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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, Earth remains at rest while the surrounding celestial sphere and everything on it (including the zodiacal belt) rotate about the sphere's line of poles (which is the same as 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 tropical year of the native's age. A **mean tropical year** is the time taken by Earth to complete its annual cycle of seasons, and it consists of 365 mean solar days, 5 hours, 48 minutes, and 45.1 seconds (which is about 365.242189 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 pertinent number of tropical 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). A sidereal day is a few minutes short of a mean solar day, which is the time taken by Earth to complete a single rotation and to advance about one degree along its orbital path about Sun. As Earth makes its daily 360° rotation about its axis, it rotates at an angular rate of about

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

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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 tropical year of age.

It follows that the native's life at A tropical 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 correspond to 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 tropical 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 correspond to primary directions that each predict an event to occur in the native's life around A tropical 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

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easy method is presented by astrologer Anthony Louis in his blog post *Fast and Easy Primary Directions* (20 July 2019).

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FIGURE 1.1 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.

FIGURE 1.1: King's natal chart

(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

In this chapter, we will use Technique #PD1 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). At the chapter's end, we will use the information gathered to rectify King's birth time.

IMPORTANT COMMENTS: In this book, we will be using the tropical 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,

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those of 1932, 1936, 1940, 1944, 1948, and 1952). It follows that on his wedding day, King's tropical age was about

$$\frac{[(6 \times 366) + (18 \times 365) + 16 + 28 + 31 + 30 + 31 + 18]\ days}{365.242189\ days/yr} \approx 24.4221513\ yrs\ .$$

On applying Technique #PD1 for $A \approx 24.4221513$, we get

$$(3.98907826 \times A)\ min \approx 97.4218728\ min \approx 1.6236979\ hr$$

$$\approx 1\ hr + 37\ min + 25\ sec$$

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) 07:48 Ve 10:28 Mo 18:42 WS12 PI	(PC11) 06:36 Me 11:39 WS11 AQ	(PC10) 05:24 Su 25:03 WS10 CP	(PC9) 06:36 Sa 25:20 WS9 SA	(PC8) 07:48 WS8 SC
(PC1) 09:01 WS1 AR	**Martin Luther King Jr.** (Tropical) Pre-Birth Symbolic Chart for Event #K1 Tuesday, 15 JAN 1929 at 10:22:35 CST Atlanta, GA (33° 45′ N; 84° 23′ W)			(PC7) 09:01 WS7 LI
Ju 01:10 (PC2) 07:48 WS2 TA	(PC3) 06:36 Ma 21:54 R WS3 GE	(PC4) 05:24 WS4 CN	(PC5) 06:36 WS5 LE	(PC6) 07:48 WS6 VI

That is, there are no major planet-to-angle aspects having a margin of inexactness of about 01°.

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

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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 01:10 (PC12) 05:31 WS12 TA	WS11 AR	Ve 10:37 Mo 20:27 (PC11) 28:56 WS10 PI	Me 11:51 (PC10) 22:22 WS9 AQ	(PC8) 05:31 Su 25:12 (PC9) 28:56 WS8 CP
(PC1) 12:05 Ma 21:53 R WS1 GE	**Martin Luther King Jr.** (Tropical) Post-Birth Symbolic Chart for Event #K1 Tuesday, 15 JAN 1929 at 13:37:25 CST Atlanta, GA (33° 45′ N; 84° 23′ W)			(PC7) 12:05 Sa 25:21 WS7 SA
(PC2) 05:31 (PC3) 28:56 WS2 CN	(PC4) 22:22 WS3 LE	(PC5) 28:56 WS4 VI	WS5 LI	(PC6) 05:31 WS6 SC

In the post-birth symbolic chart, the Mars-PC10 trine corresponds to 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 PH7 (partnerships) and PH12 (trying situations), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH2 and Gemini WS2, both houses referring to supportive persons or things. At his best, masculine Gemini seeks to learn and communicate in order to further wholesome social development. In light of the foregoing, Mars refers to King as enthusiastically partnering with others in order to further wholesome social development.

