

WILLIAM LILLY AND THE ALGORITHM FOR HIS PRIMARY DIRECTIONS

by **Rumen Kolev**

In the winter of 1998 I made a detailed research into the primary directions of William Lilly as given in his 'Christian Astrology', 1647, 'Regulus Publishing Co.', 1985. Pages 487-831.

The results, that amounted to around 34 pages, I published in March 1998 in my own journal 'The Primary Directions' and in the Feb. 99 issue of the USA journal 'Considerations'. This article was not technical in as much as it did not expound the exact math algorithm of these directions.

Now, I will try to explain the algorithm proper.



**The title page of Andreas Argolus'
'TABULAE PRIMI MOBILIS'
published in Rome in 1610.**

William Lilly most probably used the tables from this book for his calculations of primaries.

PREHISTORY

In my first article about the primaries of W.Lilly, I proved beyond any doubt, that he directed in principle as per Regiomontanus.

Regiomontanus lived 1436-1476. His sources were chiefly Latin translations of Arab authors, but also Greek manuscripts.

In 1467 Regiomontanus finished his book 'Tabulae Directionum et Profectionum', where he explained his method of primary directions together with several hundreds pages of tables designed for their speedy calculation.

I do not know to what degree did Regiomontanus realize that his method deviated considerably from the method of Ptolemy (described in 'Tetrabiblos', book 3, chapter 10).

The commentary of Haly Abenragel on Ptolemy, which circulated in Europe in Latin translation from the middle of the 13th century on, described equally well the real Ptolemaic primaries.

There are unconfirmed facts, which make me suspect that the first to invent the Regiomontanus primaries were certain Arab astrologers from the 8th-13th centuries.

Since I do not have all original texts of interest, now for now, I cannot say anything more definite about this.

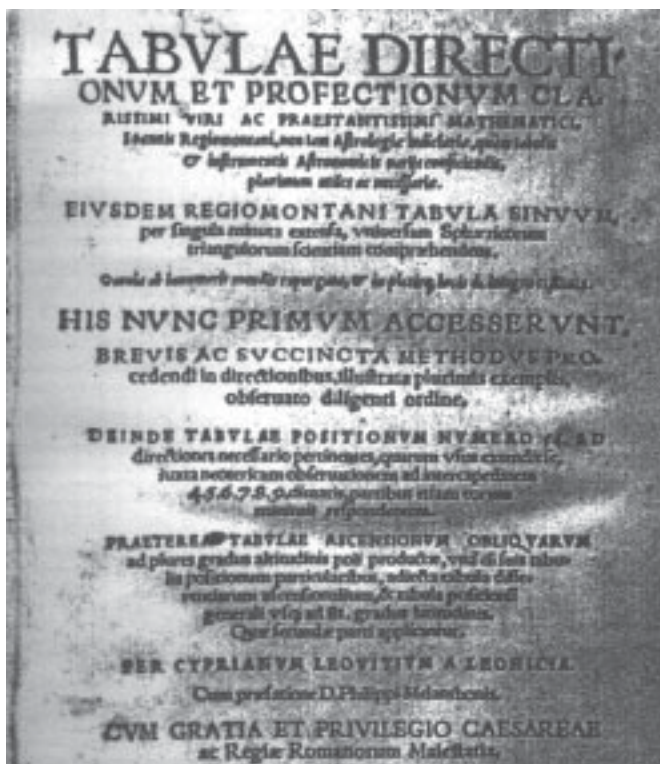
Whatever the reasons of Regiomontanus may have been, the fact remains that his method is very different in principle and in results from the method of Ptolemy-Placidus.

After Regiomontanus, many astrologers like Naibod, Maginus, Argolus, Leovitius, Moren and others....followed his steps. Among them also was William Lilly.

The Regiomontanian primaries had a short history- 15th-17th century. After their apogee in the 16th century they were gradually forgotten even by the practitioners of primaries. The last proponent of these directions known to me, was H. Noesselt who worked and lived in Germany in the first half of the 20th century..

The method of Ptolemy itself was developed further by Placidus in the 17th century and later took up his name. Now this method is known in the astrological literature as the Placidian method.

I call it the method of Ptolemy-Placidus for primary directioning.



THE SOURCES OF WILLIAM LILLY

On page 651 of 'Christian Astrology' which starts the chapter 'The Effects of Directions', Lilly states that 'At this day we use no method in Directions but Argolus...'

The book of Argolus, '**TABULAE PRIMI MOBILIS**', **published in Rome in 1610** (see its title page in this article), is listed by William Lilly in his bibliography or 'Catalogue of Astrological Authors', in the end of his 'Christian Astrology', page 834.

In this book Argolus describes and exemplifies the Regiomontanian primaries. I was happy to find it and hold it in hands in the Vienna National library in Austria. It is very thick, medium sized book, in Latin, with maybe more than 700 pages with tables in the end.

The tables served the astrologer to find out the numerous intermediate variables used in the calculations of the primaries.

Having this book, Lilly did not need to calculate anything by hand except for few simple arithmetic operations of adding and subtracting.

In the age of no-calculators and no-computers, this was a sine qua non for every student of Astrology.

THE PRINCIPLES

THE BASIS

With few words, the apparent 24-hour rotation of the celestial sphere is in the basis of all primaries. This apparent rotation makes day and night, rises, culminations and settings. Imagine that at a certain moment a child is born and the Sun is below the horizon. We ask: After how many minutes will the Sun rise? Let them be 40. Obviously we have here a clear case of a phenomenon. The event of the sunrise or the beginning of the new day happens 40 minutes after the birth of the child. Does this mean anything? Yes, if we believe in the theory that short but complete cycles in time correspond to longer complete cycles. Let our mathematical symbol for this correspondence be $\neq!$. *Something like the fractals and the chaos theory with which the scientists want to predict the future.* Then we must figure out which are the 2 cycles we want to consider. **The shorter one** will be clearly the 24-hour apparent rotation of the cel. sphere. A fixed point on the sphere will travel a full circle of 360 degrees for about 24 hours or 1 day. **The bigger cycle** will obviously be 1 solar year which is definitely a complete cycle. So, we got (1) **1 day $\neq!$ 1 solar year.**

From 1 day $\neq!$ 1 solar year by simple logic we deduce that (2) **1 day $\neq!$ 365.24219 days.** Then again from 1 day $\neq!$ 1 solar year it is clear that (3) **365.242 days $\neq!$ 365.242 years.**

Combining (2) and (3) we get 1 day $\neq!$ 365.242 days $\neq!$ 365.242 days $\neq!$ 365.242 years
In the end we have (4) **1 day $\neq!$ 365.24219 years**

Since 1 day = 24 hours = 360 degrees , we have (5) 24 hours $\neq!$ 365.242 years and (6) 360 degrees $\neq!$ 365.242 years. From (5) 24 hours $\neq!$ 365.24219 years we have 1440 minutes $\neq!$ 365.242 years and consequently (7) 3,9425 minutes $\neq!$ 1 solar year.

From (6) 360 degrees $\neq!$ 365.24219 years, we have (8) **1 degree $\neq!$ 1.0145616 solar years** which in fact is the **key (time measure) of Naibod** for conversion of time-arcs into years of life.

So, one complete 24-hour turning of the celestial sphere after the birth corresponds to 365.24.. years ! (There is another conceivable way: 360.985647 degrees $\neq!$ 365.24219 years. This because one mean Solar day is actually 360.985647 degrees of turning of the celestial sphere)

Now, we can start slowly turning the sphere and watch what is happening and after what time!

Whether we 1. take all positions of the planets fixed as in the birth-sphere or 2. allow them to change in time (as they in fact change due to reasons other than the 24-hour rotation) is a question on which I will not dwell now.

