

Primary Directions

A Predictive Tool of Astrology

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1. A FAST AND EASY METHOD

1.1 Introduction

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Earth's axial rotation gives rise to **primary motion**. From the point of view of an earthbound observer, primary motion is perceived as Earth remaining at rest while the surrounding celestial sphere and everything on it (including the zodiacal belt) rotate about Earth's line of poles. It is useful here to imagine two celestial spheres that occupy the same volume of space – the active sphere and the fixed sphere. The **active sphere** is the celestial sphere undergoing its usual axial rotation according to primary motion. The **fixed sphere** is the celestial sphere as it appeared at a specific time of interest, which could be a birth time, a solar-return time, or a lunar-return time. Primary motion moves the active sphere across the stationary fixed sphere.

From the point of view of an earthbound observer, primary motion causes the zodiacal belt (with the planets attached to it) to rotate backward through fixed houses of the local sky. A **primary direction** is the process of primary motion directing a given point of the active sphere backward through the houses toward a given point of the fixed sphere.

A primary direction results in an **arc of direction**, which is the circular path along which primary motion has directed the active point (which lies in the active sphere) toward the fixed point (which lies in the fixed sphere). A primary direction is associated with a predicted event, and the angular length of the associated arc of direction is related to the time when the event is predicted to occur.

For the moment, let's limit our attention to primary directions that are related to a natal chart. In order to convert the angular length of the arc of direction into the time when the predicted event occurs, we need a time-key. For a natal chart, the **Ptolemy time-key** (named after the Hellenistic astrologer Claudius Ptolemy) is the notion that one degree of Earth's axial rotation corresponds to one sidereal year of the native's age. A **sidereal year** is the time taken by Earth to complete its orbit about Sun relative to the fixed stars, and it consists of 365 mean solar days, 6 hours, 9 minutes, and 9.8 seconds (which is about 365.256363 mean solar days). One degree of Earth's axial rotation results in one degree of the arc of direction, and so the number of degrees in the arc of direction is the same as the number of sidereal years in the native's age.

A **sidereal day** is the time taken by Earth to complete a single rotation relative to the fixed stars, and it consists of approximately 23 hours, 56 minutes, and 4.0905 seconds (which is about 1436.068175 minutes). As Earth makes its daily 360° rotation about its axis, it rotates at an angular rate of about

$$\frac{360 \text{ deg}}{1436.068175 \text{ min}} \approx \frac{1 \text{ deg}}{3.98907826 \text{ min}},$$

and so it takes Earth about 3.98907826 minutes to longitudinally rotate by 01°. Therefore, according to the Ptolemy time-key, every addition of about 3.98907826 minutes to the native's birth time symbolically advances the natal chart by one sidereal year of age.

It follows that the native's life at A sidereal years of age is revealed by what is happening astrologically when they are about $(4 \times A)$ minutes old. For example, the native's life at age 90 is revealed by an astrological chart that is cast for when the native is about 360 minutes old.

TABLE 1.1: Average longitudinal angular speeds

Planet	Angular Speed
Saturn	00° 02' 01" per day
Jupiter	00° 04' 59" per day
Mars	00° 31' 27" per day
Sun	00° 59' 08" per day
Venus	01° 12' 00" per day
Mercury	01° 23' 00" per day
Moon	13° 10' 35" per day

If we take age 90 to be the human life span, then we can examine the native's entire life based on what is happening astrologically during the first 360 minutes (or 6 hours) after their birth. TABLE 1.1 presents the average longitudinal angular speed of each classical planet as it undergoes **secondary motion** (that is, apparent movement along the zodiac) along the celestial sphere. From this table, we see that each planet (apart from Moon) does not move very much along the zodiac during a 6-hour time period, and so we may ignore secondary motion and view primary motion as causing the zodiacal belt (with the planets attached to it) to rotate backward through fixed houses of the local sky. During the 6-hour time period after birth, primary motion directs the planets into major aspects with the angles (that is, the Ascendant, the Descendant, the Midheaven, and the Imum Coeli). These major planet-to-angle aspects are the results of primary directions.

Here is a fast and easy method for dealing with the most important natal primary directions:

Technique #PD1: In order to examine the native's life around A sidereal years of age, cast symbolic charts for about $(3.98907826 \times A)$ minutes before and after the birth time. In these symbolic charts, look for major planet-to-angle aspects, taking the margin of inexactness to be about 01°. These major aspects are primary directions that each predict an event to occur in the native's life around A sidereal years of age.

The primary directions that are shown in the pre-birth symbolic chart are said to be **neo-converse**. The primary directions that are shown in the post-birth symbolic chart are said to be **direct**.

Technique #PD1 allows us to deal with primary directions by casting pre-birth and post-birth symbolic charts instead of by determining pertinent arcs of direction. The essence of this fast and easy method is presented by astrologer Anthony Louis in his blog post *Fast and Easy Primary Directions* (20 July 2019).

FIGURE 1.1 presents the natal chart of Martin Luther King Jr. according to the sidereal zodiac. The *ayanāṃśa* here is $22^{\circ} 51' 05''$ according to True Chitrā 0° Libra. Note that Atlanta was in the Central Time Zone until legislation switched it to the Eastern Time Zone on Friday, 21 March 1941.

FIGURE 1.1: King’s natal chart

(PC12) 15:45 WS12 PI	(PC11) 10:33 Ve 17:42 Mo 26:44 WS11 AQ	Su 02:16 (PC10) 05:21 Me 18:54 WS10 CP	Sa 02:30 (PC9) 10:33 WS9 SA	(PC8) 15:45 WS8 SC
Ju 08:19 (PC1) 20:57 WS1 AR	Martin Luther King Jr. Natal Chart (Sidereal Zodiac) Tuesday, 15 JAN 1929 at 12:00 CST Atlanta, GA ($33^{\circ} 45' N$; $84^{\circ} 23' W$)			(PC7) 20:57 WS7 LI
(PC2) 15:45 Ma 29:02 R WS2 TA	(PC3) 10:33 WS3 GE	(PC4) 05:21 WS4 CN	(PC5) 10:33 WS5 LE	(PC6) 15:45 WS6 VI

In this chapter, we will use natal primary directions together with hindsight in order to examine three particular events in the life of Martin Luther King Jr. These events are: Event #K1 (King’s wedding day in 1953), Event #K2 (King’s DC speech in 1963), and Event #K3 (King’s passing in 1968).

IMPORTANT COMMENTS: In this book, we will be using the sidereal zodiac, Porphyry houses primarily, and whole-sign houses secondarily. Regarding the Porphyry house system, we will be using the denotation ‘PH n ’ to mean ‘Porphyry House n ’ and the denotation ‘PC n ’ to refer to its cusp. Note that the angles are PC1 (the Ascendant), PC4 (the Imum Coeli), PC7 (the Descendant), and PC10 (the Midheaven). Regarding the whole-sign house system, we will be using the denotation ‘WS n ’ to mean ‘whole-sign House n ’.

1.2 Event #K1: King’s wedding day in 1953

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On Thursday, 18 June 1953, Martin Luther King Jr. married Coretta Scott, who would later become a civil-rights leader in her own right. By this date, King had lived through 6 leap days (namely, those of 1932, 1936, 1940, 1944, 1948, and 1952). It follows that on his wedding day, King’s sidereal age was about

$$\frac{[(6 \times 366) + (18 \times 365) + 16 + 28 + 31 + 30 + 31 + 18] \text{ days}}{365.256363 \text{ days/yr}} \approx 24.42120 \text{ yrs.}$$

On applying Technique #PD1 for $A \approx 24.42120$, we get

$$(3.98907826 \times A) \text{ min} \approx 97.41808 \text{ min} \approx 1.62363 \text{ hr} \\ \approx 1 \text{ hr} + 37 \text{ min} + 25 \text{ sec}$$

as the chart-change term with respect to the natal chart (FIGURE 1.1).

THE PRE-BIRTH CHART

For the pre-birth symbolic chart (FIGURE 1.2a), we subtract the chart-change term (1 hour, 37 minutes, and 25 seconds) from King's birth time of 12:00 pm, CST, thereby getting 10:22:35 am, CST. In this symbolic chart, we are looking for neo-converse primary directions that are associated with King's life around age 24. In this regard, we find nothing.

FIGURE 1.2a: Pre-birth symbolic chart

(PC12) 14:57 Ve 17:37 Mo 25:51 WS12 AQ	Su 02:12 (PC11) 13:45 Me 18:48 WS11 CP	Sa 02:29 (PC10) 12:33 WS10 SA	(PC9) 13:45 WS9 SC	(PC8) 14:57 WS8 LI
(PC1) 16:09 WS1 PI	Martin Luther King Jr. (Sidereal) Pre-Birth Chart for Thursday, 18 JUN 1953 Tuesday, 15 JAN 1929 at 10:22:35 CST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 16:09 WS7 VI
Ju 08:18 (PC2) 14:57 WS2 AR	(PC3) 13:45 Ma 29:03 R WS3 TA	(PC4) 12:33 WS4 GE	(PC5) 13:45 WS5 CN	(PC6) 14:57 WS6 LE

Let's move on!

THE POST-BIRTH CHART

For the post-birth symbolic chart (FIGURE 1.2b), we add the chart-change term (1 hour, 37 minutes, and 25 seconds) to King's birth time of 12:00 pm, CST, thereby getting 01:37:25 pm, CST. In this symbolic chart, we are looking for direct primary directions that are associated with King's life around age 24. In this regard, we find a Mercury-PC1 trine (or equivalently, a Mercury-PC7 sextile) and a Mars-PC10 trine (or equivalently, a Mars-PC4 sextile).

FIGURE 1.2b: Post-birth symbolic chart

Ju 08:19 (PC12) 12:40 WS12 AR	(PC11) 06:05 WS11 PI	Ve 17:46 Mo 27:36 WS10 AQ	Su 02:21 (PC9) 06:05 Me 19:00 (PC10) 29:31 WS9 CP	Sa 02:30 (PC8) 12:40 WS8 SA
(PC1) 19:14 Ma 29:02 R WS1 TA	Martin Luther King Jr. (Sidereal) Post-Birth Chart for Thursday, 18 JUN 1953 Tuesday, 15 JAN 1929 at 13:37:25 CST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 19:14 WS7 SC
(PC2) 12:40 WS2 GE	(PC3) 06:05 (PC4) 29:31 WS3 CN	WS4 LE	(PC5) 06:05 WS5 VI	(PC6) 12:40 WS6 LI

In the post-birth symbolic chart, the Mars-PC10 trine is a direct primary direction that may refer to King's wedding. For natal Mars (in FIGURE 1.1), we find the following:

[Natal] Mars in PH2: Mars is the lord of PH1 (the native's well-being) and PH8 (an ending that facilitates transformation), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH2 and Taurus WS2, both houses referring to supportive persons or things. At her best, feminine Taurus is doggedly determined to make tangible progress in achieving a better quality of life. In light of the foregoing, Mars refers to King as enthusiastically engaging in self-betterment.

For post-birth Mars (in FIGURE 1.2b), we find the following:

[Post-birth] Mars in PH1: Mars is the lord of PH7 (marriage) and PH12 (trying situations), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH1 and Taurus WS1, both houses referring to the native's well-being. At her best, feminine Taurus is doggedly determined to make tangible progress in achieving a better quality of life. In light of the foregoing, Mars refers to King as enthusiastically engaging in self-betterment by getting married.

PC4 refers to the native's comfort and security, and the Mars-PC4 sextile refers to Mars as being helpful to PC4. PC10 refers to achieving something significant and to gaining prestige, and the Mars-PC10 trine refers to Mars as being helpful to PC10. The equivalence of the Mars-PC4 sextile and the Mars-PC10 trine indicates that King's marriage is a significant achievement that brings comfort, security, and prestige.

By trial and error, we find that the Mars-PC10 trine becomes exact at about 01:35:31 pm, CST (about 13.59194 *hr* CST) on Tuesday, 15 January 1929 (King's birth date). From 12:00 pm, CST (King's birth time) to 01:35:31 pm, CST, the time difference is

$$\text{elapsed time} = 1 \text{ hr} + 35 \text{ min} + 31 \text{ sec} \approx 95.51667 \text{ min} .$$

On making use of the Ptolemy time-key, this time difference corresponds to an age difference of

$$\begin{aligned} \text{elapsed age} &\approx \frac{1 \text{ yr of age}}{3.98907826 \text{ min}} \times 95.51667 \text{ min} \approx 23.94455 \text{ yrs} \\ &= 23 \text{ yrs} + \left(0.94455 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 23 \text{ yrs} + 345.00290 \text{ days} , \end{aligned}$$

and so the direct Mars-PC10 trine predicts an event to occur about 345 days after Tuesday, 15 January 1952 (King's 23rd birthday), which is on Thursday, 25 December 1952 (Day 360 of 1952). This prediction date is about 6 months before the date of King's wedding (Thursday, 18 June 1953).

1.3 Event #K2: King's DC speech in 1963

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On Wednesday, 28 August 1963, Martin Luther King Jr. delivered his famous "I Have A Dream" speech during the March on Washington for Jobs and Freedom. By this date, King had lived through 8 leap days (namely, those of 1932, 1936, 1940, 1944, 1948, 1952, 1956, and 1960). It follows that on the date of his speech, King's sidereal age was about

$$\begin{aligned} &\frac{[(8 \times 366) + (26 \times 365) + 16 + 28 + 31 + 30 + 31 + 30 + 31 + 28] \text{ days}}{365.256363 \text{ days/yr}} \\ &\approx 34.61405 \text{ yrs} . \end{aligned}$$

On applying Technique #PD1 for $A \approx 34.61405$, we get

$$\begin{aligned} (3.98907826 \times A) \text{ min} &\approx 138.07815 \text{ min} \approx 2.30130 \text{ hr} \\ &\approx 2 \text{ hr} + 18 \text{ min} + 5 \text{ sec} \end{aligned}$$

as the chart-change term with respect to the natal chart (FIGURE 1.1).

THE PRE-BIRTH CHART

For the pre-birth symbolic chart (FIGURE 1.3a), we subtract the chart-change term (2 hours, 18 minutes, and 5 seconds) from King's birth time of 12:00 pm, CST, thereby getting 09:41:55 am, CST. In this symbolic chart, we are looking for neo-converse primary directions that are associated with King's life around age 34. In this regard, we find a Saturn-PC10 conjunction.

In the pre-birth symbolic chart, the Saturn-PC10 conjunction is a neo-converse primary direction that may refer to King's DC speech. For natal Saturn (in FIGURE 1.1), we find the following:

[Natal] Saturn in PH8: Saturn is the lord of PH10 (achieving something significant; prestige; head persons) and PH11 (comrades and shared interests), and it is the natural representative of sober-minded action. Saturn lies in the intersection of PH8 (an ending that facilitates

transformation) and Sagittarius WS9 (spiritual or professional know-how). At his best, masculine Sagittarius is not afraid to go beyond his comfort zone and to take risks in order to achieve worthy goals. In light of the foregoing, Saturn refers to King as achieving something significant through transformative spiritual leadership to further the common good.

For pre-birth Saturn (in FIGURE 1.3a), we find the following:

[Pre-birth] Saturn in PH9: Saturn is the lord of PH11 (achieving something significant; head persons) and PH12 (trying situations), and it is the natural representative of sober-minded action. Saturn lies in the intersection of PH9 (spiritual or professional know-how) and Sagittarius WS10 (achieving something significant; prestige; head persons). In light of the foregoing, Saturn refers to King as achieving something significant through spiritual leadership to further the common good.

PC10 refers to achieving something significant, gaining prestige, and head persons, and the Saturn-PC10 conjunction refers to Saturn as being helpful to PC10.

FIGURE 1.3a: Pre-birth symbolic chart

(PC12) 01:25 Ve 17:35 Mo 25:29 WS12 AQ	Su 02:11 (PC11) 02:18 Me 18:45 WS11 CP	Sa 02:29 (PC10) 03:11 WS10 SA	(PC9) 02:18 WS9 SC	(PC8) 01:25 WS8 LI
(PC1) 00:33 WS1 PI	Martin Luther King Jr. (Sidereal) Pre-Birth Chart for Wed., 28 AUG 1963 Tuesday, 15 JAN 1929 at 09:41:55 CST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 00:33 WS7 VI
(PC2) 01:25 Ju 08:18 WS2 AR	(PC3) 02:18 Ma 29:03 R WS3 TA	(PC4) 03:11 WS4 GE	(PC5) 02:18 WS5 CN	(PC6) 01:25 WS6 LE

By trial and error, we find that the Saturn-PC10 conjunction becomes exact at about 09:38:50 am, CST (about 9.76972 *hr* CST) on Tuesday, 15 January 1929 (King's birth date). From 09:38:50 am, CST to 12:00 pm, CST (King's birth time), the time difference is

$$\text{elapsed time} = 2 \text{ hr} + 21 \text{ min} + 10 \text{ sec} \approx 141.16667 \text{ min}.$$

On making use of the Ptolemy time-key, this time difference corresponds to an age difference of

$$\begin{aligned}
 \text{elapsed age} &\approx \frac{1 \text{ yr of age}}{3.98907826 \text{ min}} \times 141.16667 \text{ min} \approx 35.38829 \text{ yrs} \\
 &= 35 \text{ yrs} + \left(0.38829 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 35 \text{ yrs} + 141.82539 \text{ days},
 \end{aligned}$$

and so the neo-converse Saturn-PC10 conjunction predicts an event to occur about 142 days after Wednesday, 15 January 1964 (King's 35th birthday), which is on Friday, 05 June 1964 (Day 157 of 1964). This prediction date is about 9 months after the date of King's DC speech (Wednesday, 28 August 1963).

