicare that Bach had initiated in his *Musical Offering* for the edification of Frederick the Great. Lyn noted how the development of this piece of musical composition had gone through an exceptional evolution during the eighteenth and nineteenth centuries by way of Mozart, Beethoven, Schumann, Schubert, and Brahms. He noted that each composer had developed his own idea in the simultaneity of eternity with the idea of Bach. Moreover, Lyn not only identified a family of musical ideas, but also identified the social function of immortality that was attached to such a development. He said:

> "**So the human individual finds in this a certain amortal, immortal morality. They participate in ideas which are, themselves, immortal. They not only express those ideas, they contribute to their evolutionary development. The evolutionary development of ideas, expressed in this way, then becomes the determination of values, of how you interpret everything else. You have to communicate, because the function of music used in this form, is a vehicle of communication, and use the artistic/poetic language of counterpoint, of well-tempered counterpoint, polyphony, you use that as a medium of standard of truth. And that standard of truth, then becomes the way in which you are able to identify, not only ideas, but to identify a process of** *generation of advancement in ideas***, advancement in quality of ideas***."* (Lyndon H. LaRouche Jr., *NEC Meeting*, Monday April 20, 2009**.**)

Today, I want to show you the development of the idea of three simultaneous times with the ancient equinox experiment that was made several thousand years ago by an astronavigator of ancient times, whose traces of discovery have been found in the United States in 1978. I am talking about the *Caves of Anubis* discovered in Oklahoma by Gloria Farley, and the crucial experiment of the time of the equinoxes that she developed in her 1994 book entitled, *In Plain Sight*.

However, before showing you how Gloria Farley's discovery required an understanding of both science and artistic composition, I want to show you an example of how, in ancient Greece, science and poetry were not separated from one another, and

people were required to deal with them together for the progress of universal ideas. In other words, if we are to understand the true universality of ideas, we must understand the process of how they are generated and transformed in time, with respect to both science and art. That is one of the reasons I have been writing all of these reports on artistic composition for the last year or so.

However, today, I am going to take an example from the scientific domain. The case of the ***Pythagorean Theorem*** will suit our purpose quite well if we follow Lyn's recommendation whereby "***poetry must supercede mathematics in physics***."

2. THE PYTHAGOREAN THEOREM AND THE POETICAL PRINCIPLE: THE METAPHOR OF A FINITE UNIVERSE SELF-BOUNDED BY CHANGE.

In ancient Greece, science and poetry were not separated as they are today. Science and poetry were as two brothers who lived together and depended on each other for the development of ideas. This is a fact that can be demonstrated by the role that the ***Pythagorean Theorem*** played in ancient times. Historically, the ***Pythagorean Theorem*** has been bowlderized by Eucledians and Aristotelians and it has been reduced to a simplistic algebraic formula known as $A^2 + B^2 = C^2$**,** which was reduced to the function of finding the third side of a right triangle. This is total reductionism on the part of mathemagicians. On the contrary, this formula was originally part of a much more complex pedagogical exercise whose intention was to focus the attention on the transformation of boundary conditions of change inside of a finite universe. So we are going to follow this process in the manner that Lyn recommended; that is, we are going to look at mathematics as a "**systematic examination of footprints**" that point to the existence of a non-visible principle underlying it.

I wrote up the essential features of the geometric construction for the ***Pythagorean Theorem*** in my geometry book for children, ***LANTERNLAND,*** back in 2001. In Chapter 8 of that book, I showed how the so-called formula of $A^2 + B^2 = C^2$ was an incomplete algebraic equation which had been generated, in reality, from the process of transformation of boundary conditions relative to the discovery of the doubling of the square, as Plato showed in his dialogue of the ***Meno***. So, there is a crucial relationship, here, between the ***Pythagorean Theorem*** and Plato's ***Meno***. This relationship, however, cannot be discovered unless we bring our investigation to the limit of the boundary conditions that the theorem had originated from. It is, therefore, essential to know how to treat concepts at their boundary conditions, because this is the epistemological region where new ideas are created, that is, new Riemanneann dimentionalities that will become fruitful for the future of mankind. So, it is important to press on that region of the mind and see what sort of creative juices will come out of the grey cells.

It is the origin of the formula $A^2 + B^2 = C^2$ which is interesting to discover, not simply the use of it. Where does that formula come from? What is the physical-

geometrical process that generated it? Mathematicians claim that this formula simply comes out of generating a right angle triangle. That is not true. This might be what the formula can be useful for, but this is not where it has been generated from. To discover where this formula comes from will require looking into ideas and into the footprints of several steps in a process that was necessary for the physical geometric construction of doubling the square. So, what is not obvious now, but will become cognitively visible to your mind's eye, in a moment, is to relate the formula of $A^2 + B^2 = C^2$ to the other well know formula that it is related to: $(A + B)^2 = A^2 + 2AB + B^2$.