I think that the second way is more logical and that's what Ptolemy had in view. However, for the primaries we investigate here, only the position of the Moon would differ substantially if computed in the first or the second manner.

So, let us start turning the sphere and watch. We see that 40 minutes after the birth, the Sun rises. Immediately we transform this into time and get roughly 40 minutes \neq 10 years.

This allows us to say that the event 'Sunrise' that occurred 40 minutes after the birth, will occur in the bigger time-cycle 10 years after the birth.

In the same way we can watch all risings, culminations (upper and lower) and settings of all other planets. These would be primary directions of the planets to the angles.

Look at figure 3.

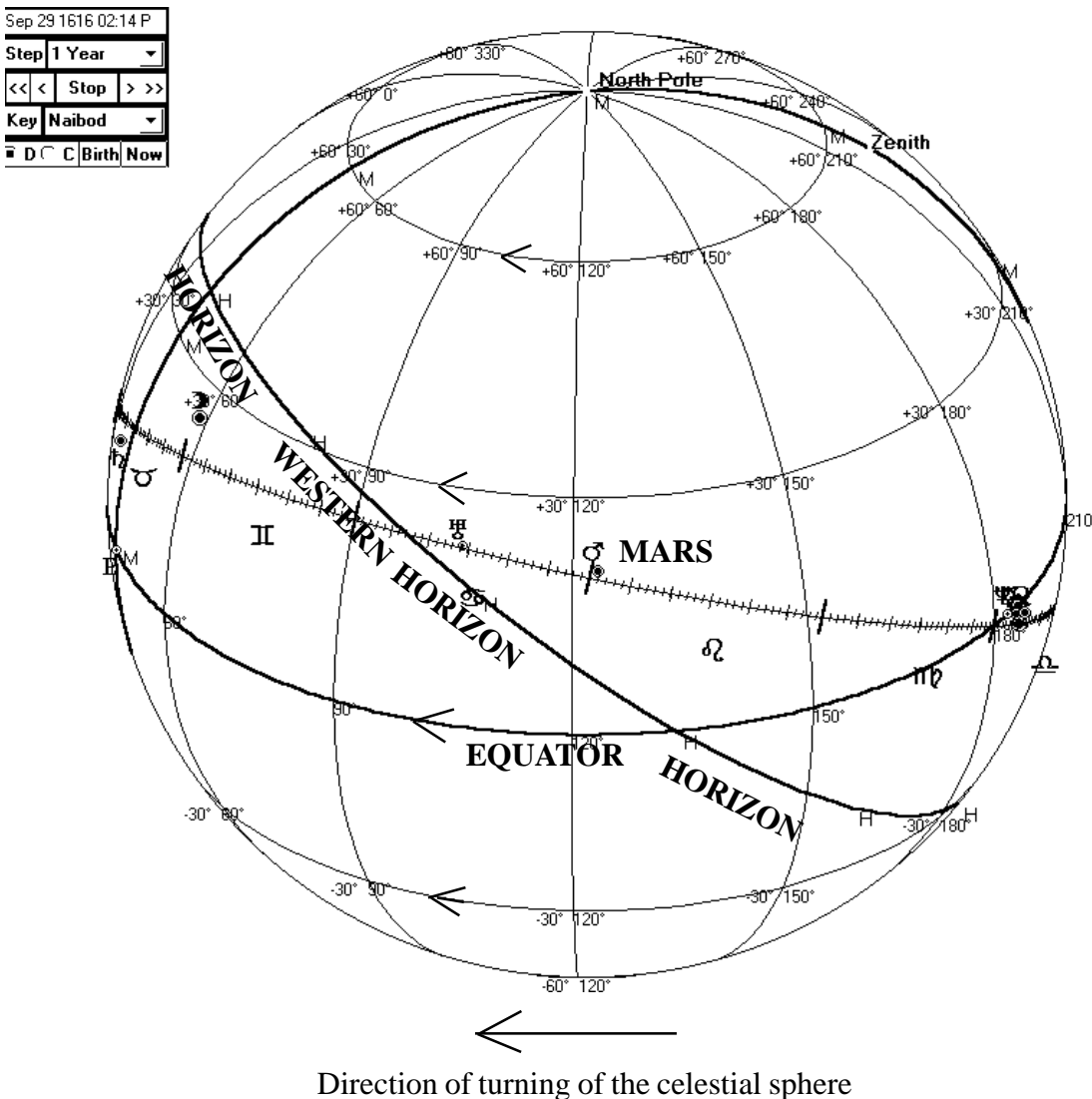


Figure 3

This is the example chart used by Lilly in 'Christian Astrology' in 3 dimensions. The celestial sphere is watched from the outside. We can see the North Pole around which in 24 hours all points of the sphere circumscribe full circles. These circles are called declination circles. Any point on the c. sphere moves along its own decl. circle due to the apparent 24-hours rotation of the sphere.

Here Mars is still above the western horizon, but soon will set.

The time is 2:14 PM

From the computer program 'Placidus' version 3.0

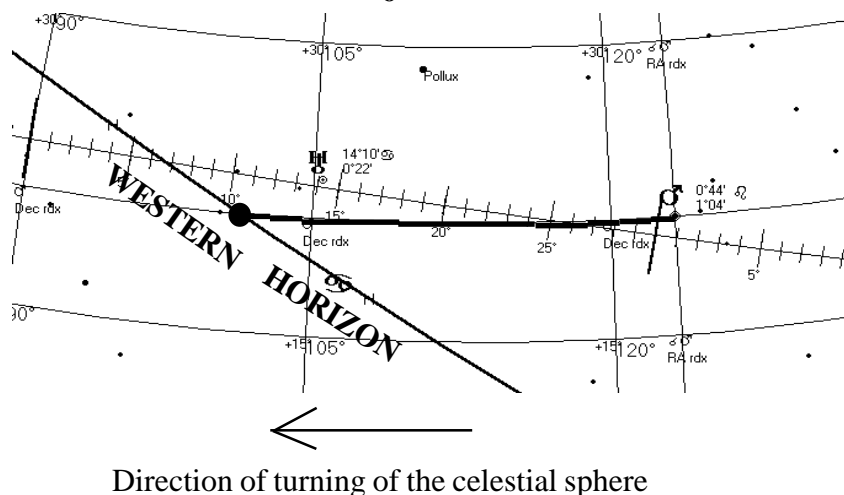


Figure 5

A zoom-up on Mars and its declination circle. The path which Mars has to travel in order to reach the western horizon is marked with thick line. This path is a part of its declination circle. In fact, this is the arc of the primary direction Mars direct to the western horizon or **Mundo♂d. →Dsc**.

From the computer program 'Placidus' version 3.0

The math algorithm for the primaries to the angles is not very complex and can be found in many books.

Whoever is interested and wants to have a thorough understanding of the math involved here as well as its astronomical meaning, may read my book 'Primary Directions' book 1, where I hope to have explained them in detail.

Here I will give only the formulae using OA and OD.

In my books I give a different and easier to understand math algorithm, but this one is shorter.

1. If the direction is to the eastern horizon then its directional arc (DA) = OA of the promissor (or the point we direct) MINUS the OA of the eastern horizon (or asc.).

$DA = OA_{prom} - OA_{asc}$. OA comes from the Latin 'ascensio obliqua' or oblique ascension.

$OA_{prom} = RA_{prom} - AD_{prom}$. RA_{prom} is the right ascension of the promissor. AD of the promissor is its ascensional difference. $AD_{prom} = \arcsin [\tan(\text{Declination of prom.}) * \tan(F)]$. F is the geographical latitude of the birthplace.