THE POST-BIRTH CHART

For the post-birth symbolic chart (FIGURE 1.3b), we add the chart-change term (2 hours, 18 minutes, and 5 seconds) to King's birth time of 12:00 pm, CST, thereby getting 02:18:05 pm, CST. In this symbolic chart, we are looking for direct primary directions that are associated with King's life around age 34. In this regard, we find a Mars-PC1 conjunction.

FIGURE 1.3b: Post-birth symbolic chart

Ju 08:19 (PC12) 22:59	(PC11) 16:33	(PC10) 10:07 Ve 17:48 Mo 27:58	Su 02:22 (PC9) 16:33 Me 19:02	Sa 02:30 (PC8) 22:59
WS12 AR	WS11 PI	WS10 AQ	WS9 CP	WS8 SA
Ma 29:01 R (PC1) 29:25	Martin Luther King Jr. (Sidereal) Post-Birth Chart for Wed., 28 AUG 1963 Tuesday, 15 JAN 1929 at 14:18:05 CST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 29:25
WS1 TA				WS7 SC
(PC2) 22:59	(PC3) 16:33	(PC4) 10:07	(PC5) 16:33	(PC6) 22:59
WS2 GE	WS3 CN	WS4 LE	WS5 VI	WS6 LI

In the post-birth symbolic chart, the Mars-PC1 conjunction is a direct primary direction that may refer to King's DC speech. For natal Mars (in FIGURE 1.1), we find the following:

[Natal] Mars in PH2: Mars is the lord of PH1 (the native's well-being) and PH8 (an ending that facilitates transformation), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH2 and Taurus WS2, both houses referring to supportive persons or things. At her best, feminine Taurus is doggedly determined to make tangible progress in achieving a better quality of life. In light of the foregoing, Mars refers to King as enthusiastically engaging in self-betterment.

For post-birth Mars (in FIGURE 1.3b), we find the following:

[Post-birth] Mars in PH12: Mars is the lord of PH7 (partnerships; divine cooperation) and PH12 (trying situations), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH12 (trying situations) and Aquarius WS1 (the native's well-being).

In light of the foregoing, Mars refers to King as partnering with others in order to boldly deal with trying situations.

PC1 refers to the native's well-being, and the Mars-PC1 conjunction refers to Mars as being helpful to PC1.

By trial and error, we find that the Mars-PC1 conjunction becomes exact at about 02:16:28 pm, CST (about 14.27444 *hr* CST) on Tuesday, 15 January 1929 (King's birth date). From 12:00 pm, CST (King's birth time) to 02:16:28 pm, CST, the time difference is

$$\text{elapsed time} = 2 \text{ hr} + 16 \text{ min} + 28 \text{ sec} \approx 136.46667 \text{ min} .$$

On making use of the Ptolemy time-key, this time difference corresponds to an age difference of

$$\begin{aligned} \text{elapsed age} &\approx \frac{1 \text{ yr of age}}{3.98907826 \text{ min}} \times 136.46667 \text{ min} \approx 34.21008 \text{ yrs} \\ &= 34 \text{ yrs} + \left(0.21008 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 34 \text{ yrs} + 76.73306 \text{ days} , \end{aligned}$$

and so the direct Mars-PC1 conjunction predicts an event to occur about 77 days after Tuesday, 15 January 1963 (King's 34th birthday), which is on Tuesday, 02 April 1963 (Day 92 of 1963). This prediction date is about 5 months before the date of King's DC speech (Wednesday, 28 August 1963).

1.4 Event #K3: King's passing in 1968

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. By this date, King had lived through 10 leap days (namely, those of 1932, 1936, 1940, 1944, 1948, 1952, 1956, 1960, 1964, and 1968). It follows that on the date of his passing, King's sidereal age was about

$$\frac{[(9 \times 366) + (30 \times 365) + 16 + 29 + 31 + 4] \text{ days}}{365.256363 \text{ days/yr}} \approx 39.21629 \text{ yrs} .$$

On applying Technique #PD1 for $A \approx 39.21629$, we get

$$\begin{aligned} (3.98907826 \times A) \text{ min} &\approx 156.43685 \text{ min} \approx 2.60728 \text{ hr} \\ &\approx 2 \text{ hr} + 36 \text{ min} + 26 \text{ sec} \end{aligned}$$

as the chart-change term with respect to the natal chart (FIGURE 1.1).

THE PRE-BIRTH CHART

For the pre-birth symbolic chart (FIGURE 1.4a), we subtract the chart-change term (2 hours, 36 minutes, and 26 seconds) from King's birth time of 12:00 pm, CST, thereby getting 09:23:34 am, CST. In this symbolic chart, we are looking for neo-converse primary directions that are associated with King's life around age 39. In this regard, we find a Mars-PC4 conjunction.

FIGURE 1.4a: Pre-birth symbolic chart

Su 02:10 Me 18:44 (PC12) 25:21 WS12 CP	Sa 02:29 (PC11) 27:09 WS11 SA	(PC10) 28:58 WS10 SC	(PC9) 27:09 WS9 LI	(PC8) 25:21 WS8 VI
Ve 17:34 (PC1) 23:33 Mo 25:19 WS1 AQ	Martin Luther King Jr. (Sidereal) Pre-Birth Chart for Thursday, 04 APR 1968 Tuesday, 15 JAN 1929 at 09:23:34 CST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 23:33 WS7 LE
(PC2) 25:21 WS2 PI	Ju 08:18 (PC3) 27:09 WS3 AR	(PC4) 28:58 Ma 29:03 R WS4 TA	(PC5) 27:09 WS5 GE	(PC6) 25:21 WS6 CN

In the pre-birth symbolic chart, the Mars-PC4 conjunction is a neo-converse primary direction that may refer to King passing away. For natal Mars (in FIGURE 1.1), we find the following:

[Natal] Mars in PH2: Mars is the lord of PH1 (the native) and PH8 (bodily death), and it is the natural representative of bodily injury. Mars lies in the intersection of PH2 and Taurus WS2, both houses referring to supportive persons or things. In light of the foregoing, Mars refers to death as coming to that which physically supports King's life.

For pre-birth Mars (in FIGURE 1.4a), we find the following:

[Pre-birth] Mars in PH3: Mars is the lord of PH3 (threats of bodily harm) and PH10 (being bound for bodily death). Note that with respect to the 4th House (being gravebound), the 10th House is the derived 7th House (bodily death or bodily harm), and the 3rd House is the derived 12th House (hidden enemies). Mars is the natural representative of hostile action and bodily injury. Mars lies in the intersection of PH3 (threats of bodily harm) and Taurus WS4 (being gravebound). In light of the foregoing, Mars refers to King as facing the threat of violent bodily death.

PC4 refers to being gravebound, and the Mars-PC4 conjunction refers to Mars as being helpful to PC4.

By trial and error, we find that the Mars-PC4 conjunction becomes exact at about 09:23:58 am, CST (about 9.39944 *hr* CST) on Tuesday, 15 January 1929 (King's birth date). From 09:23:58 am, CST to 12:00 pm, CST (King's birth time), the time difference is

$$\text{elapsed time} = 2 \text{ hr} + 36 \text{ min} + 2 \text{ sec} \approx 156.03333 \text{ min}.$$

On making use of the Ptolemy time-key, this time difference corresponds to an age difference of

$$\begin{aligned} \text{elapsed age} &\approx \frac{1 \text{ yr of age}}{3.98907826 \text{ min}} \times 156.03333 \text{ min} \approx 39.11513 \text{ yrs} \\ &= 39 \text{ yrs} + \left(0.11513 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 39 \text{ yrs} + 42.05197 \text{ days}, \end{aligned}$$

and so the neo-converse Mars-PC4 conjunction predicts an event to occur about 42 days after Monday, 15 January 1968 (King's 39th birthday), which is on Monday, 26 February 1968 (Day 57 of 1968). This prediction date is about 1 month before the date of King's passing (Thursday, 04 April 1968).

THE POST-BIRTH CHART

For the post-birth symbolic chart (FIGURE 1.4b), we add the chart-change term (2 hours, 36 minutes, and 26 seconds) to King's birth time of 12:00 pm, CST, thereby getting 02:36:26 pm, CST. In this symbolic chart, we are looking for direct primary directions that are associated with King's life around age 39. In this regard, we find nothing.

FIGURE 1.4b: Post-birth symbolic chart

Ma 29:01 R WS12 TA	Ju 08:19 (PC12) 27:31 WS11 AR	(PC11) 21:15 WS10 PI	(PC10) 15:00 Ve 17:49 Mo 28:08 WS9 AQ	Su 02:23 Me 19:03 (PC9) 21:15 WS8 CP
(PC1) 03:47 (PC2) 27:31 WS1 GE	Martin Luther King Jr. (Sidereal) Post-Birth Chart for Thursday, 04 APR 1968 Tuesday, 15 JAN 1929 at 14:36:26 CST Atlanta, GA (33° 45' N; 84° 23' W)			Sa 02:30 (PC7) 03:47 (PC8) 27:31 WS7 SA
(PC3) 21:15 WS2 CN	(PC4) 15:00 WS3 LE	(PC5) 21:15 WS4 VI	(PC6) 27:31 WS5 LI	WS6 SC

That's it!

1.5 Birth-time rectification

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The verb 'rectify' means 'to make right'. **Birth-time rectification** is the process of adjusting the native's birth time so that suitable planetary patterns coincide with actual life events. In this

section, we will use Events #K1, #K2, and #K3 to rectify King's birth time. In this regard, we will be taking 'suitable planetary patterns' to mean major planet-to-angle primary directions according to Technique #PD1 (of Section 1.1).

Our process of rectifying the birth time is based on the model equation

$$y = x + b ,$$

whose graph is a straight line having a slope value of 1 and an intercept value of b . For the native at A sidereal years of age, the quantity x is the chart-addition term, which is given by

$$x = \begin{cases} -(3.98907826 \times A) \text{ min} & \text{for a pre-birth symbolic chart} \\ +(3.98907826 \times A) \text{ min} & \text{for a post-birth symbolic chart} . \end{cases}$$

It is advisable here to express x in hours. For a given value of x , the quantity y is the time at which an associated primary direction becomes exact. The constant b is the rectified birth time. It is advisable here to express y and b in hours according to the 24-hour time format. TABLE 1.5 presents the xy pairs pertaining to our three events of interest.

TABLE 1.5: Data points for King's birth-time rectification

Event	Age (in yrs)	x (in hrs)	y (in hrs)
#K1	24.42120	+1.62363	13.59194
#K2	34.61405	−2.30130	9.76972
#K2	34.61405	+2.30130	14.27444
#K3	39.21629	−2.60728	9.39944

Each xy pair in the table is a data point. The technique of linear regression enables us to find the straight line that best accommodates our four data points. In this regard, we find that the equation of our best line is

$$y \approx (0.985366778)x + 12.0011990 .$$

On comparing this equation with the model equation $y = x + b$, we see that 0.985366778 (the best-line's slope) approximates the number 1 (the model-line's slope). Moreover, we see that 12.0011990 (the best-line's intercept) approximates b (the model-line's intercept):

$$b \approx 12.0011990 \text{ hr} \approx 12 \text{ hr} + 0 \text{ min} + 2 \text{ sec} .$$

Therefore, King's rectified birth time is about 12:00:02 pm, CST.

The birth-time rectification here is based on four data points. The more data points that we use for the linear regression, the better we can adjust the birth time.

1.6 King's 1968 solar return

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The native's **solar return** (SR) is Sun's annual return to its natal position. This return occurs on or close to the native's birthday. A solar-return year spans the time interval from one solar return to the next one. In astrology, the noun '**transit**' refers to the ongoing movement of a planet across the sky. In working with transits, we look at current planetary positions. A **solar-return chart** is a transit chart that is cast for the time when a solar return occurs, and we take it to represent the entire associated solar-return year.

FIGURE 1.6: King's 1968 SR chart

(PC12) 16:00 Sa 13:33 WS12 PI	(PC11) 10:43 Ma 12:19 WS11 AQ	Su 02:16 (PC10) 05:27 Me 14:02 WS10 CP	(PC9) 10:43 WS9 SA	(PC8) 16:00 Ve 24:27 WS8 SC
(PC1) 21:16 WS1 AR	Martin Luther King Jr. Solar-Return Chart for Age 39 (Sidereal) Tuesday, 16 JAN 1968 at 13:00:30 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 21:16 WS7 LI
(PC2) 16:00 WS2 TA	(PC3) 10:43 WS3 GE	(PC4) 05:27 Mo 15:18 WS4 CN	(PC5) 10:43 Ju 11:25 R WS5 LE	(PC6) 16:00 WS6 VI

On Monday, 15 January 1968, Martin Luther King Jr. reached age 39. In order to find the time of the SR chart, we will make use of tropical ecliptic longitudes as a means to an end. At King's birth time, Sun's sidereal ecliptic longitude is 272° 16' 59". At King's 1968 SR time, Sun's sidereal ecliptic longitude is the natal value of 272° 16' 59", and the *ayanāṃśa* is 23° 23' 44" according to True Chitrā 0° Libra. On adding this *ayanāṃśa* to Sun's sidereal ecliptic longitude, we get the SR tropical value of 295° 40' 43". We find that Sun's tropical ecliptic longitude is 295° 40' 43" on Tuesday, 16 January 1968 at 01:00:30 pm, EST. FIGURE 1.6 presents King's 1968 SR chart according to the sidereal zodiac.

Let's adapt Technique #PD1 (of Section 1.1) for use with solar-return charts. Primary motion is related to Earth's axial rotation, which has a time rate of

$$\frac{360 \text{ deg}}{1436.068175 \text{ min}} \approx \frac{1 \text{ deg}}{3.98907826 \text{ min}}$$

Solar returns are related to Earth's orbital motion about Sun, which has a time rate of

$$\frac{360 \text{ deg}}{365.256363 \text{ days}} \approx \frac{1 \text{ deg}}{1.01460101 \text{ days}}.$$

Note that a sidereal year is the time taken by Earth to complete its orbit about Sun relative to the fixed stars, and it consists of 365 mean solar days, 6 hours, 9 minutes, and 9.8 seconds (which is about 365.256363 mean solar days). The **SR time-key** is the notion that each degree of Earth's axial rotation corresponds to each degree of Earth's orbital motion. Therefore, according to the SR time-key, every addition of about 3.98907826 minutes to the SR time symbolically advances the SR chart by 1.01460101 mean solar days of age. It follows that every addition of about 3.93167189 minutes to the SR time symbolically advances the SR chart by one mean solar day of age.

The notion of SR primary directions gives rise to the following technique:

Technique #PD2: In order to examine the native's life around D mean solar days after the SR date, cast symbolic charts for about $(3.93167189 \times D)$ minutes before and after the SR time. In these symbolic charts, look for major planet-to-angle aspects, taking the margin of inexactness to be about 01° . These major aspects are primary directions that each predict an event to occur in the native's life around D days after the SR date.

The primary directions that are shown in the pre-SR symbolic chart are said to be *neo-converse*. The primary directions that are shown in the post-SR symbolic chart are said to be *direct*.

1.7 Event #K3: SR primary directions

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. Having found a pertinent primary direction at the natal-chart level (in Section 1.4), we can legitimately look for pertinent primary directions at the SR-chart level. In this regard, let's apply Technique #PD2 together with hindsight. From Tuesday, 16 January 1968 (the SR date) to Thursday, 04 April 1968 (the date of King's passing), there are 79 mean solar days. On applying Technique #PD2 for $D = 79$, we get

$$(3.93167189 \times D) \text{ min} \approx 310.60208 \text{ min} \approx 5 \text{ hr} + 10 \text{ min} + 36 \text{ sec}$$

as the chart-change term with respect to the SR chart (FIGURE 1.6).

THE PRE-SR CHART

For the pre-SR symbolic chart (FIGURE 1.7a), we subtract the chart-change term (5 hours, 10 minutes, and 36 seconds) from the SR time of 01:00:30 pm, EST, thereby getting 07:49:54 am, EST. In this symbolic chart, we are looking for neo-converse primary directions that are associated with King's life around the date of his passing. In this regard, we find a Sun-PC1 conjunction.

