

Communication Association A.R.C.A and Enrico Calzolari

“ De Aequinoctium dies”

Summary

More than the measure of solstices, the measure of the equinox presided over the understanding by the human being of its environment. It was the angular stone of construction and perennality of a creative knowledge of big civilizations. Examples found in Corsica are placing this island in the heart of this search.

We would try at Corte in July, 2006 to illustrate by our works the wealth of this debate to make sensitive and perceptible, in all, the importance of these knowledges in the measure of the equinox.

In 2002, it has been in Liguria a congress of archaeoastronomy articulated in two sessions. The first one in Genova in February and the second in November in San Remo.

The subject of these meeting was :

" Archaeoastronomers and astronomers: in search of a common method "

In this congress, reuniting appreciated and recognized researchers, participated also two English professors :

Michael Hoskin of the university of Cambridge and *Clives Ruggles* of Leicester's university.

These illustrious professors participated then in June, 2004 in Filitosa's work-shop in Corsica.

After Filitosa's work-shop professor *Hoskin* chaired the congress on the environment at the university of Corsica (*Corte, July, 2004.*)

In November, 2002 in San Remo it appeared a debate on equinoctial adaptations.

According to the two English professors these adaptations steered towards sunrises and sunsets of equinox :

- They can be simply owed at random;
- They have to be tracked down in every case and measured, point by point, exactly, making possible to be considered;
- That anyway they cannot be considered and qualified as "equinoctial", because it missed the instrument to measure time exactly (hours and minutes) as to define this equality of day and night exactly.
- That, finally, equinox, being not visible, is an abstract notion, more bound to an evolved scientific thought, based on the experiment and on the reproduction of more precise measures, that the ones we may find in marks of calendars of civilizations mastering still very bad notion of time. That they needed so, in conclusion, to be careful and to spread definitions including word "*equinox*" and to hold it into qualification such as :

Steered eastward or to the West or towards the median point, or sunrises or sunsets on the horizon. In September, 2005, in Brera's Observatory (Milan) during the annual congress of the Italian Society of Archaeoastronomy (S.I.A.) we presented a communication about measures of equinox found in Corsica and about the various technics which we were able to find there.

Far from liking it as a simple controversy of archaeoastronomers specialists in debate of school, we tried also to rise, why to look for and to know how to measure equinox was of big importance in construction, expression and development of the human personality.

Here, more than an illustration with examples, being also illuminating as those presented in Milan, we want

now to put again debate on the theoretical plan.

We are reconsidering more exactly the departure assertion of professor *Clives Ruggles*, according to which we cannot qualify these adaptations as equinoctial, because those that built them did not possess instruments precise enough and reliable of measuring time (in other words a mechanical system of verifiable clock).

They who venture this sentence give evidence of surprising anachronism, introducing into their subject of search this qualification of "equinox", as only much later human thought becomes scientific, using instruments allowing to verify experiences operated to prove advanced theories and hypotheses.

In other words, the succession from hypothesis to verification, characteristic of our scientific thought, would be not applicable to ages in which it was impossible to correctly operate in conformity with this logic.

This is a very redoubtable argument which is directly sending to the shelf of nonsense and to folkloristic archaeoastronomic studies, which would have to stop into the reductive "eastward or westward line".

Nevertheless at a closer look the concept of equinox comes to us straight from the Latin dictionary preserving a spoken language, conceived by a people who never possessed approximate bracelet clock shows.

This so Roman Latin dictionary says:

"aequinoctium"

or "**aequinoctialis**" to qualify "**aequi nox**" in other words "night equality". (*Gaffio p76*)

Yes, but the night equality in what ?

Simply in "**Dies**", in the daytime, because the Romans implied "**dies aequinoctium**" or "**dies aequinoctialis**" simply wanting to say

"**dies aequi nox**" "the day equal with the night" or "the day when the day is equal with night."

Then, how is it possible that an "unverifiable" concept had entered into the memory of a dictionary, presenting an etymologic sense of a notion which only the scientific revolution will be able to verify ?

There is the problem in which we have finally to pose the question, to know if what we now qualify into the "equinox" concept may have exactly the same semantic sense that was given to it by the Romans.

By opening a simple small Larousse dictionary, we see that there is a triple definition about equinox:

1 ° The one, very Latin, of day equality night and day;

2 ° The other one, more scientific already, of the clearing the celestial equator by the Sun;

3° The definition of the point of the celestial equator where this clearing occurs: that is the definition of the "vernal point".

There is so well a hiatus, and it seems although that we do not speak about the same thing.

If we conceive today equinox as a precise moment, expressible in time seconds, near when the Sun reaches the vernal point, it closely resembles, but at the really, it does nothing to see, and it has nothing in common with the day when it occurs, which unlikes the others in the daytime as it has a diurnal light equal to the night darkness.

So there the report of anachronism turns around against those that conceive a word in a sense which will be given to it only later, and we can suppose that if the Romans could say that the day was equal with the night, it is why they had probably means to obtain it, and let us go to try to define them.