$OA_{asc} = RAMC + 90$.

2. If the direction is to the western horizon then its directional arc (DA) = OD of the promissor (or the point we direct) MINUS the OD of the western horizon (or desc.).

$DA = OD_{prom} - OD_{desc}$. OD comes from the Latin 'descensio obliqua' or oblique descension.

$OD_{prom} = RA_{prom} + AD_{prom}$. RA_{prom} is the right ascension of the promissor.

$OD_{desc} = RAMC - 90$.

3. If the direction is to the MC or IC then $DA = RA_{prom} - RAMC$ or $DA = RA_{prom} - RA_{IC}$.

To go back to the sphere. At the moment of birth we make a 'snapshot' of the celestial sphere. Then we continue to turn the sphere slowly with time and watch what is coming on the Meridian and on the Horizon. These are the primaries to the ascendant and the MC. Everything is simple here and there is no point of argument.

However how do we proceed if we want to see what is coming to the radical Sun?

This leads us to:

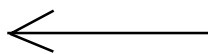
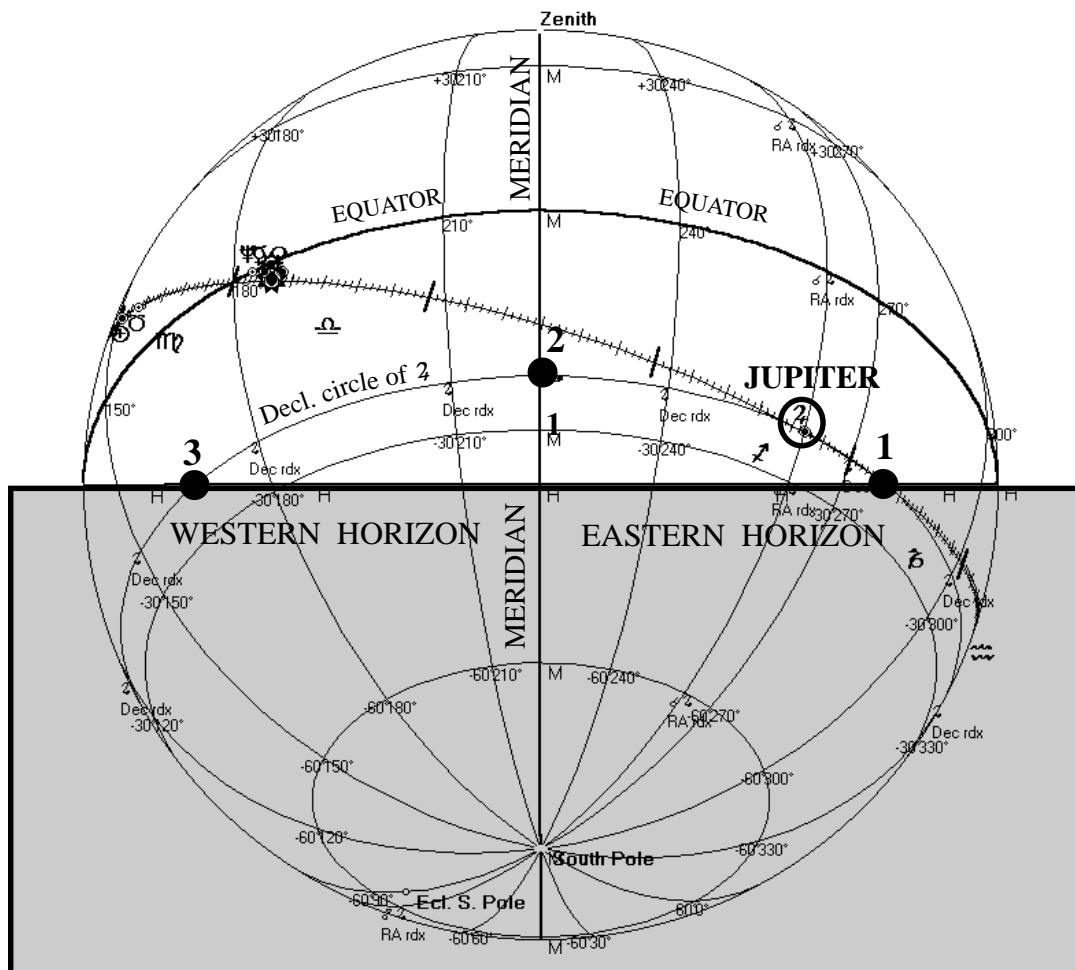
THE INTERPLANETARY DIRECTIONS

These are the directions that are calculated differently in the different directional systems. Ptolemy and Placidus had one opinion. Regiomontanus another. The topocentrists, Cardan, Leo Knecht, E.C.Kuehr... had all still another.

Let's take a close look at the Regiomontanian way (which was also the way of W.Lilly).

For example, when will Jupiter come to a conjunction with the radical Sun?

We can move the c. sphere and watch. However, since Jupiter had another declinational circle and the Sun still another, Jupiter will never come exactly over the Sun. Look at Figure 6.



Direction of turning of the celestial sphere

Figure 6

We watch here the celestial sphere from outside. We can see the declinational circle of Jupiter i.e. the path upon which Jupiter moves due to the 24-hours apparent rotation.

In point 1 Jupiter rises. In point 2 Jupiter culminates. In point 3 Jupiter sets.

Jupiter here is between its rise and culmination.

We see that the Sun is between its culmination and setting.

We also see that Jupiter will never come exactly upon the Sun.

From the computer program 'Placidus' version 3.0

Obviously there should be a point on the decl. circle of Jupiter which corresponds somehow to the position of the radical Sun on its own decl. circle

Regiomontanus (and W.Lilly) would pass through the Sun a house circle. A HOUSE CIRCLE is a great circle that passes through the two crosspoints of the Meridian with the Horizon of the birthchart (i.e. the North and South points of the Horizon). A great circle is a circle on the celestial sphere whose plane goes through the center of the sphere. Look at Figure 7.

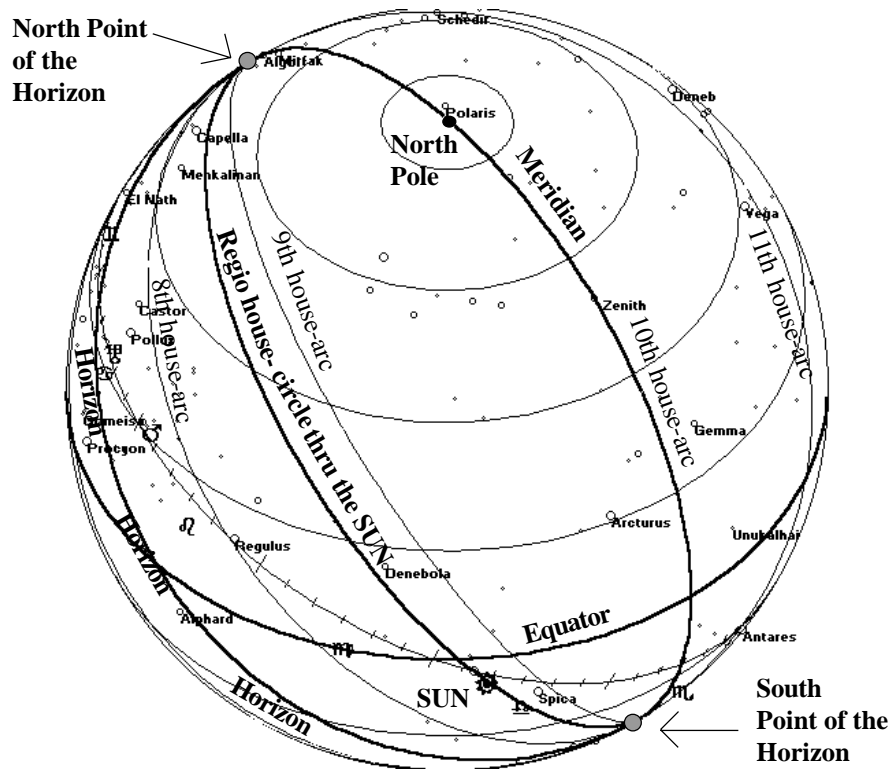


FIGURE 7

The house circle through the ☼. See how the Meridian, the Horizon, the house circle through the ☼ and all regiomontanian house boundaries join at the North and South points of the horizon.