In the pre-SR symbolic chart, the Sun-PC1 conjunction is a neo-converse primary direction that may refer to King passing away. For SR Sun (in FIGURE 1.6), we find the following:

[SR] Sun in PH9: Sun is the lord of PH5 (supportive factors to being gravebound), and it is the natural representative of vitality. Note that with respect to the 4th House (being gravebound), the 5th House is the derived 2nd House (supportive persons or things). Sun lies in the intersection of PH9 (being subject to deadly influences) and Capricorn WS10 (being bound for bodily death). Note that with respect to the 4th House (being gravebound), the 9th House is the derived 6th House (being subject to unwholesome influences), and the 10th House is the derived 7th House (bodily death or bodily harm). In light of the foregoing, Sun refers to bodily death as a result of deadly influences.

For pre-SR Sun (in FIGURE 1.7a), we find the following:

[Pre-SR] Sun in PH12: Sun is the lord of PH8 (bodily death), and it is the natural representative of vitality. Sun lies in the intersection of PH12 (hidden enemies) and Capricorn WS1 (bodily life or bodily health). In light of the foregoing, Sun refers to bodily death at the hands of hidden enemies.

PC1 refers to bodily life or bodily health, and the Sun-PC1 conjunction refers to King as facing the threat of bodily death at the hands of hidden enemies.

FIGURE 1.7a: Pre-SR symbolic chart

(PC12) 09:21 WS12 SA	(PC11) 15:46 Ve 24:11 WS11 SC	(PC10) 22:11 WS10 LI	(PC9) 15:46 WS9 VI	(PC8) 09:21 Ju 11:25 R WS8 LE
Su 02:03 (PC1) 02:56 Me 13:40 WS1 CP	Martin Luther King Jr. (Sidereal) Pre-SR Chart for Thursday, 04 APR 1968 Tuesday, 16 JAN 1968 at 07:49:54 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 02:56 Mo 12:26 WS7 CN
(PC2) 09:21 Ma 12:09 WS2 AQ	Sa 13:32 (PC3) 15:46 WS3 PI	(PC4) 22:11 WS4 AR	(PC5) 15:46 WS5 TA	(PC6) 09:21 WS6 GE

By trial and error, we find that the Sun-PC1 conjunction becomes exact at about 07:46:43 am, EST on Tuesday, 16 January 1968 (the SR date). From 07:46:43 am, EST to 01:00:30 pm, EST (the SR time), the time difference is

$$\text{elapsed time} = 5 \text{ hr} + 13 \text{ min} + 47 \text{ sec} \approx 313.78333 \text{ min}.$$

On making use of the SR time-key, this time difference corresponds to an age difference of

$$\text{elapsed age} \approx \frac{1 \text{ day of age}}{3.93167189 \text{ min}} \times 313.78333 \text{ min} \approx 79.80913 \text{ days},$$

and so the neo-converse Sun-PC1 conjunction predicts an event to occur about 80 days after Tuesday, 16 January 1968 (the SR date), which is on Friday, 05 April 1968. This prediction date is 1 day after the date of King's passing (Thursday, 04 April 1968).

THE POST-SR CHART

For the post-SR symbolic chart (FIGURE 1.7b), we add the chart-change term (5 hours, 10 minutes, and 36 seconds) to the SR time of 01:00:30 pm, EST, thereby getting 06:11:06 pm, EST. In this symbolic chart, we are looking for direct primary directions that are associated with King's life around the date of his passing. In this regard, we find nothing.

FIGURE 1.7b: Post-SR symbolic chart

	(PC12) 27:16	(PC11) 23:50	Sa 06:57 (PC10) 20:24	Ma 05:53 (PC9) 26:18
WS12 CN	WS11 GE	WS10 TA	WS9 AR	WS8 PI
(PC1) 00:42 Mo 11:33 (PC2) 27:16 WS1 LE	Martin Luther King Jr. (Sidereal) Post-SR Chart for Thursday, 04 APR 1968 Tuesday, 16 JAN 1968 at 18:11:06 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 00:42 Me 07:47 (PC8) 27:16 WS7 AQ
Ju 04:47 R (PC3) 23:50 WS2 VI	(PC4) 20:24 WS3 LI	(PC5) 23:50 WS4 SC	Ve 18:06 (PC6) 27:16 WS5 SA	Su 25:53 WS6 CP

Let's move on!

1.8 King's last lunar return

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The native's **lunar return** (LR) is Moon's monthly return to its natal position. A lunar-return month spans the time interval from one lunar return to the next one. A **lunar-return chart** is a transit chart that is cast for the time when a lunar return occurs, and we take it to represent the entire associated lunar-return month.

FIGURE 1.8: King's last LR chart

(PC12) 09:43 Me 19:43 Ve 21:16 Mo 26:44 WS12 AQ	(PC11) 09:14 WS11 CP	(PC10) 08:45 WS10 SA	(PC9) 09:14 WS9 SC	(PC8) 09:43 WS8 LI
(PC1) 10:12 Su 13:27 Sa 20:52 WS1 PI	Martin Luther King Jr. Last Lunar-Return Chart (Sidereal) Wednesday, 27 MAR 1968 at 06:27:08 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 10:12 WS7 VI
Ma 06:13 (PC2) 09:43 WS2 AR	(PC3) 09:14 WS3 TA	(PC4) 08:45 WS4 GE	(PC5) 09:14 WS5 CN	Ju 03:25 R (PC6) 09:43 WS6 LE

On Thursday, 04 April 1968, Martin Luther King Jr. passed away. Let's cast the lunar-return chart for King around April 1968. In order to find the time of the LR chart, we will make use of tropical ecliptic longitudes as a means to an end. At King's birth time, Moon's sidereal ecliptic longitude is $326^{\circ} 44' 06''$. At King's pertinent LR time, Moon's sidereal ecliptic longitude is the natal value of $326^{\circ} 44' 06''$, and the *ayanāṃśa* is $23^{\circ} 24' 13''$ according to True Chitrā 0° Libra. On adding this *ayanāṃśa* to Moon's sidereal ecliptic longitude, we get the LR tropical value of $350^{\circ} 08' 19''$. We find that Moon's tropical ecliptic longitude is $350^{\circ} 08' 19''$ on Wednesday, 27 March 1968 at 06:27:08 am, EST. FIGURE 1.8 presents King's last LR chart according to the sidereal zodiac.

Let's adapt Technique #PD1 (of Section 1.1) for use with lunar-return charts. Primary motion is related to Earth's axial rotation, which has a time rate of

$$\frac{360 \text{ deg}}{1436.068175 \text{ min}} \approx \frac{1 \text{ deg}}{3.98907826 \text{ min}}$$

Lunar returns are related to Moon's orbital motion about Earth, which has a time rate of

$$\frac{360 \text{ deg}}{27.3216620 \text{ days}} \approx \frac{1 \text{ deg}}{0.0758935056 \text{ day}}$$

Note that a **sidereal month** consists of 27 mean solar days, 7 hours, 43 minutes, and 11.6 seconds (which is about 27.3216620 mean solar days). The **LR time-key** is the notion that each degree of Earth's axial rotation corresponds to each degree of Moon's orbital motion. Therefore, according to the LR time-key, every addition of about 3.98907826 minutes to the LR time symbolically advances the LR chart by 0.0758935056 mean solar days of age. It follows that every addition of about 52.5615233 minutes to the LR time symbolically advances the LR chart by one mean solar day of age.

The notion of LR primary directions gives rise to the following technique:

Technique #PD3: In order to examine the native's life around D mean solar days after the LR date, cast symbolic charts for about $(52.5615233 \times D)$ minutes before and after the LR time. In these symbolic charts, look for major planet-to-angle aspects, taking the margin of inexactness to be about 01° . These major aspects are primary directions that each predict an event to occur in the native's life around D days after the LR date.

The primary directions that are shown in the pre-LR symbolic chart are said to be *neo-converse*. The primary directions that are shown in the post-LR symbolic chart are said to be *direct*.

1.9 Event #K3: LR primary directions

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. Having found pertinent primary directions firstly at the natal-chart level (in Section 1.4) and secondly at the SR-chart level (in Section 1.7), we can legitimately look for pertinent primary directions at the LR-chart level. In this regard, let's apply Technique #PD3 together with hindsight. From Wednesday, 27 March 1968 (the LR date) to Thursday, 04 April 1968 (the date of King's passing), there are 8 mean solar days. On applying Technique #PD3 for $D = 8$, we get

$$(52.5615233 \times D) \text{ min} \approx 420.49219 \text{ min} \approx 7 \text{ hr} + 0 \text{ min} + 30 \text{ sec}$$

as the chart-change term with respect to the LR chart (FIGURE 1.8).

THE PRE-LR CHART

For the pre-LR symbolic chart (FIGURE 1.9a), we subtract the chart-change term (7 hours, 0 minutes, and 30 seconds) from the LR time of 06:27:08 am, EST, thereby getting 11:26:38 pm, EST on the previous day. In this symbolic chart, we are looking for neo-converse primary directions that are associated with King's life around March/April 1968. In this regard, we find a Moon-PC4 conjunction.

In the pre-LR symbolic chart, the Moon-PC4 conjunction is a neo-converse primary direction that may refer to King passing away. For LR Moon (in FIGURE 1.8), we find the following:

[LR] Moon in PH12: Moon is the lord of PH5 (being subject to hidden threats), and it is the natural representative of vulnerability. Note that with respect to the 12th House (hidden enemies), the 5th House is the derived 6th House (being subject to unwholesome influences). Moon lies at the intersection of PH12 and Aquarius WS12, both houses referring to hidden enemies. In light of the foregoing, Mars refers to King as facing the threat of violent bodily death.

For pre-LR Moon (in FIGURE 1.9a), we find the following:

[Pre-LR] Moon in PH4: Moon is the lord of PH9 (being subject to deadly influences), and it is the natural representative of vulnerability. Note that with respect to the 4th House (being gravebound), the 9th House is the derived 6th House (being subject to unwholesome

influences). Moon lies in the intersection of PH4 and Aquarius WS4, both houses referring to being gravebound. In light of the foregoing, Moon refers to King as being vulnerable to deadly influences.

PC4 refers to being gravebound, and the Moon-PC4 conjunction refers to Moon as being helpful to PC4.

FIGURE 1.9a: Pre-LR symbolic chart

(PC12) 14:36 WS12 LI	(PC11) 18:30 WS11 VI	Ju 03:26 R (PC10) 22:24 WS10 LE	(PC9) 18:30 WS9 CN	(PC8) 14:36 WS8 GE
(PC1) 10:41 WS1 SC	Martin Luther King Jr. (Sidereal) Pre-LR Chart for Thursday, 04 APR 1968 Tuesday, 26 MAR 1968 at 23:26:38 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 10:41 WS7 TA
(PC2) 14:36 WS2 SA	(PC3) 18:30 WS3 CP	Me 19:18 Ve 20:55 (PC4) 22:24 Mo 23:04 WS4 AQ	Su 13:10 (PC5) 18:30 Sa 20:50 WS5 PI	Ma 06:00 WS6 AR

By trial and error, we find that the Moon-PC4 conjunction becomes exact at about 11:29:12 pm, EST on Tuesday, 26 March 1968. From 11:29:12 pm, EST (Tuesday) to 06:27:08 am, EST (the LR time on Wednesday), the time difference is

$$\text{elapsed time} = 6 \text{ hr} + 57 \text{ min} + 56 \text{ sec} \approx 417.93333 \text{ min}.$$

On making use of the LR time-key, this time difference corresponds to an age difference of

$$\text{elapsed age} \approx \frac{1 \text{ day of age}}{52.5615233 \text{ min}} \times 417.93333 \text{ min} \approx 7.95132 \text{ days},$$

and so the neo-converse Moon-PC4 conjunction predicts an event to occur about 8 days after Wednesday, 27 March 1968 (the LR date), which is on Thursday, 04 April 1968. This prediction date is the date of King's passing.

THE POST-LR CHART

For the post-LR symbolic chart (FIGURE 1.9b), we add the chart-change term (7 hours, 0 minutes, and 30 seconds) to the LR time of 06:27:08 am, EST, thereby getting 01:27:38 pm, EST. In this symbolic chart, we are looking for direct primary directions that are associated with King's life around March/April 1968. In this regard, we find a Mars-PC1 square.

FIGURE 1.9b: Post-LR symbolic chart

(PC12) 02:53 WS12 GE		Ma 06:26 (PC11) 29:22 WS10 AR	Mo 00:22 Su 13:44 Sa 20:54 (PC10) 25:51 WS9 PI	(PC8) 02:53 Me 20:09 Ve 21:38 (PC9) 29:22 WS8 AQ
(PC1) 06:25 WS1 CN	Martin Luther King Jr. (Sidereal) Post-LR Chart for Thursday, 04 APR 1968 Wednesday, 27 MAR 1968 at 13:27:38 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 06:25 WS7 CP
(PC2) 02:53 Ju 03:24 R (PC3) 29:22 WS2 LE	(PC4) 25:51 WS3 VI	(PC5) 29:22 WS4 LI		(PC6) 02:53 WS6 SA

In the post-LR symbolic chart, the Mars-PC1 square is a direct primary direction that may refer to King passing away. For LR Mars (in FIGURE 1.8), we find the following:

[LR] Mars in PH1: Mars is the lord of PH2 (supportive persons or things) and PH9 (supportive factors to bodily death), and it is the natural representative of hostile action and bodily injury. Note that with respect to the 2nd House (supportive persons or things), the 9th House is the derived 8th House (bodily death). Mars lies in the intersection of PH1 (bodily life or bodily health) and Aries WS2 (supportive persons or things). In light of the foregoing, Mars refers to King as facing the threat of violent bodily death.

For post-LR Mars (in FIGURE 1.9b), we find the following:

[Post-LR] Mars in PH10: Mars is the lord of PH11 (injury related to personal interests) and WS5 (personal interests), and it is the natural representative of hostile action and bodily injury. Note that with respect to the 5th House (personal interests), the 11th House is the derived 7th House (bodily death or bodily harm). Mars lies in the intersection of PH10 and Aries WS10, both houses referring to being subject to unwholesome influences because of personal interests. Note that with respect to the 5th House (personal interests), the 10th House is the derived 6th House (being subject to unwholesome influences). In light of the foregoing, Mars refers to King as facing the threat of violent bodily injury because of his personal interests.

PC1 refers to bodily life or bodily health, and the Mars-PC1 square refers to Mars bringing PC1 into line with its agenda of bodily injury.

By trial and error, we find that the Mars-PC1 square becomes exact at about 01:27:43 pm, EST on Wednesday, 27 March 1968 (the LR date). From 06:27:08 am, EST (the LR time) to 01:27:43 pm, EST, the time difference is

$$\text{elapsed time} = 7 \text{ hr} + 0 \text{ min} + 35 \text{ sec} \approx 420.58333 \text{ min} .$$

On making use of the LR time-key, this time difference corresponds to an age difference of

$$\text{elapsed age} \approx \frac{1 \text{ day of age}}{52.5615233 \text{ min}} \times 420.58333 \text{ min} \approx 8.00173 \text{ days} ,$$

and so the direct Mars-PC1 square predicts an event to occur about 8 days after Wednesday, 27 March 1968 (the LR date), which is on Thursday, 04 April 1968. This prediction date is the date of King's passing.

2. ARCS OF DIRECTION

2.1 Introduction

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From the point of view of an earthbound observer, primary motion causes the zodiacal belt (with the planets attached to it) to rotate backward through fixed houses of the local sky. A primary direction is the process of primary motion directing a given point of the active sphere backward through the houses toward a given point of the fixed sphere.

Each primary direction is associated with a predicted event. One of its two points is called the **significator**, and it indicates the area of life in which the predicted event will occur. The other point is called the **promissor**, and it indicates that which promises (that is, gives grounds for expecting) the predicted event. A primary direction is said to be **direct** if primary motion directs a promissor lying in the active sphere toward a significator lying in the fixed sphere. A primary direction is said to be **traditionally converse** if primary motion directs a significator lying in the active sphere toward a promissor lying in the fixed sphere. A primary direction is said to be **neo-converse** if reversed primary motion (which is a what-if notion) directs a promissor lying in the active sphere toward a significator lying in the fixed sphere.

A primary direction results in an arc of direction, which is the circular path along which primary motion has directed the active point (which lies in the active sphere) toward the fixed point (which lies in the fixed sphere). A primary direction is associated with a predicted event, and the angular length of the associated arc of direction is related to the time when the event is predicted to occur.

In this chapter, we will deal with primary directions by using the mathematics presented in Appendices A and B. Moreover, we will use primary directions together with hindsight in order to examine three particular events in the life of Martin Luther King Jr. These events are: Event #K1 (King's wedding day in 1953), Event #K2 (King's DC speech in 1963), and Event #K3 (King's passing in 1968).

2.2 Event #K1: the natal Mars-PC10 trine

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FIGURE 2.2 presents the natal chart of Martin Luther King Jr. according to the tropical zodiac. Note that Atlanta was in the Central Time Zone until legislation switched it to the Eastern Time Zone on Friday, 21 March 1941.