Can you see the connection between those two formulas? No? – Ah ah! The reason you don't see the connection is because you are not using the poetic principle of irony! The connection between the two cannot be understood algebraically without gaining access to this poetic principle, cognitively. This is why Lyn called for "***poetry to superceed mathematics in physics***." The connection can only be cognitively understood by a physical construction and an internalized sense of the universal physical principle of irony as expressed by metaphor. Here is the simplest physical geometric construction for their connection:

Given that , $(A + B)^2 = A^2 + 2AB + B^2$ in which the area of A^2 and B^2 are given, find the area of C^2.

Those of you who have done this construction before should not give out the answer. Help others make the discovery for themselves.
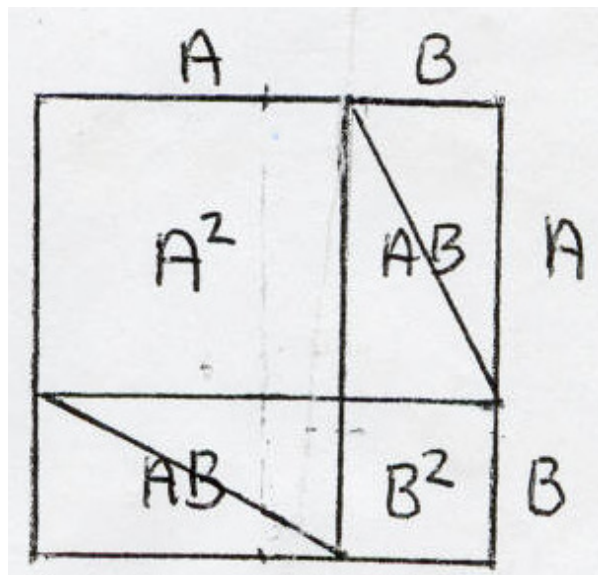

Figure 1. $(A + B)^2 = A^2 + 2AB + B^2$

Mathematicians can understand and apply the poetic principle in physics, but only when the ***Pythagorean Theorem*** is understood as a transformation function whose

purpose is to change the internal boundary conditions inside of a finite universe. As Einstein put it, and Lyn reiterated, the universe as a whole is both finite and bounded internally by self-developing universal physical principles. Let's imagine that the finite universe before us is this square $(A + B)^2$ which is internally configured with the components that you see in Figure 1.

Can everybody see that Figure 1 describes the algebraic formula $(A + B)^2 - 2AB = A^2 + B^2$? Then, since we are given A^2 and B^2, how can we discover C^2? In other words, what you are looking for is a way to demonstrate that $(A + B)^2 - 2AB = C^2$. However, how can you prove it by construction since there is no more room for C^2 inside of that square? How can you discover the physical area of C^2 without going outside of the finite universe?

It is obvious that you have to find the area of C^2 outside of the box that is already filled up. But, that is impossible, because you cannot go outside of the finite universe. What internal change must you apply, then, in order to find C^2? How can you go out of the system and stay inside of the system at the same time? This is where the poetic principle must be applied: the square area of C^2 must be created "poetically" by an irony as opposed to being derived algebraically. Here is the irony:
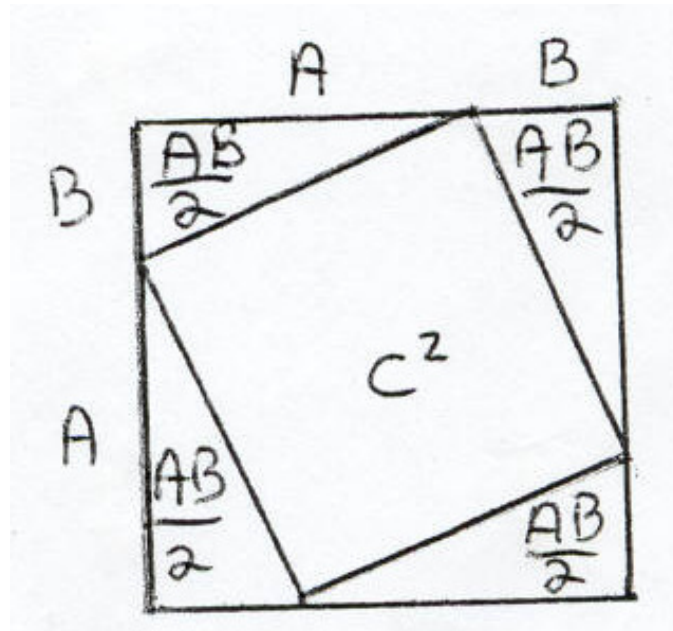

Figure 2. $(A + B)^2 - 2AB = C^2$

The discovery of the square area of C^2 is based on changing the internal boundary limits without modifying the external finite condition of the initial square. The discovery is like the idea of a changing universe that is finite, but self-bounded by internal change.

So, the poetic irony is reflected like the double meaning of a metaphor; but it can only be captured as if in one smell poop. Any questions?

3- THE *CAVES OF ANUBIS* OR THE ANCIENT EGYPTIAN DISCOVERY OF THE EQUINOX IN THE SIMULTANEITY OF ETERNITY.