From the computer program 'Placidus' version 3.0

Once the house circle is passed through the Sun, Regiomontanus would direct various points (zod. aspects, planets et cetera) with the apparent 24-hour rotation of the c. sphere until they crossed this house circle. The time needed for this process to complete gives the arc of the primary direction in question. Roughly: 4 minutes = 1 year of life.

So, there are 2 points in a primary directions: Significator and Promissor. The significator in my notation is the point which stays 'still' or 'fixed'. Regiomontanus passed a house circle through the Significator. The promissor is the point which we move towards the house circle of the significator with the rotation of the c. sphere. The promissor moves along its declinational circle.

In our example the Sun is the significator. Jupiter is the promissor. Look at Figure 8.

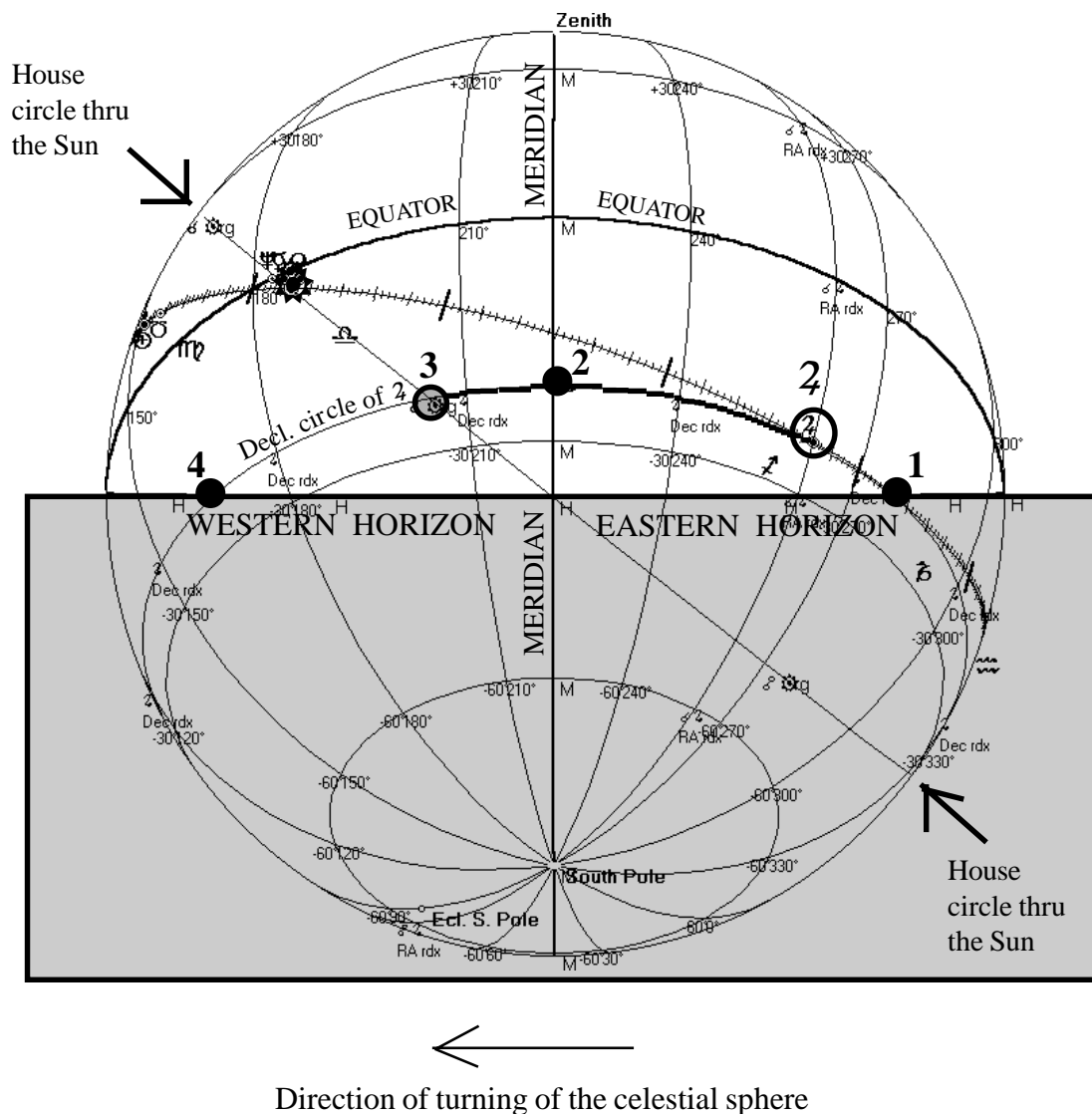


Figure 8

In point 1 Jupiter rises. In point 2 Jupiter culminates.

In point 3 Jupiter crosses the house circle through the Sun.

So, the part of the declination circle of Jupiter between Jupiter and point # 3 is the arc of the regiomontanian primary direction Mundo Jupiter direct to the Sun. In notation:

REGIO Mundo ζ d. \rightarrow \odot .

We should compute in what time does Jupiter travel this arc. This time will give us the age of the native when the direction will 'hit'. Again, roughly 4 minutes = 1 year.

The arcs of the primaries are measured in time or equatorial degrees which is the same.

From the computer program 'Placidus' version 3.0

In my notation, I put the promissor or the point which is rotated with the sphere on the left and separate it from the fixed point (the Significator) with an arrow. The arrow shows the direction of the movement. In our example Jupiter is the promissor. Sun the significator.

THE MATH ALGORITHM

I have seen the regio algorithms of

1. Jerry Makransky in his book "Primary Directions, A Primer of Calculation"
2. James Holden, the research director of AFA, in his translation of Astrologia Gallica, book 22.
3. Henry Coley, a close friend of W.Lilly, in his 'Key to The Whole Art of Astrology'
4. H. Noesselt in the German astro-journal 'Zenit', Heft 10, Oktober 1932, German
5. Ruediger Plantiko in his book 'Primaerdirektionen', 1996, Chiron Verlag, German
6. Maginus (see the bibliography), Latin
7. Argolus (see the bibliography), Latin
8. Regiomontanus (see the bibliography), Latin

I have checked the results and to some degree also the math logic of J. Makransky, H. Coley, Maginus, Argolus, Regiomontanus and Plantiko. They do hold OK.

However, for practical purposes, they may be an exasperating procedure for a NON-MATH-inclined astrologer. And for the astrologer with a math-phobia, these algorithms may be the hell itself.

After some work, I was fortunate to figure out my own Regio algorithm which I hold for the most simple and straightforward.

THE BASIC IDEA OF THE ALGORITHM

As we know, in the Regiomontanian system of primaries, we pass a house circle (which is a great circle) through the significator. The idea is to treat this circle as a 'new horizon'. If, in fact, we suppose that the significator's house circle is the horizon of the horoscope then we can employ the algorithm for the primaries to the horizon. In order to do this, we should know the geographical longitude and latitude of the point on the earth globe whose horizon **coincides** with the house circle through the significator.