On Thursday, 18 June 1953, Martin Luther King Jr. married Coretta Scott, who would later become a civil-rights leader in her own right. In Section 1.2, we examined the Mars-PC10 trine as a direct primary direction that was associated with King's wedding. Regarding King's natal chart (FIGURE 2.2), the Mars-PC10 trine is a direct primary direction in which Mars's dexter-trine copy (MDTC)

is the active promissor and PC10 (the Midheaven) is the fixed significator. Both MDTC and PC10 lie in the upper eastern sky. From Section A6, we find that

$$\text{arc of direction} = (RA)_P - (RA)_{MC} ,$$

where the subscript P refers to the promissor.

FIGURE 2.2: King's natal chart (tropical)

(PC12) 08:36 WS12 AR	(PC11) 03:24 Ve 10:33 Mo 19:35 WS11 PI	Me 11:45 WS10 AQ	(PC9) 03:24 Su 25:08 (PC10) 28:12 WS9 CP	(PC8) 08:36 Sa 25:21 WS8 SA
Ju 01:10 (PC1) 13:48 WS1 TA	Martin Luther King Jr. Natal Chart (Tropical Zodiac) Tuesday, 15 JAN 1929 at 12:00 CST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 13:48 WS7 SC
(PC2) 08:36 Ma 21:53 R WS2 GE	(PC3) 03:24 (PC4) 28:12 WS3 CN	WS4 LE	(PC5) 03:24 WS5 VI	(PC6) 08:36 WS6 LI

Firstly, let's calculate the pertinent obliquity value. Between Tuesday, 15 January 1929 at 12:00 CST (or 18:00 UTC) and the epoch J2000.0 (Saturday, 01 January 2000 at approximately 12:00 UTC), there is the rest of 1929 and 17 leap years and 53 normal years. It follows that the elapsed time in Julian years is approximately

$$\frac{\left[\left(\frac{6}{24} + 350\right) + (17 \times 366) + (53 \times 365)\right] \text{ days}}{365.25 \text{ days/yr}} \approx 70.9575633 \text{ yrs} ,$$

and so the number of Julian centuries since the epoch J2000.0 is

$$T \approx -\frac{70.9575633 \text{ yrs}}{100 \text{ yrs}} = -0.709575633 .$$

On making use of the obliquity formula in Section A1, we get

$$\begin{aligned} \varepsilon &\approx 23^\circ 26' 21.406'' - 46.836769'' \times (-0.709575633) \\ &\approx 23^\circ 26' 21.406'' + 33.2342300'' = 23^\circ 26' 54.6402300'' \\ &\approx 23.4485112^\circ \approx 23.44851^\circ . \end{aligned}$$

Note that T is positive for dates after the epoch and negative for dates before the epoch.

Secondly, let's use pertinent formulas of Section A1 to deal with Mars's dexter-trine copy (MDTC). In the tropical natal chart (FIGURE 2.2), Mars is at Gemini $21^\circ 53' 50''$ with an ecliptic latitude of $+03^\circ 26' 17''$. MDTC is at Aquarius $21^\circ 53' 50''$ with a Bianchini ecliptic latitude of $(+03^\circ 26' 17'') \times \cos 120^\circ = -01^\circ 43' 8.5''$. Therefore, we have

$$\lambda_p = 321^\circ 53' 50'' \approx 321.89722^\circ, \quad \beta_p = -01^\circ 43' 8.5'' \approx -1.71903^\circ.$$

We find that MDTC's declination is

$$\begin{aligned} \delta_p &= \arcsin(\sin \varepsilon \times \cos \beta_p \times \sin \lambda_p + \cos \varepsilon \times \sin \beta_p) \\ &\approx \arcsin[\sin 23.44851^\circ \times \cos(-1.71903^\circ) \times \sin 321.89722^\circ \\ &\quad + \cos 23.44851^\circ \times \sin(-1.71903^\circ)] \\ &\approx -15.84045^\circ. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_p &= \arccos\left(\frac{\cos \beta_p \times \cos \lambda_p}{\cos \delta_p}\right) \approx \arccos\left[\frac{\cos(-1.71903^\circ) \times \cos 321.89722^\circ}{\cos(-15.84045^\circ)}\right] \\ &\approx 35.15486^\circ. \end{aligned}$$

Because $\lambda_p > 180^\circ$, we get $(RA)_p = 360^\circ - (ED)_p \approx 324.84514^\circ$ as MDTC's right ascension.

Thirdly, let's use pertinent formulas of Section A1 to deal with PC10 (the Midheaven). In the tropical natal chart (FIGURE 2.2), the Midheaven is at Capricorn $28^\circ 12' 25''$ with an ecliptic latitude of 0° exactly. Therefore, we have

$$\lambda_{MC} = 298^\circ 12' 25'' \approx 298.20694^\circ, \quad \beta_{MC} = 0^\circ.$$

We find that the Midheaven's declination is

$$\begin{aligned} \delta_{MC} &= \arcsin(\sin \varepsilon \times \cos \beta_{MC} \times \sin \lambda_{MC} + \cos \varepsilon \times \sin \beta_{MC}) \\ &\approx \arcsin(\sin 23.44851^\circ \times \cos 0^\circ \times \sin 298.20694^\circ + \cos 23.44851^\circ \times \sin 0^\circ) \\ &\approx -20.52828^\circ. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_{MC} &= \arccos\left(\frac{\cos \beta_{MC} \times \cos \lambda_{MC}}{\cos \delta_{MC}}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 298.20694^\circ}{\cos(-20.52828^\circ)}\right] \\ &\approx 59.68811^\circ. \end{aligned}$$

Because $\lambda_{MC} > 180^\circ$, we get $(RA)_{MC} = 360^\circ - (ED)_{MC} \approx 300.31189^\circ$ as the Midheaven's right ascension.

Now we are ready to deal with the arc of direction for the direct Mars-PC10 trine. We find that

$$\text{arc of direction} = (RA)_p - (RA)_{MC} \approx 324.84514^\circ - 300.31189^\circ = 24.53325^\circ.$$

According to the Ptolemy time-key, each degree of the arc of direction corresponds to a sidereal year of age. For our arc here, we have

$$\begin{aligned}
& 24.53325 \text{ deg} \times \frac{1 \text{ yr of age}}{1 \text{ deg}} \approx 24.53325 \text{ yrs of age} \\
& = 24 \text{ yrs} + \left(0.53325 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 24 \text{ yrs} + 194.77296 \text{ days} .
\end{aligned}$$

Therefore, the direct Mars-PC10 trine predicts an event to occur about 195 days after Thursday, 15 January 1953 (King's 24th birthday), which is on Wednesday, 29 July 1953 (Day 210 of 1953). This prediction date is about 1 month after the date of King's wedding (Thursday, 18 June 1953).

2.3 Event #K2: The natal Saturn-PC10 conjunction

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On Wednesday, 28 August 1963, Martin Luther King Jr. delivered his famous "I Have A Dream" speech during the March on Washington for Jobs and Freedom. In Section 1.3, we examined the Saturn-PC10 conjunction as a neo-converse primary direction that was associated with King's DC speech. Regarding King's natal chart (FIGURE 2.2), the Saturn-PC10 conjunction is a converse primary direction in which Saturn is the promissor and PC10 (the Midheaven) is the significator. Both Saturn and PC10 lie in the upper western sky.

If we take the Saturn-PC10 conjunction to be traditionally converse, then PC10 is the active significator and Saturn is the fixed promissor. From Section A5, we find that

$$\text{arc of direction} = (r_P - r_{MC}) \times (SA)_{MC}$$

where $(SA)_{MC} = 90^\circ + (AD)_{MC}$ and

$$r_P = \frac{(RA)_{MC} - (RA)_P}{90^\circ + (AD)_P}, \quad r_{MC} = \frac{(RA)_{MC} - (RA)_{MC}}{90^\circ + (AD)_{MC}} = 0.$$

It follows that

$$\text{arc of direction} = [(RA)_{MC} - (RA)_P] \times \frac{90^\circ + (AD)_{MC}}{90^\circ + (AD)_P}.$$

Note that the subscript P refers to the promissor.

If we take the Saturn-PC10 conjunction to be neo-converse, then we look at the what-if situation of reversed primary motion directing an active promissor toward a fixed significator. In this what-if situation, we would have

$$\text{arc of direction} = (r_{MC} - r_P) \times (SA)_P = -r_P \times (SA)_P,$$

where $(SA)_P = 90^\circ + (AD)_P$. It follows that

$$\text{arc of direction} = -[(RA)_P - (RA)_{MC}] = (RA)_{MC} - (RA)_P.$$

Note that the subscript P refers to the promissor.

Firstly, let's calculate the pertinent obliquity value. In this regard, we previously found in Section 3.2 that $\varepsilon \approx 23.44851^\circ$.

Secondly, let's use pertinent formulas of Section A1 to deal with Saturn. In the tropical natal chart (FIGURE 2.2), Saturn is at Sagittarius $25^{\circ} 21' 07''$ with an ecliptic latitude of $+01^{\circ} 09' 56''$. Therefore, we have

$$\lambda_p = 265^{\circ} 21' 07'' \approx 265.35194^{\circ}, \quad \beta_p = +01^{\circ} 09' 56'' \approx +1.16556^{\circ}.$$

We find that Saturn's declination is

$$\begin{aligned} \delta_p &= \arcsin(\sin \varepsilon \times \cos \beta_p \times \sin \lambda_p + \cos \varepsilon \times \sin \beta_p) \\ &\approx \arcsin[\sin 23.44851^{\circ} \times \cos(+1.16556^{\circ}) \times \sin 265.35194^{\circ} \\ &\quad + \cos 23.44851^{\circ} \times \sin(+1.16556^{\circ})] \\ &\approx -22.20196^{\circ}. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_p &= \arccos\left(\frac{\cos \beta_p \times \cos \lambda_p}{\cos \delta_p}\right) \approx \arccos\left[\frac{\cos(+1.16556^{\circ}) \times \cos 265.35194^{\circ}}{\cos(-22.20196^{\circ})}\right] \\ &\approx 95.02015^{\circ}. \end{aligned}$$

Because $\lambda_p > 180^{\circ}$, we get $(RA)_p = 360^{\circ} - (ED)_p \approx 264.97985^{\circ}$ as Saturn's right ascension. King's geographic latitude of birth is $\Phi = 33^{\circ} 45' N = +33.75^{\circ}$. We find that

$$\begin{aligned} (AD)_p &= \arcsin(\tan \delta_p \times \tan \Phi) \approx \arcsin[\tan(-22.20196^{\circ}) \times \tan(+33.75^{\circ})] \\ &\approx -15.82531^{\circ} \end{aligned}$$

is Saturn's ascensional difference.

Thirdly, let's deal with PC10 (the Midheaven). In this regard, we previously found in Section 2.2 that $(RA)_{MC} \approx 300.31189^{\circ}$ and that $\delta_{MC} \approx -20.52828^{\circ}$. King's geographic latitude of birth is $\Phi = 33^{\circ} 45' N = +33.75^{\circ}$. We find that

$$\begin{aligned} (AD)_{MC} &= \arcsin(\tan \delta_{MC} \times \tan \Phi) \approx \arcsin[\tan(-20.52828^{\circ}) \times \tan(+33.75^{\circ})] \\ &\approx -14.48921^{\circ} \end{aligned}$$

is the Midheaven's ascensional difference.

Now we are ready to deal with the arc of direction for the converse Saturn-PC10 conjunction. If we take the Saturn-PC10 conjunction to be traditionally converse, then

$$\begin{aligned} \text{arc of direction} &= [(RA)_{MC} - (RA)_p] \times \frac{90^{\circ} + (AD)_{MC}}{90^{\circ} + (AD)_p} \\ &\approx (300.31189^{\circ} - 264.97985^{\circ}) \times \frac{90^{\circ} + (-14.48921^{\circ})}{90^{\circ} + (-15.82531^{\circ})} \approx 35.96847^{\circ}. \end{aligned}$$

According to the Ptolemy time-key, each degree of the arc of direction corresponds to a sidereal year of age. For our arc here, we have

$$\begin{aligned}
 & 35.96847 \times \frac{1 \text{ yr of age}}{1 \text{ deg}} \approx 35.96847 \text{ yrs of age} \\
 & = 35 \text{ yrs} + \left(0.96847 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 35 \text{ yrs} + 353.73983 \text{ days} .
 \end{aligned}$$

Therefore, the traditionally converse Saturn-PC10 conjunction predicts an event to occur about 354 days after Wednesday, 15 January 1964 (King's 35th birthday), which is on Sunday, 03 January 1965 (Day 3 of 1965). This prediction date is about 17 months after the date of King's DC speech (Wednesday, 28 August 1963).

If we take the Saturn-PC10 conjunction to be neo-converse, then

$$\text{arc of direction} = (RA)_{MC} - (RA)_P \approx 300.31189^\circ - 264.97985^\circ = 35.33134^\circ .$$

According to the Ptolemy time-key, each degree of the arc of direction corresponds to a sidereal year of age. For our arc here, we have

$$\begin{aligned}
 & 35.33134 \text{ deg} \times \frac{1 \text{ yr of age}}{1 \text{ deg}} \approx 35.33134 \text{ yrs of age} \\
 & = 35 \text{ yrs} + \left(0.33134 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 35 \text{ yrs} + 121.02404 \text{ days} .
 \end{aligned}$$

Therefore, the neo-converse Saturn-PC10 conjunction predicts an event to occur about 121 days after Wednesday, 15 January 1964 (King's 35th birthday), which is on Friday, 15 May 1964 (Day 136 of 1964). This prediction date is about 9 months after the date of King's DC speech (Wednesday, 28 August 1963).

2.4 Event #K3: The natal Mars-PC4 conjunction

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. In Section 1.4, we examined the Mars-PC4 conjunction as a neo-converse primary direction that was associated with King's passing. Regarding King's natal chart (FIGURE 2.2), the Mars-PC4 conjunction is a converse primary direction in which Mars is the promissor and PC4 (the Imum Coeli) is the significator. Both Mars and PC4 lie in the lower eastern sky.

If we take the Mars-PC4 conjunction to be traditionally converse, then PC4 is the active significator and Mars is the fixed promissor. From Section A4, we find that

$$\text{arc of direction} = (r_P - r_{IC}) \times (SA)_{IC}$$

where $(SA)_{IC} = 90^\circ - (AD)_{IC}$ and

$$r_P = \frac{(RA)_{IC} - (RA)_P}{90^\circ - (AD)_P}, \quad r_{IC} = \frac{(RA)_{IC} - (RA)_{IC}}{90^\circ - (AD)_{IC}} = 0 .$$

It follows that

$$\text{arc of direction} = [(RA)_{IC} - (RA)_P] \times \frac{90^\circ - (AD)_{IC}}{90^\circ - (AD)_P}.$$

Note that the subscript P refers to the promissor.

If we take the Mars-PC4 conjunction to be neo-converse, then we look at the what-if situation of reversed primary motion directing an active promissor toward a fixed significator. In this what-if situation, we would have

$$\text{arc of direction} = (r_{IC} - r_P) \times (SA)_P = -r_P \times (SA)_P,$$

where $(SA)_P = 90^\circ + (AD)_P$. It follows that

$$\text{arc of direction} = -[(RA)_P - (RA)_{IC}] = (RA)_{IC} - (RA)_P.$$

Note that the subscript P refers to the promissor.

Firstly, let's calculate the pertinent obliquity value. In this regard, we previously found in Section 3.2 that $\varepsilon \approx 23.44851^\circ$.

Secondly, let's use pertinent formulas of Section A1 to deal with Mars. In this regard, we previously found in Section 2.4 that $(RA)_P \approx 80.94429^\circ$ and that $(AD)_P \approx 19.57665^\circ$.

Thirdly, let's deal with PC4 (the Imum Coeli). For the Midheaven, we previously found in Section 2.2 that $(RA)_{MC} \approx 300.31189^\circ$ and that $\delta_{MC} \approx -20.52828^\circ$. Because the Midheaven and the Imum Coeli are opposite points, we have

$$(RA)_{IC} = (RA)_{MC} - 180^\circ \approx 300.31189^\circ - 180^\circ = 120.31189^\circ$$

and

$$\delta_{IC} = -\delta_{MC} \approx +20.52828^\circ.$$

King's geographic latitude of birth is $\Phi = 33^\circ 45' N = +33.75^\circ$. We find that

$$\begin{aligned} (AD)_{IC} &= \arcsin(\tan \delta_{IC} \times \tan \Phi) \approx \arcsin[\tan(+20.52828^\circ) \times \tan(+33.75^\circ)] \\ &\approx 14.48921^\circ \end{aligned}$$

is the Imum Coeli's ascensional difference.