Let's take the next step and use the same principle that we have just discovered for the following experiment in astrophysics. The *Caves of Anubis* discoved in the Oklahoma panhandle by archeologist and epigraphic expert, Gloria Farley, represent the best proof of the hypothesis according to which the very first human civilization came from an ancient maritime culture that travelled the oceans and propagated its knowledge of astronavigating throughout the world.

The universal physical principle involved in this discovery by Gloria Farley is based on the ancient science of shadow-reckoning known as Sphaerics, whose discoverers were ancient astronavigators who had travelled to practically all of the world's continents, and had left a precious record of their knowledge, especially on the rocks of the North American Continent, about two centuries before the birth of Christ. The question that this discovery raised for me was very special: how could those ancient astronavigators put *In Plain Sight*, as Farley entitled her book, something that was not visible to sense perception, and from which she was able to derive a discovery of universal physical principle?

Let me now show you first the trailer of *History On the Rocks,* which includes the discovery of Gloria Farley. Double click on the *You Tube* that I sent you.

http://www.youtube.com/watch?v=J6PbkgFYyp8&feature=PlayList&p=25CFCFFED02F7161&index=1

HISTORY ON THE ROCKS.mp4

THE SIMULTANEOUS THREE-TIMES EXPERIMENT.

What Gloria Farley discovered, in the secrecy of those Oklahoma caves, not only represents the traces of an ancient astronomycal observatory, which is related to the Great Pyramid of Egypt, but also represents the traces of an actual ongoing dialogue between an ancient unknown astronavigator-artist of that civilization and discoverers of the future. This is the aspect of the discovery that I find the most exciting and enriching, because those ancient astronavigators had found a way to express their historical identity in a language that Gloria Farley has been able to translate, brilliantly, in the unique form of the principle of simultaneity of eternity, as if from Plato's Cave. This may be the oldest

form of demonstrating human creativity that has ever been found in the United States to date. From the vantage point of Plato's Cave, the discovery of Gloria Farley is three-fold:

1) The astronavigator-artist used the participation of the universe itself as the subject of his pedagogical experiment.
2) He used the subjective ironic principle of light and shadow reckoning as the drawing brush for his unique artistic and scientific composition.
3) The modality he used in his language of composition was an epigraphic form of replicating three different physical times in the simultaneity of eternity.

First of all, the five Oklahoma *Caves of Anubis* , of which you have seen only the second, represent both a scientific experiment and an artistic composition which reflect the simultaneity of eternity of three simultaneous times. Can you tell which they are? You can discover them in a manner similar to the discovery of the square area of C^2. The three times involve the time of the division of the precession of the equinoxes into two segments of 12,920 years each, the time of the equal division of the solar year into two 6 months periods each, and the time of the equal division of the day into two 12 hours periods each. This is probably the most ancient form of calendar expressing those three times simultaneously, sometimes after the erection of the Great Pyramid of Egypt.

If you make the effort of listening to this ancient voice speaking to your mind's ear, you can actually reconstruct in your own imagination what was going on in the mind of this scientist-artist, and discover that he was saying to future generations: "**I, the composer of this experiment, created in the image of the Sun-God and speaking to you from the top of this cubic box, would be very surprised if, twice a year at sunset, on the day of equinox, the sun's shadow of the thumb pointer at the entrance of this cave were not to follow the pathway that I am showing you in the direction of the image of the Jackal, Anubis, who goes into darkness when I rise into light, and who comes into light when I go into darkness. When this happens, you shall discover the simultaneity of three different celestial times: the time of precession of the Equinoxes, the time of the Solar year, and the time of this Day and Night.**"

Now, look at Figure 3. and examine especially the diagonal motion that the shadow of the thumb pointer went from the cube to Anubis. In the first moment of observation of this complicated design, Gloria Farley made the following insightful remark.

 "**The most distinctive feature of the panel was at the upper right, a canine image with sharp ears and a bushy tail. I exclaimed, "This is Egyptian!" which greatly amused all my friends. Our guide chuckled and said, "It's just an old coyote." But I knew that an Oklahoma coyote would not be wearing a crown and that he would not have the royal flail of ancient Egypt standing on his back. A flail is a whip with a handle.**" (Gloria Farley**, *In Plain Sight*.)

Figure 3. The Anubis Panel. Epigraphic design showing the process of discovery of the equinox in Cave Two of the *Caves of Anubis* discovered by Gloria Farley in Oklahoma, in 1978.   (Scale drawing by Dr. Clyde Keeler from Gloria Farley, *In Plain Sight*.)
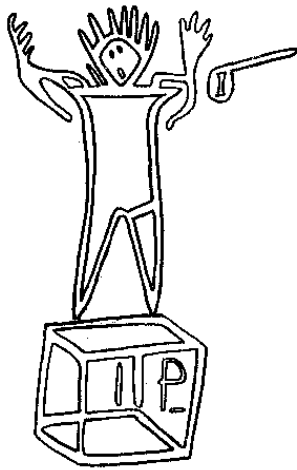