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

> **[Post-birth] Mars in PH1:** Mars is the lord of PH6 (being of service to others) and PH11 (comrades and shared interests), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH1 and Gemini WS1, both houses referring to the native's well-being. At his best, masculine Gemini seeks to learn and communicate in order to further wholesome social development. In light of the foregoing, Mars refers to King as enthusiastically working together with others in order to further wholesome social development.

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

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By trial and error, we find that the Mars-PC10 trine becomes exact at about 01:35:31 pm, CST (about 13.5919444 *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

$$\text{elapsed time} = 1\ hr + 35\ min + 31\ sec \approx 95.5166667\ min\ .$$

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

$$\text{elapsed age} \approx \frac{1\ yr\ of\ age}{3.98907826\ min} \times 95.5166667\ min \approx 23.9445457\ yrs$$

$$= 23\ yrs + \left(0.9445457\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 23\ yrs + 344.98794\ days\ ,$$

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 tropical age was about

$$\frac{[(8 \times 366) + (26 \times 365) + 16 + 28 + 31 + 30 + 31 + 30 + 31 + 28]\ days}{365.242189\ days/yr}$$

$$\approx 34.6153878\ yrs\ .$$

On applying Technique #PD1 for $A \approx 34.6153878$, we get

$$(3.98907826 \times A)\ min \approx 138.083491\ min \approx 2.30139152\ hr$$

$$\approx 2\ hr + 18\ min + 5\ sec$$

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 1.3a), 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.

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FIGURE 1.3a: Pre-birth symbolic chart

Me 11:36 (PC12) 24:17 WS12 AQ	Su 25:02 (PC11) 25:10 WS11 CP	Sa 25:20 (PC10) 26:03 WS10 SA	(PC9) 25:10 WS9 SC	(PC8) 24:17 WS8 LI
Ve 10:26 Mo 18:20 (PC1) 23:24 WS1 PI	**Martin Luther King Jr.** (Tropical) Pre-Birth Symbolic Chart for Event #K2 Tuesday, 15 JAN 1929 at 09:41:55 CST Atlanta, GA (33° 45′ N; 84° 23′ W)			(PC7) 23:24 WS7 VI
(PC2) 24:17 WS2 AR	Ju 01:10 (PC3) 25:10 WS3 TA	Ma 21:54 R (PC4) 26:03 WS4 GE	(PC5) 25:10 WS5 CN	(PC6) 24:17 WS6 LE

In the pre-birth symbolic chart, the Saturn-PC10 conjunction corresponds to 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 PH9 (spiritual or professional know-how) and PH10 (achieving something significant; head persons), and it is the natural representative of sober-minded action. Saturn lies in the intersection of PH8 and Sagittarius WS8, both houses referring to an ending that facilitates transformation. 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.

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.

The Saturn-PC10 conjunction refers to Saturn as being helpful to PC10 (achieving something significant; gaining prestige; head persons).

By trial and error, we find that the Saturn-PC10 conjunction becomes exact at about 09:38:50 am, CST (about 9.64722222 *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

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$$\text{elapsed time} = 2\ hr + 21\ min + 10\ sec \approx 141.166667\ min\ .$$

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

$$\text{elapsed age} \approx \frac{1\ yr\ of\ age}{3.98907826\ min} \times 141.166667\ min \approx 35.3882922\ yrs$$

$$= 35\ yrs + \left(0.3882922\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 35\ yrs + 141.82069\ days\ ,$$

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 01:10 (PC12) 15:50 WS12 TA	(PC11) 09:24 WS11 AR	(PC10) 02:58 Ve 10:39 Mo 20:49 WS10 PI	(PC9) 09:24 Me 11:53 WS9 AQ	(PC8) 15:50 Su 25:13 WS8 CP
Ma 21:52 R (PC1) 22:16 WS1 GE	**Martin Luther King Jr.** (Tropical) Post-Birth Symbolic Chart for Event #K2 Tuesday, 15 JAN 1929 at 14:18:05 CST Atlanta, GA (33° 45′ N; 84° 23′ W)			(PC7) 22:16 Sa 25:21 WS7 SA
(PC2) 15:50 WS2 CN	(PC3) 09:24 WS3 LE	(PC4) 02:58 WS4 VI	(PC5) 09:24 WS5 LI	(PC6) 15:50 WS6 SC

In the post-birth symbolic chart, the Mars-PC1 conjunction corresponds to 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 PH7 (partnerships) and PH12 (trying situations), and it is the natural representative of energetic assertive action. Mars lies in the intersection

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of PH2 and Gemini WS2, both houses referring to supportive persons or things. At his best, masculine Gemini seeks to learn and communicate in order to further wholesome social development. In light of the foregoing, Mars refers to King as enthusiastically partnering with others in order to further wholesome social development.