Now we are ready to deal with the arc of direction for the converse Mars-PC4 conjunction. If we take the Mars-PC4 conjunction to be traditionally converse, then

$$\begin{aligned} \text{arc of direction} &= [(RA)_{IC} - (RA)_P] \times \frac{90^\circ - (AD)_{IC}}{90^\circ - (AD)_P} \\ &\approx (120.31189^\circ - 80.94429^\circ) \times \frac{90^\circ - 14.48921^\circ}{90^\circ - 19.57665^\circ} \approx 42.21155^\circ. \end{aligned}$$

According to the Ptolemy time-key, each degree of the arc of direction corresponds to a sidereal year of age. For our arc here, we have

$$\begin{aligned}
 & 42.21155 \text{ deg} \times \frac{1 \text{ yr of age}}{1 \text{ deg}} \approx 42.21155 \text{ yrs of age} \\
 & = 42 \text{ yrs} + \left(0.21155 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 42 \text{ yrs} + 77.26998 \text{ days} .
 \end{aligned}$$

Therefore, the traditionally converse Mars-PC4 conjunction predicts an event to occur about 77 days after Friday, 15 January 1971 (what would have been King's 42nd birthday), which is on Friday, 02 April 1971 (Day 92 of 1971). This prediction date is about 36 months after the date of King's passing (Thursday, 04 April 1968).

If we take the Mars-PC4 conjunction to be neo-converse, then

$$\text{arc of direction} = (RA)_{IC} - (RA)_P \approx 120.31189^\circ - 80.94429^\circ = 39.36760^\circ .$$

According to the Ptolemy time-key, each degree of the arc of direction corresponds to a sidereal year of age. For our arc here, we have

$$\begin{aligned}
 & 39.36760 \text{ deg} \times \frac{1 \text{ yr of age}}{1 \text{ deg}} \approx 39.36760 \text{ yrs of age} \\
 & = 39 \text{ yrs} + \left(0.36760 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}} \right) \approx 39 \text{ yrs} + 134.26824 \text{ days} .
 \end{aligned}$$

Therefore, the neo-converse Mars-PC4 conjunction predicts an event to occur about 134 days after Monday, 15 January 1968 (King's 39th birthday), which is on Tuesday, 28 May 1968 (Day 149 of 1968). This prediction date is about 2 months after the date of King's passing (Thursday, 04 April 1968).

2.5 Event #K3: The SR Sun-PC1 conjunction

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. In Section 1.7, we examined the Sun-PC1 conjunction as a neo-converse primary direction that was associated with King's passing. Regarding King's SR chart (FIGURE 2.5), the Sun-PC1 conjunction is a converse primary direction in which Sun is the promissor and PC1 (the Ascendant) is the significator.

Sun lies in the upper western sky, while PC1 lies in the upper eastern sky. Because Sun and PC1 do not lie in the same quadrant, we cannot use the proportional semi-arc formula here. Nevertheless, we can construct pertinent arcs of direction by connecting suitable semi-arc pieces.

If we take the Sun-PC1 conjunction to be traditionally converse, then PC1 is the active significator and Sun is the fixed promissor. The Ascendant's arc of direction extends from the Ascendant toward Sun. For the part of the arc of direction lying in the upper eastern sky, we have a diurnal semi-arc of angular length $(SA)_{ASC} = 90^\circ + (AD)_{ASC}$. For the part of the arc of direction lying in the upper western sky, we have a diurnal arc piece of angular length $r_P \times (SA)_{ASC}$, where

$$r_P = \frac{(RA)_{MC} - (RA)_P}{90^\circ + (AD)_P} .$$

It follows that

$$\text{arc of direction} = (SA)_{Asc} + r_P \times (SA)_{Asc} = (1 + r_P) \times (SA)_{Asc}.$$

We find that

$$\begin{aligned} 1 + r_P &= 1 + \frac{(RA)_{MC} - (RA)_P}{90^\circ + (AD)_P} = \frac{[90^\circ + (AD)_P] + [(RA)_{MC} - (RA)_P]}{90^\circ + (AD)_P} \\ &= \frac{[(RA)_{MC} + 90^\circ] - [(RA)_P - (AD)_P]}{90^\circ + (AD)_P} = \frac{(OA)_{Asc} - (OA)_P}{90^\circ + (AD)_P}, \end{aligned}$$

where we have made use of the expression $(OA)_{Asc} = (RA)_{MC} + 90^\circ$. It follows that

$$\text{arc of direction} = [(OA)_{Asc} - (OA)_P] \times \frac{90^\circ + (AD)_{Asc}}{90^\circ + (AD)_P}.$$

Note that the subscript P refers to the promissor.

FIGURE 2.5: King's 1968 SR chart (tropical)

(PC12) 09:24 Sa 06:56	(PC11) 04:07 Ma 05:43	Me 07:26	(PC9) 04:07 Su 25:40 (PC10) 28:51	(PC8) 09:24 Ve 17:51
WS12 AR	WS11 PI	WS10 AQ	WS9 CP	WS8 SA
(PC1) 14:40 WS1 TA	Martin Luther King Jr. Solar-Return Chart for Age 39 (Tropical) Tuesday, 16 JAN 1968 at 13:00:30 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 14:40 WS7 SC
(PC2) 09:24	(PC3) 04:07 (PC4) 28:51	Mo 08:41	(PC5) 04:07 Ju 04:48 R	(PC6) 09:24
WS2 GE	WS3 CN	WS4 LE	WS5 VI	WS6 LI

If we take the Sun-PC1 conjunction to be neo-converse, then we look at the what-if situation of reversed primary motion directing an active promissor toward a fixed significator. In this what-if situation, Sun's arc of direction extends from Sun toward the Ascendant. For the part of the arc of direction lying in the upper western sky, we have a diurnal arc piece of angular length $r_P \times (SA)_P$, where $(SA)_P = 90^\circ + (AD)_P$. For the part of the arc of direction lying in the upper eastern sky, we have a diurnal semi-arc of angular length $(SA)_P$. It follows that

$$\begin{aligned} \text{arc of direction} &= r_p \times (SA)_p + (SA)_p = (1 + r_p) \times (SA)_p \\ &= \frac{(OA)_{Asc} - (OA)_p}{90^\circ + (AD)_p} \times [90^\circ + (AD)_p] = (OA)_{Asc} - (OA)_p. \end{aligned}$$

Note that the subscript P refers to the promissor.

Firstly, let's calculate the pertinent obliquity value. Between Tuesday, 16 January 1968 at 13:00:30 EST (or 18:00:30 UTC) and the epoch J2000.0 (Saturday, 01 January 2000 at approximately 12:00 UTC), there is the rest of 1968 and 7 leap years and 24 normal years. It follows that the elapsed time in Julian years is approximately

$$\frac{\left[\left(\frac{6}{24} + 351\right) + (7 \times 366) + (24 \times 365)\right] \text{ days}}{365.25 \text{ days/yr}} \approx 31.9596167 \text{ yrs},$$

and so the number of Julian centuries since the epoch J2000.0 is

$$T \approx -\frac{31.9596167 \text{ yrs}}{100 \text{ yrs}} = -0.319596167.$$

On making use of the obliquity formula in Section A1, we get

$$\begin{aligned} \varepsilon &\approx 23^\circ 26' 21.406'' - 46.836769'' \times (-0.319596167) \\ &\approx 23^\circ 26' 21.406'' + 14.9688519'' = 23^\circ 26' 36.3748519'' \\ &\approx 23.4434375^\circ \approx 23.44344^\circ. \end{aligned}$$

Note that T is positive for dates after the epoch and negative for dates before the epoch.

Secondly, let's use pertinent formulas of Section A1 to deal with Sun. In the tropical SR chart (FIGURE 2.5), Sun is at Capricorn $25^\circ 40' 43''$ with an ecliptic latitude of 0° exactly. Therefore, we have

$$\lambda_p = 295^\circ 40' 43'' \approx 295.67861^\circ, \quad \beta_p = 0^\circ.$$

We find that Sun's declination is

$$\begin{aligned} \delta_p &= \arcsin(\sin \varepsilon \times \cos \beta_p \times \sin \lambda_p + \cos \varepsilon \times \sin \beta_p) \\ &\approx \arcsin(\sin 23.44344^\circ \times \cos 0^\circ \times \sin 295.67861^\circ + \cos 23.44344^\circ \times \sin 0^\circ) \\ &\approx -21.01130^\circ. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_p &= \arccos\left(\frac{\cos \beta_p \times \cos \lambda_p}{\cos \delta_p}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 295.67861^\circ}{\cos(-21.01130^\circ)}\right] \\ &\approx 62.34241^\circ. \end{aligned}$$

Because $\lambda_p > 180^\circ$, we get $(RA)_p = 360^\circ - (ED)_p \approx 297.65759^\circ$ as Sun's right ascension. King's geographic latitude of birth is $\Phi = 33^\circ 45' N = +33.75^\circ$. For Sun's ascensional difference, we get

$$(AD)_P = \arcsin(\tan \delta_P \times \tan \Phi) \approx \arcsin[\tan(-21.01130^\circ) \times \tan(+33.75^\circ)] \\ \approx -14.87084^\circ,$$

and so

$$(OA)_P = (RA)_P - (AD)_P \approx 297.65759^\circ - (-14.87084^\circ) = 312.52843^\circ$$

is Sun's oblique ascension.

Thirdly, let's use pertinent formulas of Section A1 to deal with PC1 (the Ascendant). In the tropical SR chart (FIGURE 2.5), the Ascendant is at Taurus $14^\circ 40' 30.5''$ with an ecliptic latitude of 0° exactly. Therefore, we have

$$\lambda_{Asc} = 44^\circ 40' 30.5'' \approx 44.67514^\circ, \quad \beta_{Asc} = 0^\circ.$$

We find that the Ascendant's declination is

$$\delta_{Asc} = \arcsin(\sin \varepsilon \times \cos \beta_{Asc} \times \sin \lambda_{Asc} + \cos \varepsilon \times \sin \beta_{Asc}) \\ \approx \arcsin(\sin 23.44344^\circ \times \cos 0^\circ \times \sin 44.67514^\circ + \cos 23.44344^\circ \times \sin 0^\circ) \\ \approx +16.24340^\circ.$$

The equinoctial distance here is

$$(ED)_{Asc} = \arccos\left(\frac{\cos \beta_{Asc} \times \cos \lambda_{Asc}}{\cos \delta_{Asc}}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 44.67514^\circ}{\cos(+16.24340^\circ)}\right] \\ \approx 42.21143^\circ.$$

Because $\lambda_{Asc} < 180^\circ$, we get $(RA)_{Asc} = (ED)_{Asc} \approx 42.21143^\circ$ as the Ascendant's right ascension. King's geographic latitude of birth is $\Phi = 33^\circ 45' N = +33.75^\circ$. For the Ascendant's ascensional difference, we get

$$(AD)_{Asc} = \arcsin(\tan \delta_{Asc} \times \tan \Phi) \approx \arcsin[\tan(+16.24340^\circ) \times \tan(+33.75^\circ)] \\ \approx 11.22561^\circ,$$

and so

$$(OA)_{Asc} = (RA)_{Asc} - (AD)_{Asc} \approx 42.21143^\circ - 11.22561^\circ = 30.98582^\circ$$

is the Ascendant's oblique ascension.

Now we are ready to deal with the arc of direction for the converse Sun-PC1 conjunction. This arc (whether traditionally converse or neo-converse) involves the term $(OA)_{Asc} - (OA)_P$, which must be positive because the Ascendant is zodiacally ahead of Sun. We find that

$$(OA)_{Asc} - (OA)_P \approx 30.98582^\circ - 312.52843^\circ = -281.54261^\circ \\ \equiv -281.54261^\circ + 360^\circ = 78.45739^\circ.$$

Note that the mathematical symbol ' $\equiv$ ' means 'is equivalent to'. Two angles are equivalent if they differ by some nonzero integer multiple of 360° .

If we take the Sun-PC1 conjunction to be traditionally converse, then

$$\begin{aligned} \text{arc of direction} &= [(OA)_{Asc} - (OA)_P] \times \frac{90^\circ + (AD)_{Asc}}{90^\circ + (AD)_P} \\ &\approx 78.45739^\circ \times \frac{90^\circ + 11.22561^\circ}{90^\circ + (-14.87084^\circ)} \approx 105.70992^\circ. \end{aligned}$$

According to the SR time-key, each degree of the arc of direction corresponds to 1.01460101 mean solar days of age. For our arc here, we have

$$105.70992 \text{ deg} \times \frac{1.01460101 \text{ days of age}}{1 \text{ deg}} \approx 107.25339 \text{ days of age}.$$

Therefore, the traditionally converse Sun-PC1 conjunction predicts an event to occur about 107 days after Tuesday, 16 January 1968 (the SR date), which is on Thursday, 02 May 1968 (Day 123 of 1968). This prediction date is about 1 month after the date of King's passing (Thursday, 04 April 1968).

If we take the Sun-PC1 conjunction to be neo-converse, then

$$\begin{aligned} \text{arc of direction} &= (OA)_{Asc} - (OA)_P \approx 30.98582^\circ - 312.52843^\circ \\ &= -281.54261^\circ \equiv -281.54261^\circ + 360^\circ = 78.45739^\circ. \end{aligned}$$

According to the SR time-key, each degree of the arc of direction corresponds to 1.01460101 mean solar days of age. For our arc here, we have

$$78.45739 \text{ deg} \times \frac{1.01460101 \text{ days of age}}{1 \text{ deg}} \approx 79.60295 \text{ days of age}.$$

Therefore, the neo-converse Sun-PC1 conjunction predicts an event to occur about 80 days after Tuesday, 16 January 1968 (the SR date), which is on Friday, 05 April 1968 (Day 96 of 1968). This prediction date is 1 day after the date of King's passing (Thursday, 04 April 1968).

2.6 Event #K3: More on the SR Sun-PC1 conjunction

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. In Section 1.7, we examined the Sun-PC1 conjunction as a neo-converse primary direction that was associated with King's passing. Regarding King's SR chart (FIGURE 2.5), the Sun-PC1 conjunction is a converse primary direction in which Sun is the promissor and PC1 (the Ascendant) is the significator.

If we take the Sun-PC1 conjunction to be traditionally converse, then the fixed point is Sun, which lies in the upper western sky. From Section B1, the primary-direction formula yields

$$\text{arc of direction} = (RA)_{Asc} - (RA)_P + R_P \times [(AD)_{Asc} - (AD)_P],$$

where

$$R_P = \left| \frac{(RA)_{MC} - (RA)_P}{90^\circ + (AD)_P} \right|.$$

Note that the subscript P refers to the promissor.

If we take the Sun-PC1 conjunction to be neo-converse, then the fixed point is the Ascendant, which lies in the eastern sky. Here we use the negative of the formula that we would get if the primary direction were direct, and so

$$\begin{aligned} \text{arc of direction} &= -[(OA)_P - (OA)_{Asc}] = (OA)_{Asc} - (OA)_P \\ &= [(RA)_{Asc} - (AD)_{Asc}] - [(RA)_P - (AD)_P] \\ &= (RA)_{Asc} - (RA)_P - [(AD)_{Asc} - (AD)_P], \end{aligned}$$

where the subscript P refers to the promissor.

We previously found in Section 2.5 that

$$\begin{aligned} (RA)_P &\approx 297.65759^\circ, & (AD)_P &\approx -14.87084^\circ, \\ (RA)_{Asc} &\approx 42.21143^\circ, & (AD)_{Asc} &\approx 11.22561^\circ. \end{aligned}$$

Moreover, we found that $\varepsilon \approx 23.44344^\circ$.

Let's deal with the ratio R_P . In the tropical SR chart (FIGURE 2.5), the Midheaven is at Capricorn $28^\circ 51' 10''$ with an ecliptic latitude of 0° exactly. Therefore, we have

$$\lambda_{MC} = 298^\circ 51' 10'' \approx 298.85278^\circ, \quad \beta_{MC} = 0^\circ.$$

We find that the Midheaven's declination is

$$\begin{aligned} \delta_{MC} &= \arcsin(\sin \varepsilon \times \cos \beta_{MC} \times \sin \lambda_{MC} + \cos \varepsilon \times \sin \beta_{MC}) \\ &\approx \arcsin(\sin 23.44344^\circ \times \cos 0^\circ \times \sin 298.85278^\circ + \cos 23.44344^\circ \times \sin 0^\circ) \\ &\approx -20.39292^\circ. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_{MC} &= \arccos\left(\frac{\cos \beta_{MC} \times \cos \lambda_{MC}}{\cos \delta_{MC}}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 298.85278^\circ}{\cos(-20.39292^\circ)}\right] \\ &\approx 59.01408^\circ. \end{aligned}$$

Because $\lambda_{MC} > 180^\circ$, we get $(RA)_{MC} = 360^\circ - (ED)_{MC} \approx 300.98592^\circ$ as the Midheaven's right ascension. We find that

$$R_P = \left| \frac{(RA)_{MC} - (RA)_P}{90^\circ + (AD)_P} \right| \approx \left| \frac{300.98592^\circ - 297.65759^\circ}{90^\circ + (-14.87084^\circ)} \right| \approx 0.04430.$$

Note that R_P must not exceed the value of 1.