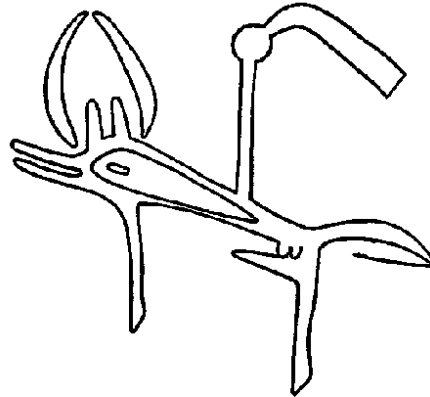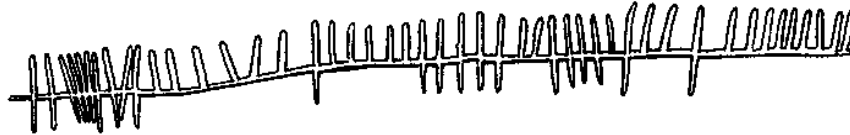Figure 4. Petroglyph of the Sun-God   Figure 5. Petroglyph of Anubis

        Next, let's look at this question of time. The first notion of timing comes from Cave One in which Barry Fell translated the Ogam inscriptions of Figure 6.

G---R-----N 6 M T---D G----N D---S H--M-D M C---T-D

Figure 6. The *Six-Months inscription* from Cave One. Transliteration by Barry Fell.

In 1980, two years after the initial discovery of Gloria Farley, Bary Fell was able to decypher the meaning of what became known as the *Six-Months Inscrition*. This Ogam inscription of Cave One said in ancient Celtic:

"The sun (is) six months north, sinks south for space of months equal-number."

Then, Gloria Farley translated the series of petroglyphs of Cave Two as replicating an ancient Egyptian discovery relating to the physical demonstration of the equinoxes. Other people have made silly interpretations of these petroglyphs, but the only truthful reliving of this historical experiment was made by Gloria Farley.

These two discoveries of Cave One and Cave Two combined, represent an extraordinary important scientific revelation, because they confirm, in a very unique way, the evolutionary development of what Lyn had identified as the idea of simulataneity of eternity. The essential feature of this ancient discovery, with respect to Lyn's conception of creative real-time, resides in the fact that it relates to the unique balance of light and shadow between the Egyptian sun-god Ra, (the artist of the composition) and the darkness-god of the underworld, Anubis. This light-shadow complex function expresses the simultaneity of eternity in a very unique fashion. Let me explain this.

 The time of the equinox, as represented by this experiment in the *Caves of Anubis*, is a very precise physical sun-time that involves simultaneously three different universal motions of the Earth in the universe as a whole. The first is the Precession of the Equinoxes, the second is the orbit of the Earth around the Sun, and the third is the rotation of the earth along its axis centered on the magnetic pole of the heaven. In other words, the time of the *Caves of Anubis* during an equinox event is the time of the simultaneity of three different actions in the universe as a whole; that is to say, a time that involves a complex division of the precession cycle, the division of the solar year in half, and the division of the day also into two equal parts. Thus, the simultaneity of those three motions is not only the demonstration that the astronavigator-artist knew that the earth was round and rotating on its inclined axis like a top with respect to the Celestial North Pole, but that the Earth was also orbiting the Sun. This shadow reckoning process points, therefore, to the existence of two universal physical principles, that of magnetism and that of gravitation.

Such a coincidence in the simultaneity of those three motions, occurring at precisely the halfpoint of each of their complete motions, reflects a unique form of universal division between the large and the small, between the maximum and the minimum actions of the Earth in the universe, and between the part and the whole. This, to me has a very exciting epistemological implication, because it implies a sort of universal Lydian division in which the Lithosphere, the Biosphere, and the Noosphere of our planet experiment a form of simultaneity of eternity that is also related to the Lydian division of the well-tempered musical system as Kepler understood the *Harmony of the World*.

This unique time of triple action is also related to the division of the fundamental time of the well-tempered modality of our musical system and solar system, the Lydian division by half, and by half of the half of the octave. This is also the unique triple-time singularity when everything that has changed during the year begins and ends in the complex actions of the universe acting on itself, such as it is, proportionately, between the parts and the whole. For the ancient Egyptians, this day of Equinox was a day of reckoning; meaning that whatever changes may have occurred during half of the year, whatever distortions or dissonances may have been generated in the world, their accounts all became settled on that day of economic adjustment and equilibrium. Therefore, this experiment of the *Cave of Anubis* reflects the discovery of principle of balance and proportionality that the feather of Maat represented in Ancient Egypt, as a means to determine truth and justice in the universe. The same idea of proportional balance was expressed by Kepler as a principle for his Harmony of the World.
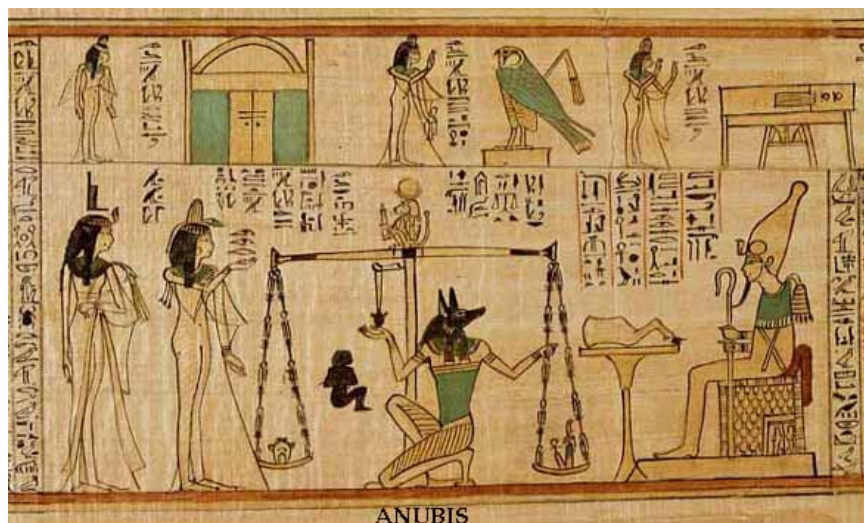