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

[Post-birth] Mars in PH12: Mars is the lord of PH6 (being of service to others) and PH11 (comrades and shared interests), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH12 (trying situations) and Gemini WS1 (self-identity). In light of the foregoing, Mars refers to King as working together with fellow African Americans in order to boldly deal with trying situations.

The Mars-PC1 conjunction refers to Mars as being helpful to PC1 (self-identity).

By trial and error, we find that the Mars-PC1 conjunction becomes exact at about 02:16:28 pm, CST (about 14.2744444 *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

$$\text{elapsed time} = 2\ hr + 16\ min + 28\ sec \approx 136.466667\ min\ .$$

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

$$\text{elapsed age} \approx \frac{1\ yr\ of\ age}{3.98907826\ min} \times 136.466667\ min \approx 34.2100751\ yrs$$

$$= 34\ yrs + \left(0.2100751\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 34\ yrs + 76.72829\ days\ ,$$

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. passed away from assassination. 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 tropical age was about

$$\frac{[(9 \times 366) + (30 \times 365) + 16 + 29 + 31 + 4]\ days}{365.242189\ days/yr} \approx 39.2178134\ yrs\ .$$

On applying Technique #PD1 for $A \approx 39.2178134$, we get

$$(3.98907826 \times A)\ min \approx 156.442927\ min \approx 2.60738211\ hr$$

$$\approx 2\ hr + 36\ min + 27\ sec$$

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

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THE PRE-BIRTH CHART

For the pre-birth symbolic chart (FIGURE 1.4a), we subtract the chart-change term (2 hours, 36 minutes, and 27 seconds) from King's birth time of 12:00 pm, CST, thereby getting 09:23:33 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

Me 11:35 (PC12) 18:12 WS12 AQ	(PC11) 20:00 Su 25:01 WS11 CP	(PC10) 21:49 Sa 25:20 WS10 SA	(PC9) 20:00 WS9 SC	(PC8) 18:12 WS8 LI
Ve 10:25 (PC1) 16:24 Mo 18:10 WS1 PI	**Martin Luther King Jr.** (Tropical) Pre-Birth Symbolic Chart for Event #K3 Tuesday, 15 JAN 1929 at 09:23:33 CST Atlanta, GA (33° 45′ N; 84° 23′ W)			(PC7) 16:24 WS7 VI
(PC2) 18:12 WS2 AR	Ju 01:09 (PC3) 20:00 WS3 TA	(PC4) 21:49 Ma 21:54 R WS4 GE	(PC5) 20:00 WS5 CN	(PC6) 18:12 WS6 LE

In the pre-birth symbolic chart, the Mars-PC4 conjunction corresponds to 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 PH7 (bodily death or bodily harm) and PH12 (hidden enemies), and it is the natural representative of bodily injury. Mars lies in the intersection of PH2 and Gemini WS2, both houses referring to supportive persons or things. In light of the foregoing, Mars refers to bodily death at the hands of hidden enemies.

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

> **[Pre-birth] Mars in PH4:** Mars is the lord of PH2 (supportive persons or things) and PH9 (spiritual or professional know-how), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH4 and Gemini WS4, both houses referring to comfort and security and to being gravebound. In light of the foregoing, Mars refers to King as being gravebound because of his spiritual efforts to get a secure footing for his followers.

The Mars-PC4 conjunction refers to Mars as being helpful to PC4 (being gravebound). King's advocacy of civil rights made him an assassination target of enemies in high places.