So, this point will be something like a 'new birthplace'. And its horizon will be the house circle of the significator.

If we find out the geo. longitude and latitude of this 'new birthplace', everything would be a walk in the park then.

The geographical latitude of this point, in fact, is something known in the regio system as the **POLE** of the Significator. Pole_{sig}. In example: Pole_☿.

The geo longitude of this same point will result in a 'new RAMC'. This is a notion unknown in Astrology up to this time. So, I will call it the 'regio RAMC of the significator'. RAMC_{Psig}. In example: RAMC_{P☿}.

In fact, we are constructing a new horoscope here. This new horoscope is the same as the radix, but with a new birthplace. The same moment in time but different birthplace.

In this new horoscope which I would call 'regio under the pole of the significator' horoscope, this same significator will be exactly on the horizon. If it is eastern in the radix (in 10, 11, 12, 1, 2 or 3rd mundo houses), we will put it on the eastern horizon of this new chart. If it is western in the radix, we will put it on the western horizon of the new chart.

If we take the Sun for significator for example, we can construct 'regio chart under the Pole of the Sun'...

This is possible in all under the Pole directional systems. Then in this new charts we can make all kinds of directions we can do in the radix. An idea interesting and inviting for more research.

In the example used by W.Lilly the Sun is in the 8th regio house i.e. western. This means that it will be on the western horizon of its 'under the Pole regio chart'. Once we find the regio Pole of the Sun which corresponds directly to the 'geo latitude of the new "regio-Sun-Pole" birthplace' and the regio RAMC of the Sun, we can compute the regio directions of points to the Sun employing the algorithm for directions to the western horizon. The only thing we need to do is to substitute in the formulae F (the geo latitude of the birthplace) with the Pole of the Sun and RAMC with the regio RAMC of the Sun.

How do we compute the regio Pole and RAMC of the Sun? In my notation these are notated with subscripts: $Pole_{\odot}$ and $RAMC_{P_{\odot}}$.

In order to compute the Pole of the significator, we first compute another intermediate variable called the **Zenith Distance** of the significator. ZD_{sig} . Or, if the sig. is the Sun, ZD_{\odot} .

The Zenith Distance of the significator is simply the angle between the Meridian and the house circle through the significator. It is always positive in value and less than 90 degrees. It is 90 degrees if the significator is exactly on the horizon of the birthplace. It is zero if the significator is exactly on the Meridian of the birthplace.

Look at figure 9.

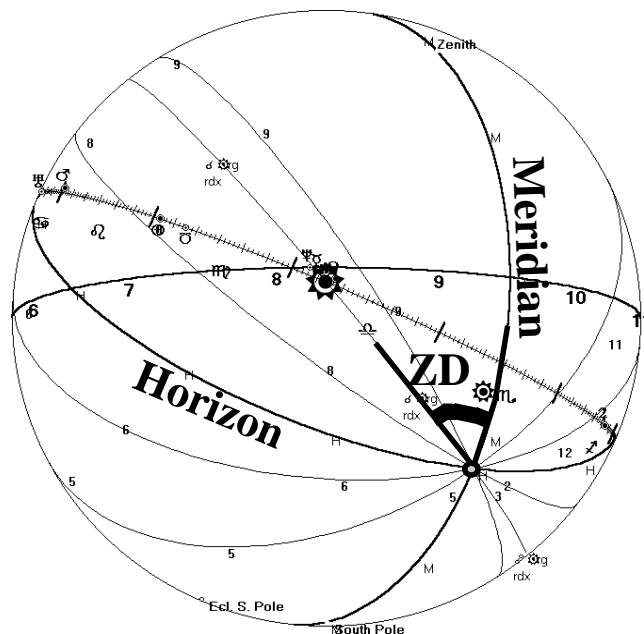


FIGURE 9

Here we can see the house circle through the Sun and its angle with the Meridian. This angle is the Zenith Distance of the Sun.

From the computer program 'Placidus' version 3.0

The formula for the ZD:

$$ZD_{sig} = 90 - \text{Atan} [\{ \text{Tan}(\text{Di}) * \text{Sin} (\text{Fi}) - \text{Cos} (\text{Fi}) * \text{Cos} (\text{MDi}) \} / \{ \text{Sin} (\text{MDi}) \}]$$

Fi

Fi = Abs (**F**) = Absolute value of the geo. lat. of the birthplace. Always positive.

F in the upper formula is the geo. lat. of the birthplace.

MDi

MDi = Calculated on the basis of the Meridian Distance of the Significator. Always positive.

1. If the significator is below the horizon then take for MDi its distance from the Upper Meridian or UMD_{sig} (Upper Meridian Distance).

2. If the significator is above the horizon then take for MDi its distance from the Lower Meridian or LMD_{sig} .

$$UMD_{sig} = RA_{sig} - RAMC.$$

$$UMD_{\odot} = RA_{\odot} - RAMC.$$

$$LMD_{sig} = RA_{sig} - RAIC.$$

$$LMD_{\odot} = RA_{\odot} - RAIC.$$

$$RAIC = RAMC + 180$$

Di

Di is a variable based on the '**Dec_{sig}**' i.e. the Declination of the significator.

If $F > 0$ and the significator is above the horizon then $Di = Dec_{sig}$

If $F > 0$ and the significator is below the horizon then $Di = -Dec_{sig}$ i.e. we take for Di the declination of the significator with the reverse sign.

If $F < 0$ and the significator is above the horizon then $Di = -Dec_{sig}$

If $F < 0$ and the significator is below the horizon then $Di = Dec_{sig}$

After we find out the ZD_{sig} , then we can find its Pole.

Pole_{sig}

The Pole of the significator we find with the simple formula:

$$\text{Pole}_{sig} = \text{Arcsin} [\{ \text{Sin} (\text{F}) * \text{Sin} (\text{ZD}_{sig}) \}]$$

F is the geo. lat. of the birthplace. May be + or -.

The Pole should be always the same sign as the sign of the geo. latitude of the birthplace and always less in absolute value.

The closer the significator to the radical horizon, the greater the absolute value of its Pole and the closer to the geo. lat. of the birthplace, though always less in absolute value.

The closer the significator to the Meridian, the lesser the value of its Pole in absolute value and the closer to zero.

RAMC_{P sig}

The regio RAMC of the significator

1. If the significator is eastern in the radix then,

The regio RAMC of the significator = RA of the significator - DSA of the sig. under its own Pole.
Or RAMCsig. = RAsig. - DSAsig. under sig. pole.

The DSA is for day semi-arc.

We can notate the DSA of the Sun under Sun's Pole with a double subscript, like:

$DSA_{\odot P_{\odot}} = \text{DSA of the Sun under the Pole of the Sun.}$

Here, the first subscript, \odot , relates to the planet or point whose DSA is in question. The second subscript, P_{\odot} , shows the planet under whose Pole this is being calculated. If there is no second transcript, this means that the DSA is calculated under the Pole of the birthplace i.e. for the geo. lat. of the birthplace.

So,

$$RAMC_{P_{\odot}} = RA_{\odot} - DSA_{\odot P_{\odot}}$$

For the radix,

$$DSAsig. = 90 + ADsig. \text{ OR}$$

$$DSA_{\odot} = 90 + AD_{\odot}$$

Correspondingly in the regio Sun chart,

$$DSAsig. \text{ under sig. pole} = 90 + ADsig. \text{ under sig pole. OR}$$

$$DSA_{\odot P_{\odot}} = 90 + AD_{\odot P_{\odot}}$$

How do we calculate the $AD_{\odot P_{\odot}}$?