Figure 7. Anubis weighing a human soul against the feather of Maat.

Furthermore, although Gloria Farley did not discuss the significance of those three different times, she grasped the historical significance of their coincidence as expressed by her shadow reckoning method. What she discovered was a true universal

and not a formula. It was a crucial experiment that included the enthusiasm of the discoverer, or of anyone who rediscovered the same universal physical principle in the simultaneity of eternity. She described the significance of the whole experiment in a three-fold climax in which she reconstituted the moment of discovery as a unique expression of the creative moment that no one else of her group of associates, including Barry Fell, appears to have made. And her discovery is unique in the sense that she succeeded in replicating exactly the historical message that the scientist-artist was attempting to communicate to us, on the subject of creativity from the simultaneity of eternity of two thousand years ago. The following paragraph of her book is worth quoting in its entirety, including the significant illustration she provided, because this was the moment of the joy of discovery that Gloria Farley did not miss, and wished to immortalize for future generations. So, it is my duty to replicate this for you, as it was relived uniquely by her. She wrote:

"At the instant of sunset came the climax when three things happened simultaneously. The shadow of the thumb pointer exactly filled the curve of the Vertical Sun, the head of the Sun God, including the rayed crown, fell into shadow, and the entire figure of Anubis, including his flail, was illuminated. A second later, when the sun had slipped behind the mesa, the entire panel was in shadow. The show was over for another six months. It must be emphasized that the above described alignments happen only at the sunset nearest the actual hour of the equinox. The day before or the day after, the pointer does not travel exactly from corner to corner of the cube, the sun symbols do not fall into light or shadow in a meaningful way, and the pointer does not fill the exact lines of the curve of the Vertical Sun (Fig. 4-10).
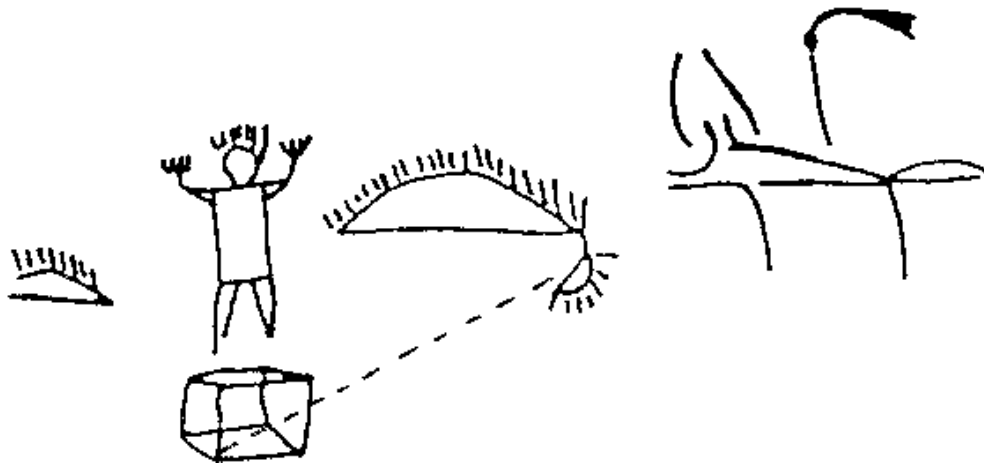
Fig. 4-10 Diagram showing path of shadow pointer during sunset on the day of the equinox. Drawing by Polansky.

The artist or artists who laid out this panel also understood the ancient Egyptian concept of day and night, of the sun ruling the sky by day and at sunset sinking into the underworld of darkness, guarded by Anubis, the God of the Dead. This

association with Anubis is explained more fully in the next chapter.” (Gloria Farley, *In Plain Sight,* Heavener, Oklahoma, 1994.) http://www.gloriafarley.com/

Here, the scientist-artist of this composition expressed his own subjective amazement in rediscovering the accurate periodic motion of solar time that his ancestors had discovered before him. He has projected his own image in that of the Sun-God, and he is enthusiastic in his task of provoking a future observer to replicate the same discovery for future generations. That is what Farley recaptured in her description of Egyptian historical times. What the artist succeeded in replicating, therefore, is the ***simultaneity of eternity of the universal mind of man*** that his ancestors had first discovered in former times, and which he replicated for future human beings to relive in their minds. The amazement is, thus, expressed by the dramatisation of the discoverer, who has carved a self-portrait of himself standing on a cubic box with his arms up in the air and declaring his enthusiasm to the world about discovering that he is not an animal, but God-like, because he succeeded in reproducing, during a period of several years, the creative process of the astrophysical universe on the rocky surface of these caves.