Now we are ready to deal with the arc of direction for the converse Sun-PC1 conjunction. If we take the Sun-PC1 conjunction to be traditionally converse, then

$$\begin{aligned}\text{arc of direction} &= (RA)_{Asc} - (RA)_P + R_P \times [(AD)_{Asc} - (AD)_P] \\ &\approx 42.21143^\circ - 297.65759^\circ + 0.04430 \times [11.22561^\circ - (-14.87084^\circ)] \\ &\approx -254.29009^\circ \equiv -254.29009^\circ + 360^\circ = 105.70991^\circ.\end{aligned}$$

According to the SR time-key, each degree of the arc of direction corresponds to 1.01460101 mean solar days of age. For our arc here, we have

$$105.70991 \text{ deg} \times \frac{1.01460101 \text{ days of age}}{1 \text{ deg}} \approx 107.25338 \text{ days of age}.$$

Therefore, the traditionally converse Sun-PC1 conjunction predicts an event to occur about 107 days after Tuesday, 16 January 1968 (the SR date), which is on Thursday, 02 May 1968 (Day 123 of 1968). This prediction date is about 1 month after the date of King's passing (Thursday, 04 April 1968).

If we take the Sun-PC1 conjunction to be neo-converse, then

$$\begin{aligned}\text{arc of direction} &= (RA)_{Asc} - (RA)_P - [(AD)_{Asc} - (AD)_P] \\ &\approx 42.21143^\circ - 297.65759^\circ - [11.22561^\circ - (-14.87084^\circ)] \\ &= -281.54261^\circ \equiv -281.54261^\circ + 360^\circ = 78.45739^\circ.\end{aligned}$$

According to the SR time-key, each degree of the arc of direction corresponds to 1.01460101 mean solar days of age. For our arc here, we have

$$78.45739 \text{ deg} \times \frac{1.01460101 \text{ days of age}}{1 \text{ deg}} \approx 79.60295 \text{ days of age}.$$

Therefore, the neo-converse Sun-PC1 conjunction predicts an event to occur about 80 days after Tuesday, 16 January 1968 (the SR date), which is on Friday, 05 April 1968 (Day 96 of 1968). This prediction date is 1 day after the date of King's passing (Thursday, 04 April 1968).

2.7 Event #K3: The LR Mars-PC1 square

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. In Section 1.9, we examined the Mars-PC1 square as a direct primary direction that was associated with King's passing. Regarding King's LR chart (FIGURE 2.7), the Mars-PC1 square is a direct primary direction in which Mars's sinister-square copy (MSSC) is the active promissor and PC1 (the Ascendant) is the fixed significator.

MSSC lies in the lower western sky, while PC1 lies in the lower eastern sky. Because MSSC and PC1 do not lie in the same quadrant, we cannot use the proportional semi-arc formula here. Nevertheless, we can construct pertinent arcs of direction by connecting suitable semi-arc pieces.

FIGURE 2.7: King's last LR chart (tropical)

(PC12) 03:07 Me 13:08 Ve 14:41 Mo 20:08 WS12 PI	(PC11) 02:38 WS11 AQ	(PC10) 02:09 WS10 CP	(PC9) 02:38 WS9 SA	(PC8) 03:07 WS8 SC
(PC1) 03:36 Su 06:51 Sa 14:16 Ma 29:37 WS1 AR	Martin Luther King Jr. Last Lunar-Return Chart (Tropical) Wednesday, 27 MAR 1968 at 06:27:08 EST Atlanta, GA (33° 45' N; 84° 23' W)			(PC7) 03:36 WS7 LI
(PC2) 03:07 WS2 TA	(PC3) 02:38 WS3 GE	(PC4) 02:09 MSSC 29:37 WS4 CN	(PC5) 02:38 Ju 26:49 R WS5 LE	(PC6) 03:07 WS6 VI

MSSC's arc of direction extends from MSSC toward the Ascendant. For the part of the arc of direction lying in the lower western sky, we have a diurnal arc piece of angular length $(1 - r_p) \times (SA)_p$, where $(SA)_p = 90^\circ - (AD)_p$ and

$$r_p = \frac{(OD)_{Dsc} - (OD)_p}{90^\circ - (AD)_p}.$$

For the part of the arc of direction lying in the lower eastern sky, we have a diurnal semi-arc of angular length $(SA)_p$. It follows that

$$\text{arc of direction} = (1 - r_p) \times (SA)_p + (SA)_p = (2 - r_p) \times (SA)_p.$$

We find that

$$\begin{aligned}
 2 - r_p &= 2 - \frac{(OD)_{Dsc} - (OD)_p}{90^\circ - (AD)_p} \\
 &= \frac{[180^\circ - 2(AD)_p] - [(OA)_{Asc} + 180^\circ] + [(RA)_p + (AD)_p]}{90^\circ - (AD)_p} \\
 &= \frac{[(RA)_p - (AD)_p] - (OA)_{Asc}}{90^\circ - (AD)_p} = \frac{(OA)_p - (OA)_{Asc}}{90^\circ - (AD)_p},
 \end{aligned}$$

where we have made use of the expression

$$(OD)_{Dsc} - 90^\circ = (RA)_{IC} = (OA)_{Asc} + 90^\circ.$$

It follows that

$$\text{arc of direction} = \frac{(OA)_P - (OA)_{Asc}}{90^\circ - (AD)_P} \times [90^\circ - (AD)_P] = (OA)_P - (OA)_{Asc}.$$

Note that the subscript P refers to the promissor.

Firstly, let's calculate the pertinent obliquity value. Between Wednesday, 27 March 1968 at 06:27:08 EST (or 11:27:08 UTC) and the epoch J2000.0 (Saturday, 01 January 2000 at approximately 12:00 UTC), there is the rest of 1968 and 7 leap years and 24 normal years. It follows that the elapsed time in Julian years is approximately

$$\frac{\left[\left(\frac{12.5}{24} + 279\right) + (7 \times 366) + (24 \times 365)\right] \text{ days}}{365.25 \text{ days/yr}} \approx 31.7632330 \text{ yrs},$$

and so the number of Julian centuries since the epoch J2000.0 is

$$T \approx -\frac{31.7632330 \text{ yrs}}{100 \text{ yrs}} = -0.317632330.$$

On making use of the obliquity formula in Section A1, we get

$$\begin{aligned} \varepsilon &\approx 23^\circ 26' 21.406'' - 46.836769'' \times (-0.317632330) \\ &\approx 23^\circ 26' 21.406'' + 14.8768721'' = 23^\circ 26' 36.2828721'' \\ &\approx 23.4434119^\circ \approx 23.44341^\circ. \end{aligned}$$

Note that T is positive for dates after the epoch and negative for dates before the epoch.

Secondly, let's use pertinent formulas of Section A1 to deal with Mars's sinister-square copy (MSSC). In the tropical LR chart (FIGURE 2.7), Mars is at Aries $29^\circ 37' 21''$ with an ecliptic latitude of $-00^\circ 05' 18''$. MSSC is at Cancer $29^\circ 37' 21''$ with a Bianchini ecliptic latitude of $(-00^\circ 05' 18'') \times \cos 90^\circ = 0^\circ$. Therefore, we have

$$\lambda_P = 119^\circ 37' 21'' = 119.62250^\circ, \quad \beta_P = 0^\circ.$$

We find that MSSC's declination is

$$\begin{aligned} \delta_P &= \arcsin(\sin \varepsilon \times \cos \beta_P \times \sin \lambda_P + \cos \varepsilon \times \sin \beta_P) \\ &\approx \arcsin(\sin 23.44341^\circ \times \cos 0^\circ \times \sin 119.62250^\circ + \cos 23.44341^\circ \times \sin 0^\circ) \\ &\approx +20.23341^\circ. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_P &= \arccos\left(\frac{\cos \beta_P \times \cos \lambda_P}{\cos \delta_P}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 119.62250^\circ}{\cos(+20.23341^\circ)}\right] \\ &\approx 121.78887^\circ. \end{aligned}$$

Because $\lambda_P < 180^\circ$, we get $(RA)_P = (ED)_P \approx 121.78887^\circ$ as MSSC's right ascension. King's geographic latitude of birth is $\Phi = 33^\circ 45' N = +33.75^\circ$. For MSSC's ascensional difference, we get

$$(AD)_P = \arcsin(\tan \delta_P \times \tan \Phi) \approx \arcsin[\tan(+20.23341^\circ) \times \tan(+33.75^\circ)] \\ \approx 14.25775^\circ,$$

and so

$$(OA)_P = (RA)_P - (AD)_P \approx 121.78887^\circ - 14.25775^\circ = 107.53112^\circ$$

is MSSC's oblique ascension.

Secondly, let's deal with PC1 (the Ascendant). In the tropical LR chart (FIGURE 2.7), the Ascendant is at Aries $03^\circ 36' 50''$ with an ecliptic latitude of 0° exactly. Therefore, we have

$$\lambda_{Asc} = 03^\circ 36' 50'' \approx 3.61389^\circ, \quad \beta_{Asc} = 0^\circ.$$

We find that the Ascendant's declination is

$$\delta_{Asc} = \arcsin(\sin \varepsilon \times \cos \beta_{Asc} \times \sin \lambda_{Asc} + \cos \varepsilon \times \sin \beta_{Asc}) \\ \approx \arcsin(\sin 23.44341^\circ \times \cos 0^\circ \times \sin 3.61389^\circ + \cos 23.44341^\circ \times \sin 0^\circ) \\ \approx +1.43696^\circ.$$

The equinoctial distance here is

$$(ED)_{Asc} = \arccos\left(\frac{\cos \beta_{Asc} \times \cos \lambda_{Asc}}{\cos \delta_{Asc}}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 3.61389^\circ}{\cos(+1.43696^\circ)}\right] \\ \approx 3.31627^\circ.$$

Because $\lambda_{Asc} < 180^\circ$, we get $(RA)_{Asc} = (ED)_{Asc} \approx 3.31627^\circ$ as the Ascendant's right ascension. King's geographic latitude of birth is $\Phi = 33^\circ 45' N = +33.75^\circ$. For the Ascendant's ascensional difference, we get

$$(AD)_{Asc} = \arcsin(\tan \delta_{Asc} \times \tan \Phi) \approx \arcsin[\tan(+1.43696^\circ) \times \tan(+33.75^\circ)] \\ \approx 0.96039^\circ,$$

and so

$$(OA)_{Asc} = (RA)_{Asc} - (AD)_{Asc} \approx 3.31627^\circ - 0.96039^\circ = 2.35588^\circ$$

is the Ascendant's oblique ascension.

Now we are ready to deal with the arc of direction for the direct Mars-PC1 square. We find that

$$\text{arc of direction} = (OA)_P - (OA)_{Asc} \approx 107.53112^\circ - 2.35588^\circ = 105.17524^\circ.$$

According to the LR time-key, each degree of the arc of direction corresponds to 0.0758935056 mean solar days of age. For our arc here, we have

$$105.17524 \text{ deg} \times \frac{0.0758935056 \text{ days of age}}{1 \text{ deg}} \approx 7.98212 \text{ days of age}.$$

Therefore, the direct Mars-PC1 square predicts an event to occur about 8 days after Wednesday, 27 March 1968 (the LR date), which is on Thursday, 04 April 1968 (Day 95 of 1968). This prediction date is the date of King's passing.

2.8 Event #K3: More on the LR Mars-PC1 square

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On Thursday, 04 April 1968, Martin Luther King Jr. was assassinated. In Section 1.9, we examined the Mars-PC1 square as a direct primary direction that was associated with King's passing. Regarding King's LR chart (FIGURE 2.7), the Mars-PC1 square is a direct primary direction in which Mars's sinister-square copy (MSSC) is the active promissor and PC1 (the Ascendant) is the fixed significator. From Section B4, we find that

$$\text{arc of direction} = (OA)_P - (OA)_{Asc} ,$$

where the subscript P refers to the promissor.

We previously found in Section 2.7 that

$$(OA)_P \approx 107.53112^\circ , \quad (OA)_{Asc} \approx 2.35588^\circ ,$$

and so

$$\text{arc of direction} = (OA)_P - (OA)_{Asc} \approx 107.53112^\circ - 2.35588^\circ = 105.17524^\circ .$$

According to the LR time-key, each degree of the arc of direction corresponds to 0.0758935056 mean solar days of age. For our arc here, we have

$$105.17524 \text{ deg} \times \frac{0.0758935056 \text{ days of age}}{1 \text{ deg}} \approx 7.98212 \text{ days of age} .$$

Therefore, the direct Mars-PC1 square predicts an event to occur about 8 days after Wednesday, 27 March 1968 (the LR date), which is on Thursday, 04 April 1968 (Day 95 of 1968). This prediction date is the date of King's passing.

APPENDIX A

Proportional semi-arcs

A1 Equatorial coordinates

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The term ‘primary directions’ refers to techniques that use primary motion to predict events. In order to deal with the mathematics of primary directions, we will be using the **equatorial coordinate system**, which enables us to specify the location of any point of the celestial sphere in terms of pertinent values of longitude and latitude. Equatorial longitude (called **right ascension**) is angular distance measured along the equator, going from 0° to 360° as we go eastward from the March equinox point. Equatorial latitude (called **declination**) is angular distance (along the celestial sphere) from the equator, going from 0° to $+90^\circ$ as we go perpendicularly northward and going from 0° to -90° as we go perpendicularly southward.

Converting from sidereal ecliptic coordinates to equatorial coordinates involves going from sidereal ecliptic coordinates to tropical ecliptic coordinates and then to equatorial coordinates. Adding the *ayanāmśa* to a sidereal ecliptic longitude yields its equivalent tropical ecliptic longitude, while tropical ecliptic latitude equals sidereal ecliptic latitude.

Both tropical ecliptic longitude and right ascension are measured from the March equinox point. Going from tropical ecliptic coordinates to equatorial coordinates is a conversion from one system of spherical coordinates to another. Consider a point of the celestial sphere that has tropical ecliptic longitude λ and ecliptic latitude β . Its right ascension RA and declination δ satisfy the equations

$$\begin{aligned}\cos \delta \times \cos(RA) &= \cos \beta \times \cos \lambda , \\ \cos \delta \times \sin(RA) &= \cos \varepsilon \times \cos \beta \times \sin \lambda - \sin \varepsilon \times \sin \beta , \\ \sin \delta &= \sin \varepsilon \times \cos \beta \times \sin \lambda + \cos \varepsilon \times \sin \beta ,\end{aligned}$$

where the **obliquity** ε is the angle between the ecliptic plane and the celestial equatorial plane (which is the same as Earth’s equatorial plane).

The obliquity is a slowly varying angle for which we will be using the approximation

$$\varepsilon \approx 23^\circ 26' 21.406'' - 46.836769'' \times T ,$$

where T is the number of Julian centuries since the epoch J2000.0. A **Julian year** is defined as exactly 365.25 days of 86400 seconds each. The epoch J2000.0 is a particular instant of time that is Saturday, 01 January 2000 at approximately 12:00 UTC. Note that T is positive for dates after the epoch and negative for dates before the epoch.

We find that

$$\delta = \arcsin(\sin \varepsilon \times \cos \beta \times \sin \lambda + \cos \varepsilon \times \sin \beta) .$$

On defining the **equinoctial distance**

$$ED := \arccos\left(\frac{\cos \beta \times \cos \lambda}{\cos \delta}\right),$$

we get

$$RA = \begin{cases} ED & \text{for } \lambda < 180^\circ \\ 360^\circ - ED & \text{for } \lambda > 180^\circ. \end{cases}$$

Note that equinoctial distance is angular distance measured along the equator, going from 0° to 180° as we go eastward or westward from the March equinox point.

TABLE A1: Ecliptic latitudes for aspect copies

Aspect Copy	θ_A	β_A/β_0
Duodecile	30°	$+\sqrt{3}/2$
Sextile	60°	$+1/2$
Square	90°	0

Aspect Copy	θ_A	β_A/β_0
Trine	120°	$-1/2$
Quincunx	150°	$-\sqrt{3}/2$
Opposition	180°	-1

In order to get the ecliptic latitude of an aspect copy, we will use the **Bianchini aspect circle**. On the celestial sphere, this great circle passes through the parent planet's location and intersects the ecliptic at the two points corresponding to the planet's square aspects. In this regard, we will take each square copy to lie on the ecliptic at an intersection point, and we will take the opposition copy to lie at the point that is opposite the parent planet's location. It follows that the ecliptic latitude of an aspect copy having signature angular separation θ_A is given by

$$\beta_A = \beta_0 \times \cos \theta_A$$

where β_0 is the ecliptic latitude of the parent planet. TABLE A1 presents pertinent results.

A2 Direct and converse primary directions

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Earth's axial rotation gives rise to **primary motion**. From the point of view of an earthbound observer, primary motion is perceived as Earth remaining at rest while the surrounding celestial sphere and everything on it (including the zodiacal belt) rotate about Earth's line of poles. It is useful here to imagine two celestial spheres that occupy the same volume of space – the active sphere and the fixed sphere. The **active sphere** is the celestial sphere undergoing its usual axial rotation according to primary motion. The **fixed sphere** is the celestial sphere as it appeared at a specific time of interest, which could be a birth time, a solar-return time, or a lunar-return time. Primary motion moves the active sphere across the stationary fixed sphere.