In any case we are not on an imaginary of "Swiss" precision, and any more of atomic clock, to define concept as the vernal point or the speed of rotation of our planet on the orbit, because, even today, without having made a lot of astronomy, you all must know that it is between two passages in this "vernal point" (between two springs) that it is possible to confront the precise duration of the year and so to calculate the orbital speed of our dear earth.

In few words, if the vernal point is contained in the spring equinox, it is not equinox, because equinox is the day when the day light is equal with the night. Equinox it is not that this only second when the sun reaches the vernal point.

Equinox it is two complete days, the day of spring and also... the day of autumn.

By pushing farther search, we arrived at the text of *Julius Hyginus or Hygin*, franked by *Caesar*, director of the *Palatine* library, and which writes in the second paragraph of the chapter 6, its first book, in the treaty "**De astronomia**" about astronomy :

"**Ducitur circulus aequinoctialis**, one draws the equinoctial circle **qui a Graecis isemerinos appellatus** which by the Greeks is called **isemerinos**, **ideo quod sol cum ad eum orbem pervenit** because the sun reaching this circle **aequinoxium conficit** produces equinox.

We are undoubtedly into the second definition of our small Larousse, the definition which we have considered almost scientific, and we are in the year 45 before Jesus Christ !

You can note in the passage that the Greeks already qualified equinox by the word *isemerinos* (*iso-mere*) equality of size, and so that they already defined this concept of equality of day and night. So they also knew how probably to recognize the days of equinox and knew how to verify that they did not make a mistake.

Then, without waiting you much longer, we have to say to you which was this instrument, this tool, which allowed them to assert, and it without the risk of making a mistake, since when the ancient people knew how to make it.

You will admit that it is a very important question for archaeoastronomers because earlier the ancient people will have found this technics, earlier we have to consider these types of adaptations.

The first answer is coming from survey.

It is in the "Torrean site" of **Sartè, in Corsica**, "**u Castellu Puzzone**" dated 1500 before J.C.

This site still preserves in the openings of its summital terrace an axis directed in 153°- 333°az. Due to our **Arkéorb** software, and to its virtual sundial we were able to notice that it is the day of spring or of autumn that makes on this axis of 153 - 333° az the equality, with the shadow of a stick standing vertically in the centre of the terrace. Then returned in memory the report made by professor *Jean François Santucci*, having attended the communication of professor *Stephen Mccluskey*, in November, 2001 during a congress in Canada (*Chacmool Conférence November 2001, Native American Cosmologies, "Calgary", Canada.*)

This communication treated the way that the american Indian people knew to find the North, due to a simple right stick standing vertically in the ground.

Twice a day the shadow of the stick is going to touch the circle, the beam of which is equal to the length of the stick, determining so two points; by joining these two points it is possible to determine the East–West axis.

A simple perpendicular line allows then to find the North-South axis.

Every day the point of equality of the shadow moves.

It is enough for it that the sun reaches at least 45° of height.

It occurred, for Sartè's latitude (castellu Puzzone) for 2005, all days when the sun had at least a declination angle

of - 3°22' that is from March 12 till October 1-st, with a movement in going and a movement in returning around of the point of solstice.

The equality of the shadow is going up above the circle of the azimuth 180°az in March 12 until that of 98°az to the summer solstice (in June 21) for the morning equality, and to return from the 262° of the summer solstice (in June 21) until the 180°az of October 1-st.

The day of spring and of autumn, that is the days of equinox, equality appears in the morning in 153°az and in the afternoon in 207°az.

By opening this passage to the 153°az-333°az those who built *Castellu Puzzone*, there is 3500 years Before Present, seem well to have left us a proof of their knowledge, by indicating the position of the Sun 153°az at 45° of height, what produces a shadow, equal to the length of the stick, directed in the 333°az.

When one is doing a study about sundials, this is a very remarkable fact :

In the daytime at the equinox the plan of the shadow produces what we call the **right-line of equinox**, that is the plan of shadows aligns itself in a rigorously perpendicular way with the North-South axis of the stick.

Well to show you it, we chose to show you what it is proceeded on March 11, 1533 on a sundial placed in front of the entry of the **Lascaux's famous cave**. This day there was, in the Julian calendar, either the day of the equinox either the day of the full moon.

So we were not hampered on the virtual dial by the theoretical shadow of the moon.

On this image of the shadow which goes from morning till night, you can notice two things:



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1 ° the famous right-line of equinox (red line)

2 ° the shadow of the stick is equal to the stick when the Sun is in the full South in the noon of the place so.

This choice is not fortuitous because Lascaux's latitude is 45° and so it is in the exact middle of the North hemisphere, as other numerous big decorated caves of the Palaeolithic age are, in a line which goes there from *Lascaux's (France)* in the West to the Italian mountain *Monviso* in the East.

It is in the shaft of *Lascaux's* cave that *Chantal Jègues* noted that, at 11 metres underground, **on the carving of the stick surmounted by the bird**, a North-South orientation, connecting so two concepts (*C.Jègues workshop, Filitosa-Corsica, Juin 2003*):

-North-south for the stick

- East-west for the bird.**3**



This equality in the full South of the stick during the days of equinox at this latitude of 45° interrogates us, as if this latitude allowed these peoples to understand or to express something very important.