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By trial and error, we find that the Mars-PC4 conjunction becomes exact at about 09:23:58 am, CST (about 9.39944444 *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

$$\text{elapsed time} = 2\ hr + 36\ min + 2\ sec \approx 156.033333\ min\ .$$

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

$$\text{elapsed age} \approx \frac{1\ yr\ of\ age}{3.98907826\ min} \times 156.033333\ min \approx 39.1151346\ yrs$$

$$= 39\ yrs + \left(0.1151346\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 39\ yrs + 42.05201\ days\ ,$$

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 27 seconds) to King's birth time of 12:00 pm, CST, thereby getting 02:36:27 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

Ju 01:10 (PC12) 20:22 WS12 TA	(PC11) 14:07 WS11 AR	(PC10) 07:51 Ve 10:40 Mo 20:59 WS10 PI	Me 11:55 (PC9) 14:07 WS9 AQ	(PC8) 20:22 Su 25:14 WS8 CP
Ma 21:52 R (PC1) 26:38 WS1 GE	**Martin Luther King Jr.** (Tropical) Post-Birth Symbolic Chart for Event #K3 Tuesday, 15 JAN 1929 at 14:36:27 CST Atlanta, GA (33° 45′ N; 84° 23′ W)			Sa 25:21 (PC7) 26:38 WS7 SA
(PC2) 20:22 WS2 CN	(PC3) 14:07 WS3 LE	(PC4) 07:51 WS4 VI	(PC5) 14:07 WS5 LI	(PC6) 20:22 WS6 SC

That is, there are no major planet-to-angle aspects having a margin of inexactness of about 01°.

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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 aspects 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 tropical years of age, the quantity x is the chart-addition term, which is given by

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

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 major planet-to-angle aspect 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	24.4221513	+1.6236979	13.5919444
#K2	34.6153878	−2.30139152	9.64722222
#K2	34.6153878	+2.30139152	14.2744444
#K3	39.2178134	−2.60738211	9.39944444

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

$$y \approx (0.998053781)x + 11.9737063\,.$$

On comparing this equation with the model equation $y = x + b$, we see that 0.998053781 (the best-line's slope) approximates the number 1 (the model-line's slope). Moreover, we see that 11.9737063 (the best-line's intercept) approximates b (the model-line's intercept):

$$b \approx 11.9737063\ hr \approx 11\ hr + 58\ min + 25\ sec\,.$$

Therefore, King's rectified birth time is about 11:58:25 am, CST.

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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.

FIGURE 1.5: King's rectified natal chart

(PC12) 08:08 WS12 AR	(PC11) 02:59 Ve 10:33 Mo 19:34 WS11 PI	Me 11:45 WS10 AQ	(PC9) 02:59 Su 25:08 (PC10) 27:49 WS9 CP	(PC8) 08:08 Sa 25:21 WS8 SA
Ju 01:10 (PC1) 13:17 WS1 TA	**Martin Luther King Jr.** Natal Chart (Tropical Zodiac) Tuesday, 15 JAN 1929 at 11:58:25 CST Atlanta, GA (33° 45′ N; 84° 23′ W)			(PC7) 13:17 WS7 SC
(PC2) 08:08 Ma 21:53 R WS2 GE	(PC3) 02:59 (PC4) 27:49 WS3 CN	WS4 LE	(PC5) 02:59 WS5 VI	(PC6) 08:08 WS6 LI

FIGURE 1.5 presents our rectified natal chart for 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.

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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 calculating arcs of direction according to the mathematics presented in Appendices A and B. More specifically, we will use King's natal chart (FIGURE 1.1) and the primary directions found in Sections 1.2, 1.3, and 1.4 to get prediction dates for 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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In Section 1.2, we examined a Mars-PC10 trine that is associated with Event #K1 (King's wedding day in 1953). With regard to King's natal chart (FIGURE 2.2), this Mars-PC10 trine corresponds to 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.