Note in ending, that in order to experiment the time of the Precession of the Equinoxes, you must turn your back to the cave at the very moment when the curtain comes down; that is at the precise moment when Gloria noted: “**The show is over for another six months**.” At that very moment, when the sun has set behind the horizon, you could see the first star that appears nearest to where the Sun was. If you follow the change of position of the eliacal rising of that star, you will notice that it moves away from the setting sun by a very small increment which corresponds to about one degree in every 72 years; which is the size of your extended pinky. Thus, the cycle of the precession of the equinoxes is approximately 360 x 72 = 25,920 years.

HOW THE THREE SIMULTANEOUS TIMES OF THE EQUINOXES LED TO THE DISCOVERY OF THE ASTROLABE.

Let me give you another example of a metaphor for our finite and self-bounded changing universe. One of the greatest astronomers of antiquity, Hipparchus (active around 162-126 BC) developed a hypothesis for the construction of the Astrolabe which was a crucial continuation and improvement on the boundary conditions set by the ancient discovery of the astronavigator-artist of the *Caves of Anubis* and the Pythagorean Theorem. The original idea of the Astrolabe construction, however, has almost completely dissapeared from the face of the earth, and is to be found, today, in only a few rare astronomy books, one of which is written by an excellent English astronomer, W. Schroeder, *Practical Astronomy*, Littlefield, Adams & Co. Totowa, New Jersey, 1965. I highly recommend you read and use this book for the construction of your own Astrolabe in Montreal.

The conception of this stereographic projection, which I have attributed to Hipparchus, because he is, reportedly, the discoverer of the precession, is a very powerful

transformation of the idea of triple simultaneous time of the equinox established by the experiment of the *Caves of Anubis*, and it includes a few added poetical ironies which I would like to highlight for your benefit in ending this class. The astrolabe, however, can only account for two of those three simultaneous times (See Figure 8). Examine this reconstruction attentively and you will find that this is an advanced form of the experiment of the *Caves of Anubis*, because this construction involves new paradoxes that the caves did not deal with.
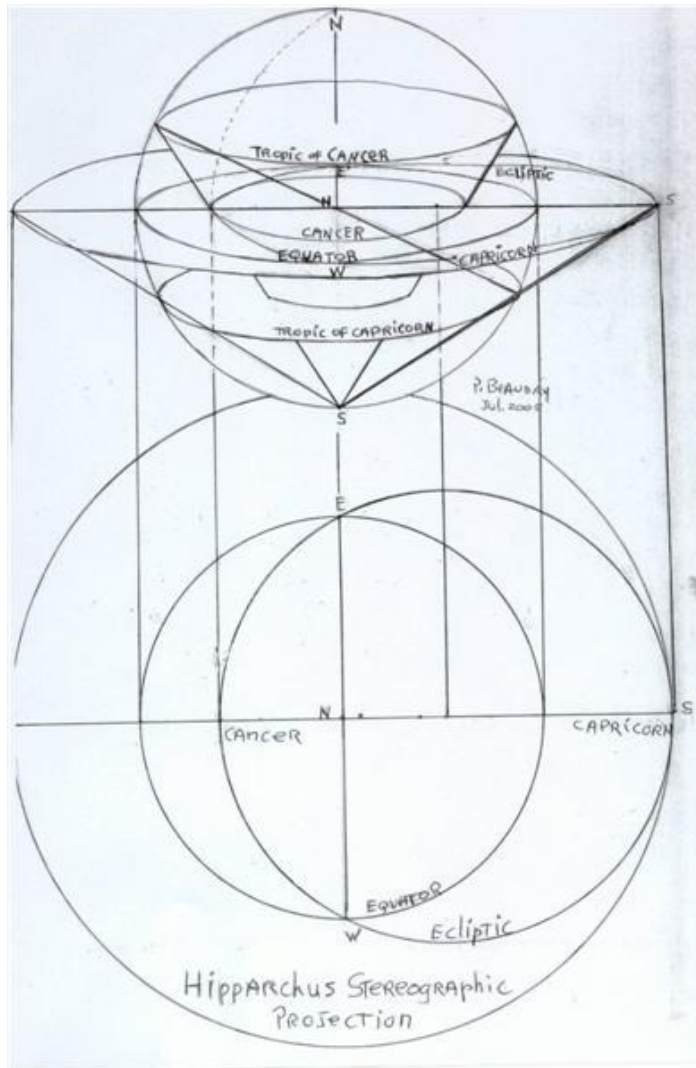

Figure 8. The Hipparchus hypothesis for the stereographic projection of the equinoxes.