For any point in the radix,

$$AD_{\text{point}} = \arcsin [\text{Tan(Declination of point.)} * \text{Tan (F) }].$$

F = geographic latitude of the birthplace.

Correspondingly in the regio chart under the Pole of the Sun (as the significator),

$$AD_{\odot P_{\odot}} = \arcsin [\text{Tan(Declination of } \odot \text{.)} * \text{Tan (Pole }_{\odot} \text{) }].$$

2. If the significator is western in the radix then,

$$RAMC_{P_{\odot}} = RA_{\odot} + DSA_{\odot P_{\odot}}$$

Now, we can try to compute the ZD_{\odot} , $Pole_{\odot}$ and $RAMC_{P_{\odot}}$ for the example chart used by William Lilly.

First we can peep for their values in the computer program 'Placidus'.

Look at Figure 10.

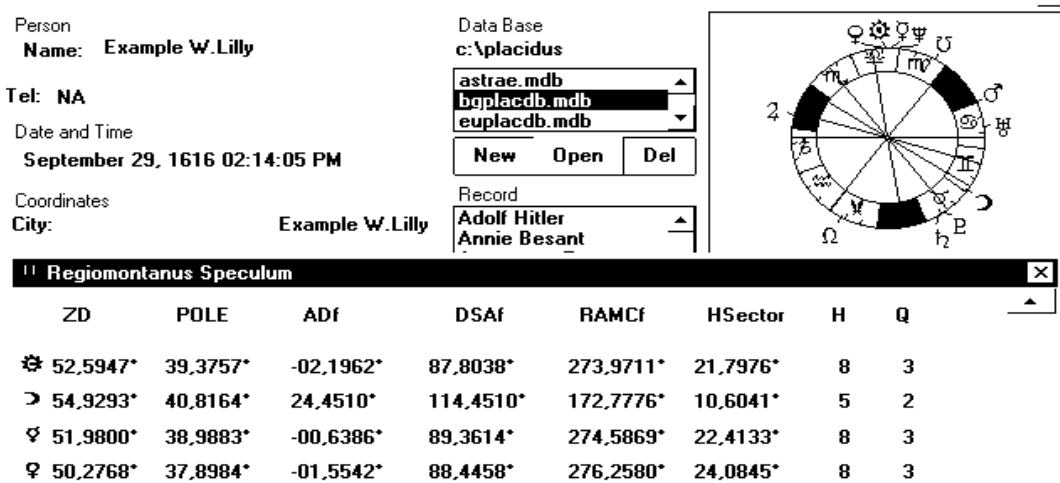


FIGURE 10, From the computer program 'Placidus' version 3.0

For those who have not read my first article about Lilly in 'Considerations', I will give again the data for the computer-reconstructed example chart of Lilly: 29 September, 1616 (Gregorian) UT = 2:14:05 PM, Geo. Lat. = 53° N. Geo. Long. = 00°, RAMC = 222° 10', MC = 14° 39' m, ASC = 6° 41' z .

We see from the Regio Speculum that the $ZD_{\odot} = 52.5947^{\circ}$. $Pole_{\odot} = 39.3757^{\circ}$ and $RAMC_{P_{\odot}} = 273.9711^{\circ}$, $AD_{\odot P_{\odot}} = -2.1962^{\circ}$, $DSA_{\odot P_{\odot}} = 87.8038^{\circ}$

From the radix we will need also:

F (geo lat. of birthplace) = +53°,

$RAMC = 222.17357^{\circ}$,

$RAIC = RAMC + 180 = 222.17357^{\circ} + 180^{\circ} = 42.17357^{\circ}$,

$RA_{\odot} = 186.1673^{\circ}$,

$Dec_{\odot} = DECLINATION_{\odot} = -2.6734^{\circ}$.

Now, we will try to compute by hand.

First the ZD_{\odot} .

$$ZD_{\odot} = 90 - \text{Atan} \left[\frac{\{ \tan(Di) * \sin(Fi) - \cos(Fi) * \cos(MDi_{\odot}) \}}{\{ \sin(MDi_{\odot}) \}} \right]$$

$$Fi = \text{Abs}(F) = 53.00^{\circ}$$

The significator, the Sun, is above the horizon, ergo:

$$MDi_{\odot} = LMD_{\odot} = RA_{\odot} - RAIC = 186.1673^{\circ} - 42.17357^{\circ} = 143.99373^{\circ}$$

$F > 0$ and The significator, the Sun, is above the horizon, ergo:

$$Di = Dec_{\odot} = -2.6734^{\circ}$$

Now, after we substitute in

$$ZD_{\odot} = 90 - \text{Atan} [\{ \text{Tan}(\text{Di}) * \text{Sin} (\text{Fi}) - \text{Cos} (\text{Fi}) * \text{Cos} (\text{MDi}_{\odot}) \} / \{ \text{Sin} (\text{MDi}_{\odot}) \}]$$

we get:

$$ZD_{\odot} = 90 - \text{Atan} [\{ \text{Tan}(-2.67^{\circ}) * \text{Sin} (53^{\circ}) - \text{Cos} (53^{\circ}) * \text{Cos} (143.99^{\circ}) \} / \{ \text{Sin} (143.99^{\circ}) \}]$$

$$ZD_{\odot} = 90 - \text{Atan} [\{ -0.046634 * 0.79863 - 0.60181 * -0.808914 \} / \{ 0.58792 \}]$$

$$ZD_{\odot} = 90 - \text{Atan} [\{ -0.0372433 + 0.4868125 \} / \{ 0.58792 \}]$$

$$ZD_{\odot} = 90 - \text{Atan} [\{ 0.449569 \} / \{ 0.58792 \}]$$

$$ZD_{\odot} = 90 - \text{Atan} [0.764677566]$$

$$ZD_{\odot} = 90 - 37.404332^{\circ}$$

$$ZD_{\odot} = 52.595667^{\circ}.$$

The value from the computer is 52.5947° . We are pretty close and OK, having in mind the rounding errors.

Now the Pole_⊙.

$$\text{Pole}_{\text{sig}} = \text{Arcsin} [\{ \text{Sin} (\text{F}) * \text{Sin} (\text{ZD}_{\text{sig}}) \}]$$

$$\text{Pole}_{\odot} = \text{Arcsin} [\{ \text{Sin} (\text{F}) * \text{Sin} (\text{ZD}_{\odot}) \}]$$

$$\text{Pole}_{\odot} = \text{Arcsin} [\{ \text{Sin} (53^{\circ}) * \text{Sin} (52.595667^{\circ}) \}]$$

$$\text{Pole}_{\odot} = \text{Arcsin} [\{ 0.798630 * 0.794368 \}]$$

$$\text{Pole}_{\odot} = \text{Arcsin} [0.634406116]$$

$$\text{Pole}_{\odot} = 39.375951^{\circ}$$

The value from the computer is 39.3757° . We are now even closer.

Now the RAMC_{P⊙}.

The significator, the Sun is western in the radix, ergo:

$$\text{RAMC}_{P_{\odot}} = \text{RA}_{\odot} + \text{DSA}_{\odot P_{\odot}}$$

$$\text{RAMC}_{P_{\odot}} = 186.1673^{\circ} + \text{DSA}_{\odot P_{\odot}}$$

$$\text{DSA}_{\odot P_{\odot}} = 90 + \text{AD}_{\odot P_{\odot}}$$

$$\begin{aligned} \text{AD}_{\odot P_{\odot}} &= \arcsin [\text{Tan}(\text{Dec}_{\odot}) * \text{Tan} (\text{Pole}_{\odot})] = \arcsin [\text{Tan}(-2.6734^{\circ}) * \text{Tan} (39.375951^{\circ})] = \\ &= \arcsin [-0.0466935 * 0.820706568] = \arcsin [-0.038321662] = -2.1962^{\circ}. \quad \text{The same as from the computer.} \end{aligned}$$

$$\text{Ergo, DSA}_{\odot P_{\odot}} = 90 + -2.1962^{\circ} = 87.8038^{\circ}. \quad \text{Again the same as from the computer.}$$

$$\text{Ergo, RAMC}_{P_{\odot}} = 186.1673^{\circ} + 87.8038^{\circ} = 273.9711^{\circ}. \quad \text{Same as from computer.}$$

Now we know that Pole $\odot = 39.375951^\circ$.