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FIGURE 2.2: King's natal chart again

(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 King's birth time (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

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

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

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

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

$$\varepsilon\approx 23^\circ\,26'\,21.406''-46.836769''\times(-0.709575633)$$

$$\approx 23^\circ\,26'\,21.406''+33.2342300''=23^\circ\,26'\,54.6402300''$$

$$\approx 23.4485112^\circ\approx 23.44851^\circ\,.$$

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 natal chart (FIGURE 2.2), Mars is at Gemini 21° 53′ 50″ with an ecliptic latitude of $+03^\circ\,26'\,17''$. MDTC is at Aquarius 21° 53′ 50″ with a Bianchini ecliptic latitude of $(+03^\circ\,26'\,17'')\times\cos 120^\circ=-01^\circ\,43'\,8.5''$. Therefore, we have

$$\lambda_P=321^\circ\,53'\,50''\approx 321.89722^\circ\,,\qquad \beta_P=-01^\circ\,43'\,8.5''\approx -1.71903^\circ\,.$$

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We find that MDTC's declination is

$$\delta_P = \arcsin(\sin\varepsilon \times \cos\beta_P \times \sin\lambda_P + \cos\varepsilon \times \sin\beta_P)$$
$$\approx \arcsin[\sin 23.44851° \times \cos(-1.71903°) \times \sin 321.89722°$$
$$+ \cos 23.44851° \times \sin(-1.71903°)]$$
$$\approx -15.84045° .$$

The equinoctial distance here is

$$(ED)_P = \arccos\left(\frac{\cos\beta_P \times \cos\lambda_P}{\cos\delta_P}\right) \approx \arccos\left[\frac{\cos(-1.71903°) \times \cos 321.89722°}{\cos(-15.84045°)}\right]$$
$$\approx 35.15486° .$$

Because $\lambda_P > 180°$, we get $(RA)_P = 360° - (ED)_P \approx 324.84514°$ as MDTC's right ascension.

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

$$\lambda_{MC} = 298° \, 12' \, 25'' \approx 298.20694° , \qquad \beta_{MC} = 0° .$$

We find that the Midheaven's declination is

$$\delta_{MC} = \arcsin(\sin\varepsilon \times \cos\beta_{MC} \times \sin\lambda_{MC} + \cos\varepsilon \times \sin\beta_{MC})$$
$$\approx \arcsin(\sin 23.44851° \times \cos 0° \times \sin 298.20694° + \cos 23.44851° \times \sin 0°)$$
$$\approx -20.52828° .$$

The equinoctial distance here is

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

Because $\lambda_{MC} > 180°$, we get $(RA)_{MC} = 360° - (ED)_{MC} \approx 300.31189°$ 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

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

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

$$24.53325 \, deg \times \frac{1 \, yr \, of \, age}{1 \, deg} \approx 24.53325 \, yrs \, of \, age$$
$$= 24 \, yrs + \left(0.53325 \, yr \times \frac{365.242189 \, days}{1 \, yr}\right) \approx 24 \, yrs + 194.76540 \, days .$$

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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).

In Section 1.2, the direct Mars-PC10 trine predicted 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).

2.3 Event #K2: The natal Saturn-PC10 conjunction

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In Section 1.2, we examined a Saturn-PC10 conjunction that is associated with Event #K2 (King's DC speech in 1963). With regard to King's natal chart (FIGURE 2.2), this Saturn-PC10 conjunction corresponds to 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 $(SA)_{MC} = 90° + (AD)_{MC}$ and

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

It follows that

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

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 (Saturn) toward a fixed significator (the Midheaven). 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 $(SA)_P = 90° + (AD)_P$. 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 2.2 that $\varepsilon \approx 23.44851°$.

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

$$\lambda_P = 265°\,21'\,07'' \approx 265.35194°\,, \qquad \beta_P = +01°\,09'\,56'' \approx +1.16556°\,.$$

We find that Saturn's declination is

$$\begin{aligned}\delta_P &= \arcsin(\sin\varepsilon \times \cos\beta_P \times \sin\lambda_P + \cos\varepsilon \times \sin\beta_P)\\ &\approx \arcsin[\sin 23.44851° \times \cos(+1.16556°) \times \sin 265.35194°\\ &\quad + \cos 23.44851° \times \sin(+1.16556°)]\\ &\approx -22.20196°\,.\end{aligned}$$

The equinoctial distance here is

$$\begin{aligned}(ED)_P &= \arccos\left(\frac{\cos\beta_P \times \cos\lambda_P}{\cos\delta_P}\right) \approx \arccos\left[\frac{\cos(+1.16556°) \times \cos 265.35194°}{\cos(-22.20196°)}\right]\\ &\approx 95.02015°\,.\end{aligned}$$

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

$$\begin{aligned}(AD)_P &= \arcsin(\tan\delta_P \times \tan\Phi) \approx \arcsin[\tan(-22.20196°) \times \tan(+33.75°)]\\ &\approx -15.82531°\end{aligned}$$

is Saturn's ascensional difference.