Examine carefully the sphere in the upper part of the stereographic projection. Can you see how this works like a finite universe with internal self-bounding change? This is the principle of projection of all of the stars of the northern and southern hemispheres of the heavens onto a plane. The principle of this stereographic projection is an actual solution to the paradox of the incommensurability between the sphere and the

plane; that is to say, it is the only rigorously scientific and poetic mapping of the stars of the heavens projected from an imaginary sphere onto a flat surface disk.

Now, as you all know, you cannot flatten a half orange onto a flat surface without breaking its curvature and making a mess of things. However, this stereographic projection can do that without creating a mess. The only juices flowing are from your grey cells. You may consider this Hipparchus Hypothesis as an orange peeler and flattener! It contains a number of very poetical paradoxes, like this one, that I want to show you briefly, and leave you to think about after the end of this class.

Remember that the simultaneous times of the Equinoxes, as demonstrated in Cave Two of the *Caves of Anubis* is very accurate and is cyclical because the equal division of the year always coincides twice with the equal division of the day, and **ONLY WHEN THE ECLIPTIC CROSSES THE CELESTIAL EQUATOR**. (That is, when two of the three motions of the Earth, precession, orbit, and rotation, coincide at their half points.) That triple motion division is fixed for ever and ever, within the simultaneity of eternity and it will never change. There are a few things that don't change in the universe and that is one of them; that is, the Lydian division of the year, of the day, of the heavenly sphere, and of the octave of the musical system.

However, would it surprise you to discover that this astrophysical division of time can also be visualized in the sphere? Let me show you. Unless our planet or our sun explode, this observation of the Equinoxes is universally true and cannot change as long as the Earth maintains the angle of about 23.5° degrees between the Ecliptic pathway of the Sun and the apparent Equator of the Universe as a whole. Now, how can this no-change change be constructed? How can you construct a portable model of the simultaneity of those times?

This is what the Hipparchus Stereographic Projection is all about. (Figure 8) Take the three circles inside of the sphere. They are the Tropic of Capricorn, the Tropic of Cancer, and the Equator of the heavenly sphere. Crossing all three of those parallel circles is an inclined circular line called the Ecliptic, which, when mapped onto the equatorial circle of the heavens, exceeds the size of that sphere of the univese. That is quite a paradox. How can the pathway of the sun, that is, the Ecliptic be projected outside of the universe?

This is permitted in order to allow the invisible southern half of the celestial sphere to become visible. That is the crucial discovery of the stereographic projection of Hipparchus. That is the "Eye of Truth and Justice!" This is a paradoxical way of saying that the sun spends half the year in the south and half the year in the north; that is, where human cognition is able to pass through the discontinuity between the domain of Anubis and the domain of Ra, that man is capable of mastering axiomatic changes by passing from one world into another. And, this is also what permits the orange to be peeled and be mapped onto the plane. The truth of the matter may not be very politically correct, but it is very poeticaly correct, and although the different angular positions of the stars are different in these two domains, the proportionnality of their angles is maintained in both.

Thus, for Plato, the stars were the proverbial eyes of justice and truth, and that is why the study of the heavens is not ultimately for the purpose of providing information for the farmer on the land, for the sailor at sea, or for the general at war. As Rabelais had also shown, the study of the heavens is the crucial test in the quest for wisdom and felicity; for the heavens give to mankind the ability to gaze at the truth with many eyes. As Plato had the Athenian say that the stars were living eyes which distinguished the good and the bad among men and reported to the Eternal God everything that happens on the land as on the seas. (Plato, *Epinomis*, 985 a)
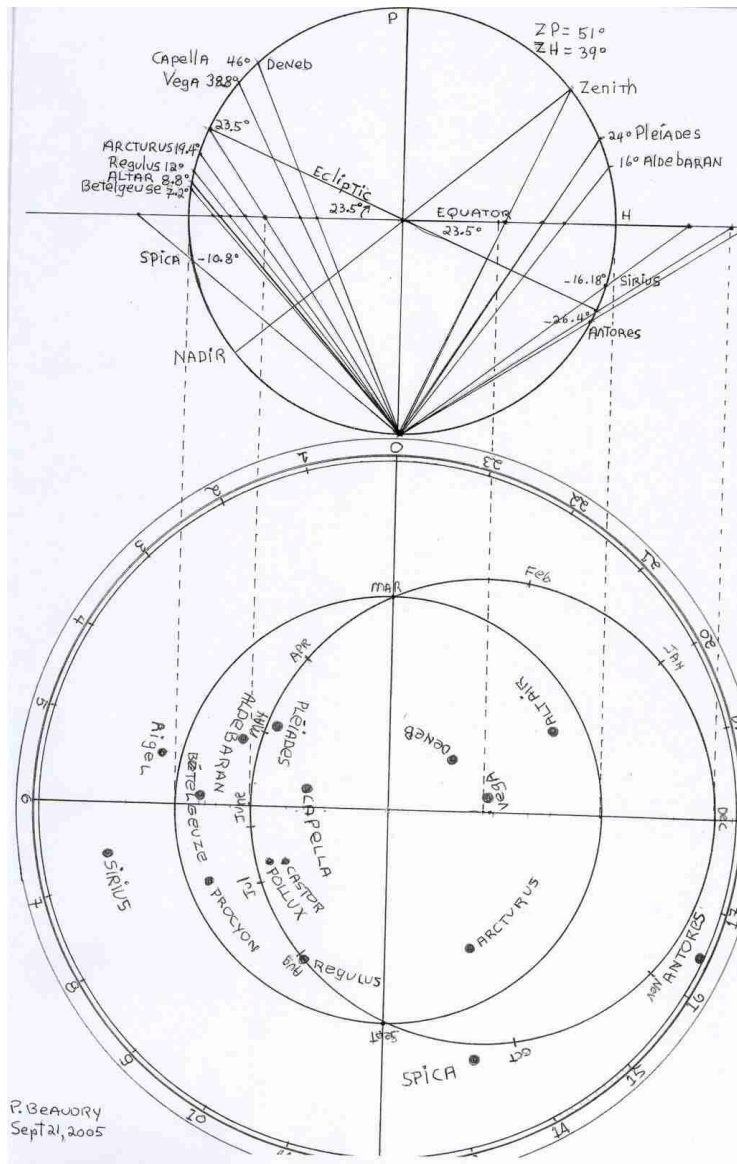