This is the geographic latitude for the place on earth whose western horizon coincided with the house circle through the Sun in the radix. And this: at the moment of birth.

GEOGRAPHIC LONGITUDE OF THE REGIO-SUN-POLE CHART

We know that RAMC of any chart is the RAMC of the celestial Meridian of the chart.

In this point of the calculations we know the RAMC of the birth chart, the RAMC of the Regio-Sun-Pole chart and the geographic longitude of the birth place. It will be no problem to find out the geo. long. for the new regio-sun-pole chart.

We know:

RAMC of birth chart = 222deg. 10 min.

RAMC of regio-sun-pole chart = 273 deg. 58 min.

Geo. Long. of birthplace = 00 deg. 00 min.

Geo. Long. of regio-sun-pole chart = ???

We know that the radical Sun is between culmination and setting i.e. in its 3rd quadrant i.e. it is western and above the horizon.

Imagine that we can travel instantly over the earth's globe. If in the moment of birth we first go down to the geo. lat. for the new regio-sun-pole chart (39.375 N) and then start moving with infinite speed to the East, we will see how the Sun gets closer and closer to the western horizon until it finally is exactly on the horizon line.

This will be the fictional new place of birth for the regio-sun-pole chart.

Geographically, it will be so many degrees to the East from the radical birth place as the difference between its RAMC and the radical RAMC.

We know both and we can find the Absolute Value of the difference (DRAMC):

DRAMC = RAMC(of regio Sun-Pole chart) - RAMC of radical chart =

= AbsoluteValue(273d. 58m. - 222d. 10m). = 51 degrees 48 min.

Since in our case,

Geo. Long. of regio-sun-pole chart = Geo. Long. of birthplace - DRAMC

Geo. Long. of regio-sun-pole chart = 00 d. 00 min. - 51 d. 48 min. = -51 d. 48 min.

This is 51d. 48 m. East.

We will designate the eastern geo. longitudes from 0 to -180 and the western from 0 to +180.

The general algorithm to find out the new geo. longitude (for the regio chart under certain significator) is the following:

1. If the significator is eastern and below the horizon (1st quadrant) then,
We have to move eastward to get the Sun exactly on the eastern horizon. Ergo,
New Geo. Long = Geo. Long. of birthplace - DRAMC
2. If the significator is western and below the horizon (2nd quadrant) then,
We have to move westward to get the Sun exactly on the western horizon. Ergo,
New Geo. Long = Geo. Long. of birthplace + DRAMC
3. If the significator is western and above the horizon (3rd quadrant) then,
We have to move eastward to get the Sun exactly on the western horizon. Ergo,
New Geo. Long = Geo. Long. of birthplace - DRAMC
4. If the significator is eastern and above the horizon (4th quadrant) then,

We have to move westward to get the Sun exactly on the eastern horizon. Ergo,
 New Geo. Long = Geo. Long. of birthplace + DRAMC

CAVEATS: We should be careful with the DRAMC. If e.g. RAMC is 359 and the new
 RAMC is 2 then DRAMC will be 3 and NOT 357. We take the shortest arc.

Also, we should be careful with the new geo. long.

If geo.long. of the birth place is -170 and DRAMC is 20 and if we are in case 1, then:
 New Geo. Long = Geo. Long. of birthplace - DRAMC =
 New Geo. Long = -170 - 20 = -190. However, such thing does not exist. This is equal to + 170 or
 170 degrees West.

Let us try to produce the new horoscope. For the same time as the radix, but for these new
 'regio-Sun-pole' geo. lat. and long.

The data for this Regio-Sun-Pole horoscope will be:

29 September, 1616 (Gregorian)

UT = 2:14:05 PM, Geo. Lat. = 39° 22' N., Geo. Long.= 51° 48' East, RAMC = 273.97°.

If we have computed all OK, then in this chart the Sun should be exactly on the descendant (western horizon).

And here is the result:

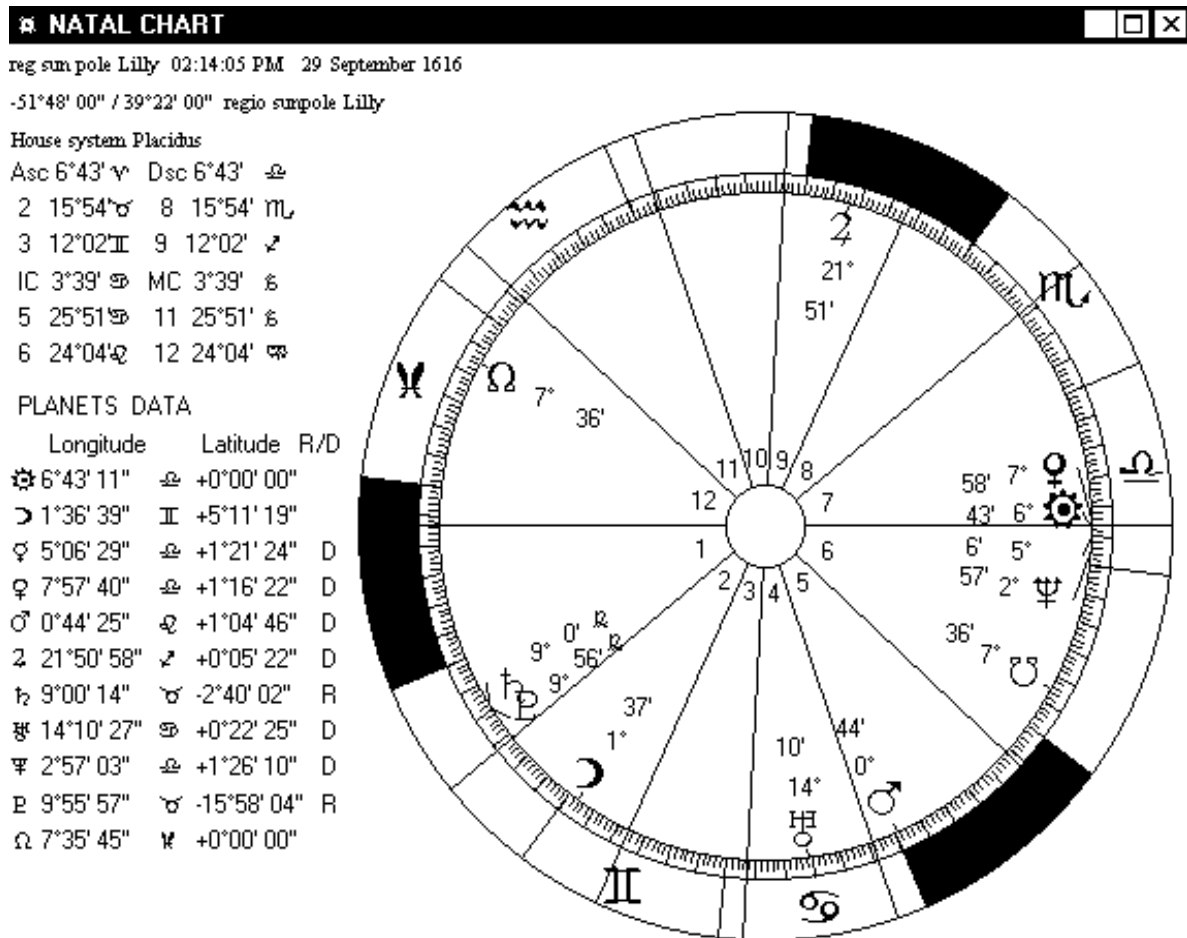


FIGURE 11

The Sun is exactly on the western horizon. The RAMC = 273.97°
 From the computer program 'Placidus' version 3.0

Now, let us see how will both, the radix and the Regio-Sun-Pole horoscope look in 3D.