From the point of view of an earthbound observer, primary motion causes the zodiacal belt (with the planets attached to it) to rotate backward through fixed houses of the local sky. A **primary direction** is the process of primary motion directing a given point of the active sphere backward through the houses toward a given point of the fixed sphere.

Each primary direction is associated with a predicted event. One of its two points is called the **significator**, and it indicates the area of life in which the predicted event will occur. The other point is called the **promissor**, and it indicates that which promises (that is, gives grounds for expecting) the predicted event. A primary direction is said to be **direct** if primary motion directs a promissor lying in the active sphere toward a significator lying in the fixed sphere. A primary direction is said to be **traditionally converse** if primary motion directs a significator lying in the active sphere toward a promissor lying in the fixed sphere. A primary direction is said to be **neo-converse** if reversed primary motion (which is a what-if notion) directs a promissor lying in the active sphere toward a significator lying in the fixed sphere.

A primary direction results in an **arc of direction**, which is the circular path along which primary motion has directed the active point (which lies in the active sphere) toward the fixed point (which lies in the fixed sphere). A primary direction is associated with a predicted event, and the angular length of the associated arc of direction is related to the time when the event is predicted to occur.

A3 The proportional semi-arc formula

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The Ascendant-Descendant (or horizon) axis is the boundary between the upper sky (which contains the Midheaven) and the lower sky (which contains the Imum Coeli). Moreover, the Medium-Imum Coeli (or meridian) axis is the boundary between the eastern sky (which contains the Ascendant) and the western sky (which contains the Descendant). A quadrant-house system (such as our Porphyry house system) uses the horizon and meridian axes to divide the local sky into four quadrants, each containing three houses.

In applying any method of primary directions, we are working with an astrological chart that is cast for a specific time of interest, which could be a birth time, a solar-return time, or a lunar-return time. For the time of the chart, consider an active-sphere point A and a fixed-sphere point F that are both in the same quadrant. The active point lies zodiacally ahead of the fixed point, and so primary motion will direct the active point toward the fixed point.

The active and fixed points each have a **semi-arc** that extends backward house-wise from one quadrant boundary to the other. The semi-arc of the active point is the path that it follows as the active sphere undergoes primary motion. The semi-arc of the fixed point that it would follow if the fixed sphere were allowed to undergo primary motion. Note that points A and F usually have different semi-arcs. Therefore, whenever we say that point A will move toward point F , we mean that point A will move along its own semi-arc and get closer to point F (which lies on its own semi-arc).

The angular length of a point's semi-arc is a non-negative quantity that depends on the point's declination δ and on the chart's geographical latitude Φ via the **ascensional difference**

$$AD = \arcsin(\tan \delta \times \tan \Phi) .$$

If points A and F both lie in a quadrant of the chart's diurnal hemisphere, then each point has a **diurnal semi-arc**. If points A and F both lie in a quadrant of the chart's nocturnal hemisphere, then each point has a **nocturnal semi-arc**. The angular length of a semi-arc is given by

$$SA = \begin{cases} 90^\circ + AD & \text{for a diurnal semi-arc} \\ 90^\circ - AD & \text{for a nocturnal semi-arc} \end{cases}.$$

Because AD is an arcsine value, its range is from -90° to $+90^\circ$. It follows that SA can never be negative.

Each semi-arc extends backward house-wise from one quadrant boundary to the other. If the beginning quadrant boundary is a horizon angle (that is, the Ascendant or the Descendant), then each point lies along its own semi-arc at some angular distance HD away from that horizon angle. This **horizontal distance** is given by

$$HD = \begin{cases} (OA)_{Asc} - OA & \text{away from the Ascendant} \\ (OD)_{Dsc} - OD & \text{away from the Descendant} \end{cases},$$

where $OA = RA - AD$ is the **oblique ascension** and $OD = RA + AD$ is the **oblique descension**. Like right ascension RA , oblique ascension and oblique descension are increasing functions of ecliptic longitude. Because points A and F both lie zodiacally behind the quadrant boundary (whether the Ascendant or the Descendant), their respective horizontal distances are nonnegative angular quantities.

If the beginning quadrant boundary is a meridian angle (that is, the Midheaven or the Imum Coeli), then each point lies along its own semi-arc at some angular distance MD away from that meridian angle. This **meridian distance** is given by

$$MD = \begin{cases} (RA)_{MC} - RA & \text{away from the Midheaven} \\ (RA)_{IC} - RA & \text{away from the Imum Coeli} \end{cases}.$$

Right ascension RA is an increasing function of ecliptic longitude. Because points A and F both lie zodiacally behind the quadrant boundary (whether the Midheaven or the Imum Coeli), their respective meridian distances are nonnegative angular quantities.

Let r be the point's **proportional location**, which is ratio of the point's angular distance (whether HD or MD) divided by its semi-arc's extent SA . Note that r takes on values from 0 to 1. For the time of the chart, the active point lies zodiacally ahead of the fixed point, and so its proportional location is lesser. That is, we have $r_A < r_F$. As primary motion occurs, the active-point's proportional location increases. A **conjunction** occurs between points A and F whenever their proportional locations become equal. The arc of direction is the angle through which the active point must be moved (via primary motion) along its own semi-arc so that its proportional location goes from the chart value r_A to the conjunction value r_F . More specifically, we have

$$\text{arc of direction} = (r_F - r_A) \times (SA)_A$$

for a primary direction in the quadrant of interest. We will refer to this expression as the **proportional semi-arc formula**.

A4 Directing toward the Ascendant

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In a suitable astrological chart, consider an active-sphere point A and a fixed-sphere point F that are both in the upper western sky (that is, the quadrant consisting of PH1, PH2, and PH3). The active point lies zodiacally ahead of the fixed point, and so primary motion will direct the active point toward the fixed point. The active and fixed points each have a nocturnal semi-arc that extends from the Imum Coeli to the Ascendant. Each point's angular distance along its own nocturnal semi-arc is given by its meridian distance MD from the Imum Coeli. The positive ratios

$$r_A = \frac{(MD)_A}{(SA)_A} = \frac{(RA)_{IC} - (RA)_A}{90^\circ - (AD)_A}, \quad r_F = \frac{(MD)_F}{(SA)_F} = \frac{(RA)_{IC} - (RA)_F}{90^\circ - (AD)_F}$$

respectively give each point's proportional location along its own nocturnal semi-arc.

Let's now consider the special case of the fixed point being the Ascendant. Because the Ascendant lies at the end of its semi-arc, we have

$$\begin{aligned} 1 = r_{Asc} &= \frac{(RA)_{IC} - (RA)_{Asc}}{90^\circ - (AD)_{Asc}} \Rightarrow (RA)_{IC} - (RA)_{Asc} = 90^\circ - (AD)_{Asc} \\ &\Rightarrow (RA)_{IC} = (OA)_{Asc} + 90^\circ. \end{aligned}$$

From Section A3, the proportional semi-arc formula yields the expression

$$\begin{aligned} \text{arc of direction} &= (r_{Asc} - r_A) \times (SA)_A = \left[1 - \frac{(RA)_{IC} - (RA)_A}{90^\circ - (AD)_A} \right] \times [90^\circ - (AD)_A] \\ &= \left\{ \frac{[90^\circ - (AD)_A] - [(OA)_{Asc} + 90^\circ] + (RA)_A}{90^\circ - (AD)_A} \right\} \times [90^\circ - (AD)_A] \\ &= 90^\circ - (AD)_A - (OA)_{Asc} - 90^\circ + (RA)_A = [(RA)_A - (AD)_A] - (OA)_{Asc}, \end{aligned}$$

and so

$$\text{arc of direction} = (OA)_A - (OA)_{Asc}$$

for a primary direction having the Ascendant as the fixed point.

A5 Directing toward the Descendant

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In a suitable astrological chart, consider an active-sphere point A and a fixed-sphere point F that are both in the upper western sky (that is, the quadrant consisting of PH7, PH8, and PH8). The active point lies zodiacally ahead of the fixed point, and so primary motion will direct the active point toward the fixed point. The active and fixed points each have a diurnal semi-arc that extends from the Midheaven to the Descendant. Each point's angular distance along its own diurnal semi-arc is given by its meridian distance MD from the Midheaven. The positive ratios

$$r_A = \frac{(MD)_A}{(SA)_A} = \frac{(RA)_{MC} - (RA)_A}{90^\circ + (AD)_A}, \quad r_F = \frac{(MD)_F}{(SA)_F} = \frac{(RA)_{MC} - (RA)_F}{90^\circ + (AD)_F}$$

respectively give each point's proportional location along its own diurnal semi-arc.

Let's now consider the special case of the fixed point being the Descendant. Because the Descendant lies at the far endpoint of its semi-arc, we have

$$\begin{aligned} 1 = r_{Dsc} &= \frac{(RA)_{MC} - (RA)_{Dsc}}{90^\circ + (AD)_{Dsc}} \Rightarrow (RA)_{MC} - (RA)_{Dsc} = 90^\circ + (AD)_{Dsc} \\ &\Rightarrow (RA)_{MC} = (OD)_{Dsc} + 90^\circ. \end{aligned}$$

From Section A3, the proportional semi-arc formula yields the expression

$$\begin{aligned} \text{arc of direction} &= (r_{Dsc} - r_A) \times (SA)_A = \left[1 - \frac{(RA)_{MC} - (RA)_A}{90^\circ + (AD)_A} \right] \times [90^\circ + (AD)_A] \\ &= \left\{ \frac{[90^\circ + (AD)_A] - [(OD)_{Dsc} + 90^\circ] + (RA)_A}{90^\circ + (AD)_A} \right\} \times [90^\circ + (AD)_A] \\ &= 90^\circ + (AD)_A - (OD)_{Dsc} - 90^\circ + (RA)_A = [(RA)_A + (AD)_A] - (OD)_{Dsc}, \end{aligned}$$

and so

$$\text{arc of direction} = (OD)_A - (OD)_{Dsc}$$

for a primary direction having the Descendant as the fixed point.

A6 Directing toward the Midheaven

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In a suitable astrological chart, consider an active-sphere point A and a fixed-sphere point F that are both in the upper eastern sky (that is, the quadrant consisting of PH10, PH11, and PH12). The active point lies zodiacally ahead of the fixed point, and so primary motion will direct the active point toward the fixed point. The active and fixed points each have a diurnal semi-arc that extends from the Ascendant to the Midheaven. Each point's angular distance along its own diurnal semi-arc is given by its horizontal distance HD from the Ascendant. The positive ratios

$$r_A = \frac{(HD)_A}{(SA)_A} = \frac{(OA)_{Asc} - (OA)_A}{90^\circ + (AD)_A}, \quad r_F = \frac{(HD)_F}{(SA)_F} = \frac{(OA)_{Asc} - (OA)_F}{90^\circ + (AD)_F}$$

respectively give each point's proportional location along its own diurnal semi-arc.

Let's now consider the special case of the fixed point being the Midheaven. Because the Midheaven lies at the far endpoint of its semi-arc, we have

$$\begin{aligned} 1 = r_{MC} &= -\frac{(OA)_{MC} - (OA)_{Asc}}{90^\circ + (AD)_{MC}} \Rightarrow (OA)_{MC} - (OA)_{Asc} = -(AD)_{MC} - 90^\circ \\ &\Rightarrow (OA)_{Asc} = (OA)_{MC} + 90^\circ. \end{aligned}$$

From Section A3, the proportional semi-arc formula yields the expression

$$\begin{aligned} \text{arc of direction} &= (r_{MC} - r_A) \times (SA)_A = \left[1 - \frac{(OA)_{Asc} - (OA)_A}{90^\circ + (AD)_A} \right] \times [90^\circ + (AD)_A] \\ &= \left\{ \frac{[90^\circ + (AD)_A] - [(RA)_{MC} + 90^\circ] + (OA)_A}{90^\circ + (AD)_A} \right\} \times [90^\circ + (AD)_A] \\ &= 90^\circ - (RA)_{MC} - 90^\circ + (AD)_A + (OA)_A = [(OA)_A + (AD)_A] - (RA)_{MC}, \end{aligned}$$

and so

$$\text{arc of direction} = (RA)_A - (RA)_{MC}$$

for a primary direction having the Midheaven as the fixed point.

A7 Directing toward the Imum Coeli

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In a suitable astrological chart, consider an active-sphere point A and a fixed-sphere point F that are both in the lower western sky (that is, the quadrant consisting of PH4, PH5, and PH6). The active point lies zodiacally ahead of the fixed point, and so primary motion will direct the active point toward the fixed point. The active and fixed points each have a nocturnal semi-arc that extends from the Descendant to the Imum Coeli. Each point's angular distance along its own nocturnal semi-arc is given by its horizontal distance HD from the Descendant. The positive ratios

$$r_A = \frac{(HD)_A}{(SA)_A} = \frac{(OD)_{Dsc} - (OD)_A}{90^\circ - (AD)_A}, \quad r_F = \frac{(HD)_F}{(SA)_F} = \frac{(OD)_{Dsc} - (OD)_F}{90^\circ - (AD)_F}$$

respectively give each point's proportional location along its own nocturnal semi-arc.

Let's now consider the special case of the fixed point being the Imum Coeli. Because the Imum Coeli lies at the far endpoint of its semi-arc, we have

$$\begin{aligned} 1 = r_{IC} &= -\frac{(OD)_{IC} - (OD)_{Dsc}}{90^\circ - (AD)_{IC}} \Rightarrow (OD)_{IC} - (OD)_{Dsc} = (AD)_{IC} - 90^\circ \\ &\Rightarrow (OD)_{Dsc} = (RA)_{IC} + 90^\circ. \end{aligned}$$

From Section A3, the proportional semi-arc formula yields the expression

$$\begin{aligned} \text{arc of direction} &= (r_{IC} - r_A) \times (SA)_A = \left[1 - \frac{(OD)_{Dsc} - (OD)_A}{90^\circ - (AD)_A} \right] \times [90^\circ - (AD)_A] \\ &= \left\{ \frac{[90^\circ - (AD)_A] - [(RA)_{IC} + 90^\circ] + (OD)_A}{90^\circ - (AD)_A} \right\} \times [90^\circ - (AD)_A] \\ &= 90^\circ - (AD)_A - (RA)_{IC} - 90^\circ + (OD)_A = [(OD)_A - (AD)_A] - (RA)_{IC}, \end{aligned}$$

and so

$$\text{arc of direction} = (RA)_A - (RA)_{IC}$$

for a primary direction having the Imum Coeli as the fixed point.

A8 A calculation example

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FIGURE A8 presents my natal chart in terms of the tropical zodiac.

FIGURE A8: Aakhut's natal chart (tropical)

Ma 07:11 (PC12) 21:22 WS12 TA	(PC11) 13:08 JDSC 19:59 WS11 AR	(PC10) 04:53 Su 17:21 WS10 PI	Ve 04:28 (PC9) 13:08 Me 20:02 WS9 AQ	(PC8) 21:22 WS8 CP
(PC1) 29:37 WS1 GE	Aakhut Em Bak Natal Chart (Tropical Zodiac) Tuesday, 08 MAR 1955 at 11:15 CST Chicago, IL (41° 51' N; 87° 39' W)			(PC7) 29:37 WS7 SA
Ju 19:59 R (PC2) 21:22 WS2 CN	(PC3) 13:08 WS3 LE	(PC4) 04:53 Mo 18:08 WS4 VI	(PC5) 13:08 WS5 LI	Sa 21:07 R (PC6) 21:22 WS6 SC

Let's examine the Jupiter-PC10 square as a direct primary direction in which Jupiter's dexter-square copy (JDSC) is the active promissor and PC10 (the Midheaven) is the fixed significator. Both JDSC and PC10 lie in the upper eastern sky. From Section A6, we find that

$$\text{arc of direction} = (RA)_P - (RA)_{MC} ,$$

where the subscript P refers to the promissor.

Firstly, let's calculate the pertinent obliquity value. Between Tuesday, 08 March 1955 at 11:15 CST (or 17:15 UTC) and the epoch J2000.0 (Saturday, 01 January 2000 at approximately 12:00 UTC), there is the rest of 1955 and 16 leap years and 28 normal years. It follows that the elapsed time in Julian years is approximately

$$\frac{\left[\left(\frac{6.75}{24}\right) + 298\right] + (16 \times 366) + (28 \times 365)}{365.25 \text{ days/yr}} \approx 44.8303388 \text{ yrs} ,$$

and so the number of Julian centuries since the epoch J2000.0 is

$$T \approx -\frac{44.8303388 \text{ yrs}}{100 \text{ yrs}} = -0.448303388.$$

On making use of the obliquity formula in Section A1, we get

$$\begin{aligned} \varepsilon &\approx 23^\circ 26' 21.406'' - 46.836769'' \times (-0.448303388) \\ &\approx 23^\circ 26' 21.406'' + 20.9970822'' = 23^\circ 26' 42.4030822'' \\ &\approx 23.4451120^\circ \approx 23.44511^\circ. \end{aligned}$$

Note that T is positive for dates after the epoch and negative for dates before the epoch.

