Using an Ephemeris

Todd Carnes

1 Introduction

When I first began studying astrology there really wasn't such a thing as "home" computers. Yes, there were people with a lot of money who had them, but by and large the only places you saw computers was in big schools, big businesses, etc.

How did astrologers create charts before there were astrology programs? The answer - with pencil, paper and their brains (usually with a little help from various tables and reference books).

I'm going to show you how to make a chart - old school. In this first post we're going to concentrate on finding the planetery positions. As an example, we'll use my son's birth data, because I know it is correct. I was there and timed it myself.

11 September 2005 @ 12:46pm EDT (GMT-4)
Chattanooga, TN (35°02'44"N, 85°18'35"W)

Before you start, you'll need pencil, paper and an ephemeris. An ephemeris is a list of planetary positions at either midnight or noon each day. If you do not already own an ephemeris, Astrodienst has 6000 years worth of ephemeris files free for the download from AstroDienst.

Naturally, you'll want to grab the file for 2005 in order to follow along with this example.

2 How It's Done

Step 1: Convert local civil time to Universal Time. Though not "strictly" correct, for our purposes Local Time(with Time Zone Correction) = GMT = UT will work just fine. (Using the 24-hour clock will make your calculations

easier.) If you are correcting for a location that is west of Greenwich, you should add the time zone correction (in this case 4). Otherwise, you should subtract the time zone from the birth time.

12:46 + 04:00 = 16:46

Step 2: Now, to make future calculations easier, convert the birth time to its decimal equivalent.

$$\begin{aligned} DecimalHours &= Hours + \frac{Minutes}{60} \\ &= 16 + \frac{46}{60} \\ &= 16 + 0.7666667 \\ &= 16.7666667 \end{aligned}$$

Step 3: Now, get out the ephemeris page for September 2005 and look down the ”day” column until you find the row for the 11th. Copy the Sun’s position onto your paper.

11 Sep 2005 @ 00:00 UT 18°21’46”♍

Step 4: Under that write down the time for the chart that you are interested in creating.

11 Sep 2005 @ 00:00 UT 18°21’46”♍
11 Sep 2005 @ 16:46 UT

Step 5: Find the Sun’s position on the next day and write it down as well.

11 Sep 2005 @ 00:00 UT 18°21’46”♍
11 Sep 2005 @ 16:46 UT
12 Sep 2005 @ 00:00 UT 19°20’07”♍

Now you have all you need to interpolate the Sun’s position on 11 Sep 2005 @ 16:46 UT. Don’t let the word “interpolate” scare you. All we’re really doing is working out a simple proportion.

Step 6: Subtract the Sun’s position on 11 Sep 2005 @ 00:00 UT from its position on 12 Sep 2005 @ 00:00 UT to find out how far it travelled in 24 hours.

19°20’07”♍
18°21’46”♍
——————
00°58’21” = 58.35°

Step 7: Now set up the proportion and solve for how much the Sun has moved between 11 Sep @ 00:00 UT and 11 Sep @ 16:46 UT.

Let...

A =Time Since 00:00 UT
B = Distance Traveled By The Sun By 16:46
C = 24 Hours
D = Sun's rate of movement

Then...

$$\frac{A}{C} = \frac{B}{D}$$

So...

$$\begin{aligned} B &= \frac{A * D}{C} \\ B &= \frac{16.7666667 * 58.35}{24} \\ B &= 40.76395833 \\ B &= 40'46'' \end{aligned}$$

Step 8: Now add the Sun's motion you just found to its position on 11 Sep 2005 @ 00:00. This is the Sun's position at the time my son was born.

18°21'07"♍
00°40'46"
——————
19°02'32"♍

Step 9: Repeat steps 3 through 8 for the other planets. You should end up with the following:

Planet	Distance / Day	Interpolated Position
☉	00°58'21"	19°02'32"♍
☽	12°44'00"	21°07'44"♐
☿	01°55'00"	13°12'20"♍
♀	00°01'54"	00°01'54"♏
♂	00°16'00"	20°33'11"♉
♃	00°12'00"	20°35'23"♎
♄	00°06'00"	07°01'12"♌

3 Conclusion

Ok, but is this good enough for actual use in astrology?

Today's astrologer is used to using computer programs that spit out planetary positions down to the micro-arcsecond of "accuracy", but, quite frankly, if you're trying to use positions down to less than a minute accuracy, you are wasting your time. Astronomers are constantly working to increase the accuracy of their ephemerides, but there is still a lot of work to go on some of them, especially for the Moon.

The Swiss Ephemeris is considered, and rightly so, to be extremely accurate and is used in nearly all modern astrology software for that reason. It is based on the DE406 ephemeris from NASA' s Jet Propulsion Laboratory. Back when the Swiss Ephemeris was first created, DE406 was the best there was. No one had a better ephemeris. In fact, DE406 is still pretty much the standard long range ephemeris to which all other ephemerides are compared. However, DE406, and by extension Swiss Ephemeris, are not the most accurate ephemerides available today. There have been many advances in the field and even JPL has better short range ephemerides now.

With this in mind, let us compare our results to the Swiss Ephemeris and JPL's new Horizons System...

Planet	Our Positions	Swiss Ephemeris	Horizons
☉	19°02'32"♍	19°02'32"♍	18°52'56"♍
☽	21°07'44"♐	21°07'44"♐	19°45'23"♐
☿	13°12'20"♍	13°12'24"♍	12°53'35"♍
♀	00°01'54"♏	00°01'33"♏	29°50'04"♎
♂	20°33'11"♉	20°32'31"♉	20°29'42"♉
♃	20°35'23"♎	20°35'07"♎	20°33'09"♎
♄	07°01'12"♌	07°01'25"♌	07°00'21"♌

Not bad at all, really.Notice that both we and the Swiss Ephemeris got the Moon wrong by 1/2° to 1° and we both got the sign wrong for Venus, since it was so close to the cusp to begin with.