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

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

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

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

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

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$$35.96847 \times \frac{1\ yr\ of\ age}{1\ deg} \approx 35.96847\ yrs\ of\ age$$

$$= 35\ yrs + \left(0.96847\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 35\ yrs + 353.72610\ days\ .$$

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

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

Using the Ptolemy time-key yields

$$35.33134\ deg \times \frac{1\ yr\ of\ age}{1\ deg} \approx 35.33134\ yrs\ of\ age$$

$$= 35\ yrs + \left(0.33134\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 35\ yrs + 121.01935\ days\ .$$

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).

In Section 1.3, 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).

2.4 Event #K3: The natal Mars-PC4 conjunction

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In Section 1.4, we examined a Mars-PC4 conjunction that is associated with Event #K3 (King's passing in 1968). With regard to King's natal chart (FIGURE 2.2), this Mars-PC4 conjunction corresponds to 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 $(SA)_{IC} = 90° - (AD)_{IC}$ and

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

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It follows that

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

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 (Mars) toward a fixed significator (the Imum Coeli). 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 $(SA)_P = 90° + (AD)_P$. 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 2.2 that $\varepsilon \approx 23.44851°$.

Secondly, let's use pertinent formulas of Section A1 to deal with Mars. In the natal chart (FIGURE 2.2), Mars is at Gemini 21° 53′ 50″ with an ecliptic latitude of +03° 26′ 17″. Therefore, we have

$$\lambda_P = 81°\,53'\,50'' \approx 81.89722°\,, \qquad \beta_P = +03°\,26'\,17'' \approx +3.43806°\,.$$

We find that Mars's declination is

$$\begin{aligned}\delta_P &= \arcsin(\sin\varepsilon \times \cos\beta_P \times \sin\lambda_P + \cos\varepsilon \times \sin\beta_P)\\ &\approx \arcsin[\sin 23.44851° \times \cos(+3.43806°) \times \sin 81.89722°\\ &\qquad + \cos 23.44851° \times \sin(+3.43806°)]\\ &\approx +26.63212°\,.\end{aligned}$$

The equinoctial distance here is

$$\begin{aligned}(ED)_P &= \arccos\left(\frac{\cos\beta_P \times \cos\lambda_P}{\cos\delta_P}\right) \approx \arccos\left[\frac{\cos(+3.43806°) \times \cos 81.89722°}{\cos(+26.63212°)}\right]\\ &\approx 80.94429°\,.\end{aligned}$$

Because $\lambda_P < 180°$, we get $(RA)_P = (ED)_P \approx 80.94429°$ as Mars's right ascension. King's geographic latitude of birth is $\Phi = 33°\,45'\,N = +33.75°$. We find that

$$\begin{aligned}(AD)_P &= \arcsin(\tan\delta_P \times \tan\Phi) \approx \arcsin[\tan(+26.63212°) \times \tan(+33.75°)]\\ &\approx 19.57665°\end{aligned}$$

is Mars's ascensional difference.

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

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

and

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

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

$$(AD)_{IC} = \arcsin(\tan\delta_{IC} \times \tan\Phi) \approx \arcsin[\tan(+20.52828°) \times \tan(+33.75°)]$$
$$\approx 14.48921°$$

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

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

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

$$42.21155\ deg \times \frac{1\ yr\ of\ age}{1\ deg} \approx 42.21155\ yrs\ of\ age$$
$$= 42\ yrs + \left(0.21155\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 42\ yrs + 77.26699\ days .$$

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

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

Using the Ptolemy time-key yields

$$39.36760\ deg \times \frac{1\ yr\ of\ age}{1\ deg} \approx 39.36760\ yrs\ of\ age$$
$$= 39\ yrs + \left(0.36760\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 39\ yrs + 134.26303\ days .$$

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

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1968). This prediction date is about 2 months after the date of King's passing (Thursday, 04 April 1968).