Secondly, let's use pertinent formulas of Section A1 to deal with Jupiter's dexter-square copy (JDSC). In the tropical natal chart (FIGURE A8), Jupiter is at Cancer $19^\circ 59' 17''$ with an ecliptic latitude of $+00^\circ 28' 59''$. JDSC is at Aries $19^\circ 59' 17''$ with a Bianchini ecliptic latitude of $(+00^\circ 28' 59'') \times \cos 90^\circ = 0^\circ$. Therefore, we have

$$\lambda_P = 19^\circ 59' 17'' \approx 19.98806^\circ, \quad \beta_P = 0^\circ.$$

We find that JDSC's declination is

$$\begin{aligned} \delta_P &= \arcsin(\sin \varepsilon \times \cos \beta_P \times \sin \lambda_P + \cos \varepsilon \times \sin \beta_P) \\ &\approx \arcsin(\sin 23.44511^\circ \times \cos 0^\circ \times \sin 19.98806^\circ + \cos 23.44511^\circ \times \sin 0^\circ) \\ &\approx +7.81655^\circ. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_P &= \arccos\left(\frac{\cos \beta_P \times \cos \lambda_P}{\cos \delta_P}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 19.98806^\circ}{\cos(+7.81655^\circ)}\right] \\ &\approx 18.45411^\circ. \end{aligned}$$

Because $\lambda_P < 180^\circ$, we get $(RA)_P = (ED)_P \approx 18.45411^\circ$ as JDSC's right ascension.

Secondly, let's use pertinent formulas of Section A1 to deal with PC10 (the Midheaven). In the tropical natal chart (FIGURE A8), the Midheaven is at Pisces $04^\circ 53' 20''$ with an ecliptic latitude of 0° exactly. Therefore, we have

$$\lambda_{MC} = 334^\circ 53' 20'' \approx 334.88889^\circ, \quad \beta_{MC} = 0^\circ.$$

We find that the Midheaven's declination is

$$\begin{aligned} \delta_{MC} &= \arcsin(\sin \varepsilon \times \cos \beta_{MC} \times \sin \lambda_{MC} + \cos \varepsilon \times \sin \beta_{MC}) \\ &\approx \arcsin(\sin 23.44511^\circ \times \cos 0^\circ \times \sin 334.88889^\circ + \cos 23.44511^\circ \times \sin 0^\circ) \\ &\approx -9.72074^\circ. \end{aligned}$$

The equinoctial distance here is

$$\begin{aligned} (ED)_{MC} &= \arccos\left(\frac{\cos \beta_{MC} \times \cos \lambda_{MC}}{\cos \delta_{MC}}\right) \approx \arccos\left[\frac{\cos 0^\circ \times \cos 334.88889^\circ}{\cos(-9.72074^\circ)}\right] \\ &\approx 23.26664^\circ. \end{aligned}$$

Because $\lambda_{MC} > 180^\circ$, we get $(RA)_{MC} = 360^\circ - (ED)_{MC} \approx 336.73336^\circ$ as the Midheaven's right ascension.

Now we are ready to deal with the arc of direction for the direct Jupiter-PC10 square. We find that

$$\begin{aligned}\text{arc of direction} &= (RA)_P - (RA)_{MC} \approx 18.45411^\circ - 336.73336^\circ = -318.27925^\circ \\ &\equiv -318.27925^\circ + 360^\circ = 41.72075^\circ.\end{aligned}$$

Note that the mathematical symbol ' $\equiv$ ' means 'is equivalent to'. Two angles are equivalent if they differ by some nonzero integer multiple of 360° .

According to the Ptolemy time-key, each degree of the arc of direction corresponds to a sidereal year of age. For our arc here, we have

$$\begin{aligned}41.72075 \text{ deg} \times \frac{1 \text{ yr of age}}{1 \text{ deg}} &\approx 41.72075 \text{ yrs of age} \\ &= 41 \text{ yrs} + \left(0.72075 \text{ yr} \times \frac{365.256363 \text{ days}}{1 \text{ yr}}\right) \approx 41 \text{ yrs} + 263.25852 \text{ days}.\end{aligned}$$

Therefore, the direct Jupiter-PC10 square predicts an event to occur about 263 days after Friday, 08 March 1996 (my 41st birthday), which is on Tuesday, 26 November 1996 (Day 331 of 1996).

APPENDIX B

More mathematics of primary directions

B1 The primary-direction formula

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In Section A3 of Appendix A, we presented the proportional semi-arc formula, which involves a situation in which the active and fixed points of a primary direction both lie in the same quadrant of the sky. In this section, we present a formula that can be applied to any situation of primary directions. In applying any method of primary directions, we are working with an astrological chart that is cast for a specific time of interest, which could be a birth time, a solar-return time, or a lunar-return time. For the time of the chart, consider an active-sphere point A and a fixed-sphere point F . The arc of direction is the circular path along which primary motion directs the active point toward the fixed point. For primary directions that are direct or traditionally converse, the angular length of the arc of direction is given by the **primary-direction formula**

$$\text{arc of direction} = \begin{cases} (RA)_A - (RA)_F - R_F \times [(AD)_A - (AD)_F] & \text{for an eastern fixed point} \\ (RA)_A - (RA)_F + R_F \times [(AD)_A - (AD)_F] & \text{for a western fixed point.} \end{cases}$$

For each of the points A and F , the ascensional difference is given by

$$AD = \arcsin(\tan \delta \times \tan \Phi),$$

where RA is the point's declination, δ is the point's declination, and Φ is the chart's geographical latitude. The nonnegative quantity

$$R_F = \left| \frac{(MD)_F}{(SA)_F} \right|$$

involves the ratio of the fixed-point's meridian distance

$$(MD)_F = \begin{cases} (RA)_{MC} - (RA)_F & \text{for a fixed point in the upper sky} \\ (RA)_{IC} - (RA)_F & \text{for a fixed point in the lower sky} \end{cases}$$

to its semi-arc

$$(SA)_F = \begin{cases} 90^\circ + (AD)_F & \text{for a fixed point in the upper sky} \\ 90^\circ - (AD)_F & \text{for a fixed point in the lower sky.} \end{cases}$$

Note that R_F must not exceed the value of 1.

B2 Directing toward the Ascendant

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For a primary direction having the Ascendant as the fixed point, the primary-direction formula yields

$$\text{arc of direction} = (RA)_A - (RA)_{Asc} - R_{Asc} \times [(AD)_A - (AD)_{Asc}].$$

The Ascendant is on the horizon, but the expression for R_F depends on whether the fixed point is above or below the horizon. In order to solve this problem, we will firstly take the Ascendant to be slightly away from the horizon and secondly take the mathematical limit as ‘being slightly away from the horizon’ approaches ‘being on the horizon’.

Let’s take the Ascendant to be slightly above the horizon. In this what-if scenario, we have

$$R_{Asc} = \left| \frac{(RA)_{MC} - (RA)_{Asc}}{90^\circ + (AD)_{Asc}} \right|.$$

On making use of the expression

$$(OA)_{Asc} = (RA)_{MC} + 90^\circ,$$

we get

$$\begin{aligned} \frac{(RA)_{MC} - (RA)_{Asc}}{90^\circ + (AD)_{Asc}} &= \frac{[(OA)_{Asc} - 90^\circ] - (RA)_{Asc}}{90^\circ + (AD)_{Asc}} = \frac{-90^\circ + [(OA)_{Asc} - (RA)_{Asc}]}{90^\circ + (AD)_{Asc}} \\ &= \frac{-90^\circ - (AD)_{Asc}}{90^\circ + (AD)_{Asc}} = \frac{-[90^\circ + (AD)_{Asc}]}{90^\circ + (AD)_{Asc}} = -1. \end{aligned}$$

Therefore, we get $R_{Asc} = |-1| = 1$ for the what-if scenario of the Ascendant being slightly above the horizon. On taking the mathematical limit as ‘being slightly above the horizon’ approaches ‘being on the horizon’, we get $R_{Asc} = 1$.

Let’s now take the Ascendant to be slightly below the horizon. In this what-if scenario, we have

$$R_{Asc} = \left| \frac{(RA)_{IC} - (RA)_{Asc}}{90^\circ - (AD)_{Asc}} \right|.$$

If Point #1 and Point #2 are opposite points of the celestial sphere, then

$$(RA)_2 = (RA)_1 - 180^\circ \equiv (RA)_1 + 180^\circ,$$

$$\delta_2 = -\delta_1 \Rightarrow (AD)_2 = -(AD)_1.$$

Note that the mathematical symbol ‘ $\equiv$ ’ means ‘is equivalent to’. Two angles are equivalent if they differ by some nonzero integer multiple of 360° . Because the Midheaven and Imum Coeli are opposite points of the celestial sphere, we get

$$(RA)_{IC} = (RA)_{MC} - 180^\circ \equiv (RA)_{MC} + 180^\circ,$$

and so

$$\begin{aligned} \frac{(RA)_{IC} - (RA)_{Asc}}{90^\circ - (AD)_{Asc}} &= \frac{[(RA)_{MC} + 180^\circ] - (RA)_{Asc}}{90^\circ - (AD)_{Asc}} \\ &= \frac{[(OA)_{Asc} - 90^\circ] + 180^\circ - (RA)_{Asc}}{90^\circ - (AD)_{Asc}} = \frac{90^\circ + [(OA)_{Asc} - (RA)_{Asc}]}{90^\circ - (AD)_{Asc}} \\ &= \frac{90^\circ - (AD)_{Asc}}{90^\circ - (AD)_{Asc}} = 1. \end{aligned}$$

Therefore, we get $R_{Asc} = |1| = 1$ for the what-if scenario of the Ascendant being slightly below the horizon. On taking the mathematical limit as ‘being slightly below the horizon’ approaches ‘being on the horizon’, we get $R_{Asc} = 1$.

For the two what-if scenarios just considered, the pertinent mathematical limits are equal. Therefore, we have $R_{Asc} = 1$ for the Ascendant being on the horizon. It follows that

$$\begin{aligned} \text{arc of direction} &= (RA)_A - (RA)_{Asc} - 1 \times [(AD)_A - (AD)_{Asc}] \\ &= [(RA)_A - (AD)_A] - [(RA)_{Asc} - (AD)_{Asc}] , \end{aligned}$$

and so

$$\text{arc of direction} = (OA)_A - (OA)_{Asc}$$

for a primary direction having the Ascendant as the fixed point. Note that $OA = RA - AD$ is the oblique ascension.

B3 Directing toward the Descendant

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For a primary direction having the Descendant as the fixed point, the primary-direction formula yields

$$\text{arc of direction} = (RA)_A - (RA)_{Dsc} + R_{Dsc} \times [(AD)_A - (AD)_{Dsc}] .$$

The Descendant is on the horizon, but the expression for R_F depends on whether the fixed significator is above or below the horizon. In order to solve this problem, we will firstly take the Descendant to be slightly away from the horizon and secondly take the mathematical limit as ‘being slightly away the horizon’ approaches ‘being on the horizon’.

Let’s take the Descendant to be slightly above the horizon. In this what-if scenario, we have

$$R_{Dsc} = \left| \frac{(RA)_{MC} - (RA)_{Dsc}}{90^\circ + (AD)_{Dsc}} \right| .$$

On making use of the expression

$$(OD)_{Dsc} = (RA)_{MC} - 90^\circ ,$$

we get

$$\begin{aligned} \frac{(RA)_{MC} - (RA)_{Dsc}}{90^\circ + (AD)_{Dsc}} &= \frac{[(OD)_{Dsc} + 90^\circ] - (RA)_{Dsc}}{90^\circ + (AD)_{Dsc}} = \frac{90^\circ + [(OD)_{Dsc} - (RA)_{Dsc}]}{90^\circ + (AD)_{Dsc}} \\ &= \frac{90^\circ + (AD)_{Dsc}}{90^\circ + (AD)_{Dsc}} = 1 , \end{aligned}$$

and so $R_{Dsc} = |1| = 1$ for the what-if scenario of the Descendant being slightly above the horizon. On taking the mathematical limit as ‘being slightly above the horizon’ approaches ‘being on the horizon’, we get $R_{Dsc} = 1$.

Let's now take the Descendant to be slightly below the horizon. In this what-if scenario, we have

$$R_{Dsc} = \left| \frac{(RA)_{IC} - (RA)_{Dsc}}{90^\circ - (AD)_{Dsc}} \right|.$$

Because the Midheaven and Imum Coeli are opposite points of the celestial sphere, we have

$$(RA)_{IC} = (RA)_{MC} - 180^\circ \equiv (RA)_{MC} + 180^\circ,$$

$$\delta_{IC} = -\delta_{MC} \Rightarrow (AD)_{IC} = -(AD)_{MC}.$$

We find that

$$\frac{(RA)_{IC} - (RA)_{Dsc}}{90^\circ - (AD)_{Dsc}} = \frac{[(RA)_{MC} - 180^\circ] - [(RA)_{Asc} - 180^\circ]}{90^\circ - [-(AD)_{Asc}]} = \frac{(RA)_{MC} - (RA)_{Asc}}{90^\circ + (AD)_{Asc}},$$

which we have already shown to be equal to -1 in Section B2. Therefore, we get $R_{Dsc} = |-1| = 1$ for the what-if scenario of the Descendant being slightly below the horizon. On taking the mathematical limit as 'being slightly below the horizon' approaches 'being on the horizon', we get $R_{Dsc} = 1$.

For the two what-if scenarios just considered, the pertinent mathematical limits are equal. Therefore, we have $R_{Dsc} = 1$ for the Descendant being on the horizon. It follows that

$$\begin{aligned} \text{arc of direction} &= (RA)_A - (RA)_{Dsc} + 1 \times [(AD)_A - (AD)_{Dsc}] \\ &= [(RA)_A + (AD)_A] - [(RA)_{Dsc} + (AD)_{Dsc}], \end{aligned}$$

and so

$$\text{arc of direction} = (OD)_A - (OD)_{Dsc}$$

for a primary direction having the Descendant as the fixed point. Note that $OD = RA + AD$ is the oblique descension.

Let's go further. For the point Q that is opposite the active point A , we have

$$(RA)_Q = (RA)_A - 180^\circ \equiv (RA)_A + 180^\circ, \quad (AD)_Q = -(AD)_A,$$

and so

$$\begin{aligned} \text{arc of direction} &= [(RA)_A + (AD)_A] - [(RA)_{Dsc} + (AD)_{Dsc}] \\ &= [(RA)_Q + 180^\circ - (AD)_Q] - [(RA)_{Asc} + 180^\circ - (AD)_{Asc}] \\ &= [(RA)_Q - (AD)_Q] - [(RA)_{Asc} - (AD)_{Asc}]. \end{aligned}$$

It follows that

$$\text{arc of direction} = (OA)_Q - (OA)_{Asc},$$

and so for a primary direction having the Descendant as the fixed point, we may consider the situation in which primary motion directs the point opposite A toward the Ascendant.

B4 Directing toward a meridian angle

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For a primary direction having the Midheaven as the fixed point, the primary-direction formula yields

$$\text{arc of direction} = (RA)_A - (RA)_{MC} \mp R_{MC} \times [(AD)_A - (AD)_{MC}] .$$

Because the Midheaven lies in the upper sky, we have

$$R_{MC} = \left\lfloor \frac{(RA)_{MC} - (RA)_{MC}}{90^\circ + (AD)_{MC}} \right\rfloor = 0 ,$$

and so

$$\text{arc of direction} = (RA)_A - (RA)_{MC}$$

for a primary direction having the Midheaven as the fixed point.

For a primary direction having the Imum Coeli as the fixed point, the primary-direction formula yields

$$\text{arc of direction} = (RA)_A - (RA)_{IC} \mp R_{IC} \times [(AD)_A - (AD)_{IC}] .$$

Because the Imum Coeli lies in the lower sky, we have

$$R_{IC} = \left\lfloor \frac{(RA)_{IC} - (RA)_{IC}}{90^\circ - (AD)_{IC}} \right\rfloor = 0 ,$$

and so

$$\text{arc of direction} = (RA)_A - (RA)_{IC}$$

for a primary direction having the Imum Coeli as the fixed point.

Let's go further. For the point Q that is opposite the active point A , we have

$$(RA)_Q = (RA)_A - 180^\circ \equiv (RA)_A + 180^\circ ,$$

and so

$$\begin{aligned} \text{arc of direction} &= (RA)_A - (RA)_{IC} = [(RA)_A - 180^\circ] - [(RA)_{MC} - 180^\circ] \\ &= (RA)_Q - (RA)_{MC} , \end{aligned}$$

and so for a primary direction having the Imum Coeli as the fixed point, we may consider the situation in which primary motion directs the point opposite A toward the Midheaven.

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