Look at figures 11 and 12, keeping in mind that the Zenith of the 3D chart always coincides with the birth-place.



FIGURE 12

The radical chart with the celestial sphere projected unto the earth-globe. The radical Sun is western, in the 8th regio house.

The zenith which coincides always with the birthplace projects itself in England where the native is born.

Look carefully at the house circle through the Sun and where exactly it is being projected unto the earth-globe.



FIGURE 13

The Regio Sun-Pole chart with the celestial sphere projected unto the earth-globe. The signficator here, the Sun is exactly on the western horizon.

The zenith here projects itself somewhere in the Caspian Sea. This place is the point on the earth-globe whose horizon coincides perfectly with the house circle through the Sun in the radix. From the computer program 'Placidus' version 3.0

Now we can compute the regio primary directions .

We know everything about the Regio-Sun-Pole Chart and we will work on it.

To compute the direction of Jupiter to the western horizon in this chart is the same as to compute the regio directions of Jupiter to the house circle through the Sun in the radix. Why? Because the western horizon in this Regio-Sun-Pole chart coincides with the house circle through the Sun in the radix.

The promissor is Jupiter, the significator is the Sun i.e. the western horizon of the new chart. The notation will be: **REGIO Mundo 2 d. → ☼**. or just **M. 2 d. → ☼**.

Since the direction is to the western horizon, we have:

$$DA = OD_2 - OD_{desc}.$$

$$OD_2 = RA_2 + AD_2.$$

$$OD_{desc} = RAMC - 90.$$

We should never forget that we are working in a new chart. To remind ourselves, we can use another notation like:

$$DA = OD_{2P_{☼}} - OD_{☼P_{☼}} \quad (OD_{2P_{☼}} \text{ means OD of Jupiter under the Pole of the Sun })$$

$$OD_{2P_{☼}} = RA_2 + AD_{2P_{☼}} \quad (AD_{2P_{☼}} \text{ means AD of Jupiter under the Pole of the Sun })$$

$$OD_{☼P_{☼}} = RAMC_{P_{☼}} - 90. \quad (OD_{☼P_{☼}} \text{ means OD of the Sun under the Pole of the Sun })$$

$$(RAMC_{P_{☼}} \text{ means RAMC of the chart under the Pole of the Sun })$$

We will use the $RA_2 = 261.13^\circ$, $Dec_2 = -23.151^\circ$ and the already computed by hand $Pole_{☼} = 39.3759^\circ$ and $RAMC_{P_{☼}} = 273.9711^\circ$.

$$\text{We have } OD_{☼P_{☼}} = RAMC_{P_{☼}} - 90.$$

$$\text{Ergo, } OD_{☼P_{☼}} = 273.9711^\circ - 90 = \mathbf{183.9711^\circ}.$$

From

$$AD_{prom} = \arcsin [\tan(\text{Declination of prom.}) * \tan (F)],$$

$$AD_{2P_{☼}} = \arcsin [\tan(Dec_2) * \tan (Pole_{☼})],$$

$$AD_{2P_{☼}} = \arcsin [\tan(-23.151^\circ) * \tan (39.3759^\circ)],$$

$$AD_{2P_{☼}} = \arcsin [-0.4275886^\circ * 0.820705^\circ],$$

$$AD_{2P_{☼}} = \arcsin [-0.350924102^\circ],$$

$$AD_{2P_{☼}} = -20.543847^\circ .$$

$$\text{From } OD_{2P_{☼}} = RA_2 + AD_{2P_{☼}}, OD_{2P_{☼}} = 261.13^\circ + -20.543847^\circ = \mathbf{240.58615^\circ}.$$

In the end, the Directional Arc of M. 2 d. → ☼ = DA = OD_{2P_☼} - OD_{☼P_☼} = 240.58615° - 183.9711° = 56.615053° . The value from the computer is the same.

This was my explanation of the William's Lilly (Regiomontani) primaries in a nutshell.

MUNDO REGIOMONTANIAN PRIMARIES

The just explained regio primaries were practiced historically. To repeat, we choose a planet for the significator. (Non-planetary significators were only the Pars Fortunae and the boundaries of the regio houses.) Then we pass a house circle through the body of the planet (not through its zodiacal projection). Then we direct various points in the maner described to this house circle. These points may be bodies of planets and stars (mundo conjunction and oppositions) or their zodiacal projections (zodiacal conjunction and oppositions) or zodiacal points of aspects, zodiacal parallels, antiscia, contra-antiscia, terms... (zodiacal aspectual).

Lilly directed all zodiacal aspects with latitude zero. Only the antiscia and contra-antiscia directed he both with a latitude and with latitude zero. (See my article about Lilly in the March 1999 issue of 'The Primary Directions' or in the Feb.1999 issue of 'Considerations')

Many astrologers as Regiomontanus, Maginus, Argolus and others directed the zodiacal aspects with certain latitude. This system is known as the Blanchinus (somewhere: Bianchinus) system. They ascribed a latitude to the aspects. For example the trine of Venus would have a latitude equal to half the latitude of Venus with the reverse sign. Its sextile: half of the latitude with the same sign. Its square would have zero latitude.

The same did Placidus and Morin, but their systems, which were different from each other, were more complex.

These were no mundo aspectual. These were zodiacal aspectual with a latitude. Somewhere they are mentioned as 'field plane primaries'.

This was what was practiced historically.

Historically, only mundo conjunctions and oppositions between planets and planets and between planets and stars has been practiced. No more and no less.

We owe to Jerry Makransky, a USA born mathematician and astrologer, living now in his rancho in Guatemala, the insight that there are also MUNDO primaries in the regio system. Mundo parallels, mundo trines, squares, sextiles, mundo rapt-parallels and so on. I would like to underline here the fact, that these mundo regio directions were never practiced. No person calculated them except Jerry. This, of course, does not relate to their possible efficiency. They may be efficient or may be not efficient. The practice will tell. The algorithm for these truely mundo regio interplanetary directions is somewhat more complex and I , now for now, do not have the space and time to give it here.

OTHER UNDER-THE-POLE DIRECTIONAL SYSTEMS

The other under the Pole kinds of interplanetary primaries as the Topocentric and the Placidian under the Pole (knowns also as KUEHR's primaries) have absolutely the same algorithm; the difference being only in the way the Pole_{sig} and RAMC_{sig} are computed.

COMMENTS OF THE AUTHOR

I gave here my algorithm for the regio interplanetary primaries because of the new-grown interest among the astrologers in the subject of the primaries.

I explained here the algorithm for those who would like to know the facts and the Truth and who want to research further into the practice of the ancient, medieval and renaissance authors.

In this respect I would like also to point out that many publishers of W.Lilly and Henry Coley ommit their voluminous sections on the primaries. Whoever wants to order their complete books, should point this out and demand the authentic, unabridged editions or facsimile copies.

In the end, whoever wants more information about the primaries, is welcomed to contact me.

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