Figure 9. Stereographic projection of stars from the celestial sphere onto the plane disk of the celestial equator.

The angular cut of the Ecliptic circle of the heavenly sphere forms a 23.5° degree angle with the circle of the Equator of the same sphere. These are the only two circles projected from the sphere onto the plane located vertically under the sphere. Do you see that? Note the two points of intersections of those two circles in the plane, E and W which stand for the two cardinal points East and West intersecting the horizon of your observatory and serve for orienting your astrolabe. If you were to divide the circle of the Ecliptic and the circle of the Equator into the same overlapping twelve equal months, these two points would coincide with the two Equinoxes, that is, if you use round figures of 12 months of 30 days each, March 21 and September 21. Of course, these points cannot be marked as precisely as in the *Caves of Anubis*, because the physical reality of the Sun is not present in your Astrolabe experiment.

CONCLUSION: WHERE CAN ONE FIND WISDOM?

Thus, I tried to develop for you those three metaphorical models in order to see how a finite universe can be conceived as being self-bounded internally by a universal physical principle of change, and all three models required the same poetic principle of irony. It turns out that there is an amazing congruence between the simultaneity of eternity and those three simultaneous astrophysical times of the Equinoxes. Both relate to a higher dimensionality of action in the universe whose time has come to be established as a new standard of truth and values for our international community.

So, if any of you ever ventures into attempting to understand the so-called unified field of Einstein, for example, which seems to me to be the next step for integrating the higher set of a multi-dimensional tensor of universal physical principles through the Noosphere, then, don't forget that it won't work if you leave out the poetic principle of irony; that is, if you leave out the role played by the paradoxal presence of the human mind caught in *flagrante delictus* of causing change in the universe. This is why you will require the three phase spaces of Vernadsky, the Lithosphere, the Biosphere, and the Noosphere to achieve your objective. And don't forget that the Noosphere, that is, the participation of the creative mind of man universally, is the only domain from which man can give direction to where the universe is going.

Therefore, my last question to you, in ending this class, is who, among you, is going to challenge himself to build the appropriate epistemological device of an astrolabe for the Montreal region; so that you can easily connect the discoveries of the past with the future ones to come? The method, however, is not a method of mapping two points, one on one, from the sphere onto the plane. The method is one of discovering and resolving paradoxes. In other words, I am not asking you to map the stars of the universe onto a flat disk; I am asking you to locate, in the universal boundary conditions of your minds, the creative power of the Noosphere by means of which the stars of the universe can be mapped, in the spirit of Plato's *Epinomis*.

As Plato asked: "**What are the studies which will lead a mortal man to wisdom**?" His Athenian Socrates replied:

> "**To the man who pursues his studies in the proper way, all geometric constructions, all systems of numbers, all duly constituted melodic progressions, the single ordered scheme of all celestial revolutions, should disclose themselves, and disclose themselves they will, if, as I say, a man pursues his studies aright with his mind's eye fixed on their single end. As such a man reflects, he will receive the revelation of a single bond of natural interconnection between all of these problems. If such matters are handed in any other spirit, a man as I am saying, will need to invoke his luck. We may rest assured that without these qualifications, the happy will not make their appearance in any society; this is the method, this is the pabulum, these the studies demanded; hard or easy, this is the road we must tread. And piety itself forbids us to disregard the gods, now that the glad news of the all has been duly revealed. Him who has mastered all these lessons I account in truth as wisest; of him I dare affirm – 'tis a fancy, and yet I am in earnest with it to – that such a one, when death has put the end of his alloted term, if he may be said still to endure beyond death, will no longer be subject, as he is now, to a multitude of perceptions; he will have but one allotted portion, even as he has reduced the manifold within himself to unity, and in it will be happy, wise, blessed, all in one.**" (Plato**,** *Epinomis*, 991e-992a-b.**)**

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