Often symbols and carvings left in the stone and its constructions address to the posterity a message which means:

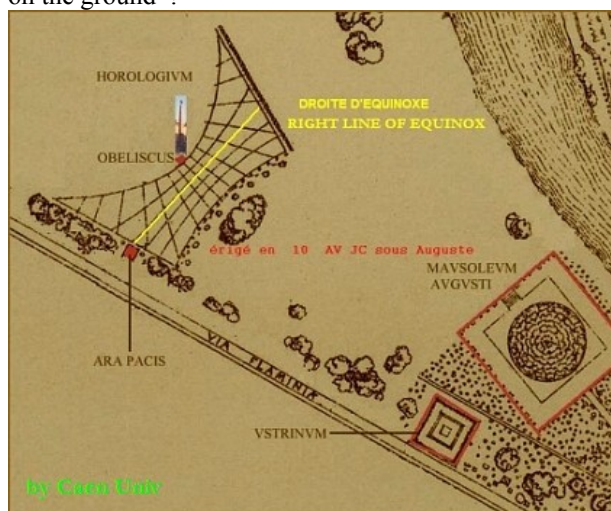
" *We were there, and we had understood it* ".

So the ancient peoples using the stick could have very well understood since a very long time that this rectilinear line of the shadow occurred only in the day of equinox.

You will verify with the communication of *Chantal Jègues* about the bone of **Blanchard** shelter (at same 45° N of latitude) which has been dated in -35000 Before JC, that they were capable, and since a very long time, of understanding notions much more complicated than that of the shadow of equinox.

I leave you the care of reading the communication of *Chantal Jègues* which will intervene, about this subject, during this same congress.

By returning to the Romans and by making us to the **Ara Pacis**, set up in the year 10 Before JC in Rome, under **Augustus**, we can notice, from the point of view of the site, that the right stick became the obelisk and that the altar of the peace, the **Ara pacis**, is adjoining at the end of the right-line of equinox, on the sundial drawn on the ground !



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We chose the spectacular example of the **Ara pacis** to well prove that the right stick and its line of equinox were the element of measure which the Romans had.

This monument is connected to another concept in a very important idea of the human being, the idea of peace.

In Corsica the year begins with the traditional: "**Pace è Salute**".

Formerly the year began then in March, in spring, in the time of the equinox.

It is on the March field, the field of the god of the war, that we find the **Ara Pacis in Rome**.

Knowing how to calculate peace in the war, it is a knowledge to draw a new line of equality, a new line of division, a new right-line of equinox !

Here it is registered an idea, that is on this stick of power which is this obelisk.

An idea which appears as a new understanding of the shadow in the Platonic cave.

(*Platon, the myth of the cave: shadow shows us what we cannot look at, what we do not see, but what, due to it, we can look at*)

Henceforth you will be able to well assimilate the measures of equinox found in Corsica, which we exposed in the Brera's-Milan observatory in September, 2005.

They will be included in a slide show, which we shall present during our communication.

For those that shall not be able to be present or they who did not have been able to attend it, they shall be able to ask for a copy of it, calling the A.R.C.A. association.

The chapter about Tchoukotka will be enclosed in our presentation.

In the Siberian extremity of the Bering Strait, the first peoples, Tchoukes and Inuits, visited and studied by **Jean Malaurie**, the author of "*Last kings of Thulé*", gives us a convincing example of the essential link which united the man and the equinox.

Extracted from a small book of the great explorer ethnologist, "*The passage of whales*" 5, the legend of **Yttigran island** says to us about the mythical story of the precision in astronomical knowledge on the equinox by these traditional societies and the necessity of knowing it for the survival of these human groups.

To end our communication we shall put an inescapable fact :

-If solar declination varies, varying little, but varying, the axes of solstices.

-If stars and constellations are moved by the precession of equinoxes.

The line of equinox never varies. It was, it is, it will be the fixed mark that the human being has passed on, and it will be able to be passed on, as if equinox never is making a mistake, it will never be able to mistake us.

1) www.archaeoastronomy.it/convegno_sanremo.htm
www.artepreistorica.it/articoli/articolo.asp?idarticolo=38

www3.shiny.it/caprione/niolu

www3.shiny.it/caprione/nioluequi.htm

www3.shiny.it/caprione/nioliasse.htm

www.castfvg.it/articoli/paleoastronomia/dibattito_e_quinozio.htm

2) Virutal sundial of Arkeorb software

3) **C. JÈGUES WORK SHOP FILITOSA-CORSICA in June, 2003.**

and Lascaux patrimoine photographie.

4) **CAEN UNIVERSTY ARA PACIS Rome**

5) **JEAN MALAURIE " L'ALLEE DES BALEINES "**
éditions mille et une nuits ISBN : 2-84205-738-4

6) **A .R .C .A association (33) 06 16 30 69 70**