In Section 1.4, 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).

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3. THE CIVIL RIGHTS ACT OF 1964

3.1 An inception chart for America

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The Continental Congress began as the provisional government for the Thirteen Colonies of Great Britain. After the American Revolutionary War began in 1775, the Congress became the governing body by which the Thirteen Colonies (then known as the United Colonies) coordinated their resistance to British rule.

According to *Journals of the Continental Congress*,[1] the Congress was scheduled to begin its business of Thursday, 04 July 1776 at 09:00 am. Consideration of the Declaration of Independence was the second item of business. In his article *Time and Temperature: Philadelphia, July 4, 1776*, historian Paul H. Smith[2] presents evidence that the Declaration of Independence was probably ratified before 11:00 am, LAT. We will take the ratification of the Declaration of Independence to be the birth of the United States of America (USA).

FIGURE 3.1: Our USA inception chart

Ra 06:35 D (PC12) 21:57 WS12 LE	Ve 02:45 Ju 05:52 Su 13:03 Me 24:19 R WS11 CN	(PC10) 21:11 Ma 21:11 WS10 GE	LFo 02:25 (PC9) 21:34 WS9 TA	(PC8) 21:57 WS8 AR
(PC1) 22:19 WS1 VI	**United States of America** Inception Chart (Tropical Zodiac) Thursday, 04 JUL 1776 at 10:28:51 LMT Philadelphia, PA (39° 57′ N; 75° 10′ W)			(PC7) 22:19 WS7 PI
Sa 14:47 (PC2) 21:57 WS2 LI	(PC3) 21:34 WS3 SC	(PC4) 21:11 WS4 SA	(PC5) 21:34 WS5 CP	Ke 06:35 D LSp 12:14 (PC6) 21:57 Mo 23:08 WS6 AQ

Local Apparent Time (LAT) is sundial time, which is a longitude-dependent time scale that is based on the actual position of Sun in the local sky. The length of an apparent (or actual) solar day varies during the course of a year, and so it is convenient to use Local Mean Time (LMT), which is based on the notion of a mean solar day (which is exactly 24 hours long by definition).

[1] *Journals of the Continental Congress, Vol. V*, United States Government Publishing Office (1906).
[2] *The Quarterly Journal of the Library of Congress, Vol. 33, No. 4*, October 1976.

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Over the course of a year, LAT ranges from about 14 minutes slower to about 16 minutes faster than LMT. On the morning of Thursday, 04 July 1776, LAT was about 4 minutes behind LMT.

During the Congress's morning of business, we find (by trial and error) that a Virgo Ascendant occurs before about 11:07:08 am, LMT and that a Libra Ascendant occurs afterward. Moreover, a Mars-PC10 conjunction was occurring while the Continental Congress was in the process of ratifying the Declaration of Independence. This conjunction became exact at about 10:28:51 am, LMT.

An **inception chart** is an astrological chart pertaining to the beginning of an endeavor – it is the endeavor's natal chart. FIGURE 3.1 presents our inception chart for the United States of America. Here we are taking the estimated birth time to be Thursday, 04 July 1776 at 10:28:51 am, LMT, which is the time of the aforementioned Mars-PC10 conjunction. The Ascendant is at Virgo 22° 19′ 59″. True *Rāhu* is in direct motion, lying at Leo 06° 35′ 30″.

As previously stated, a Mars-PC10 conjunction was occurring while the Continental Congress was in the process of ratifying the Declaration of Independence. In this regard, we find the following for Mars:

> **Mars in PH10:** Mars is the lord of PH3 (relatives) and PH8 (an ending that facilitates transformation), and it is the natural representative of hostile action and of things that are sharp or cutting. Mars lies in the intersection of PH10 and Gemini WS10, both houses referring to achieving something significant and to being on top of a situation. The Latin name *Gemini* means 'twins'. In light of the foregoing, Mars refers to the United Colonies as severing ties with their British kinfolk in order to have self-determination.

The Mars-PC10 conjunction refers to Mars as being helpful to PC10 (achieving something significant; being on top of a situation).

3.2 Event CRA

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On Thursday, 02 July 1964, President Lyndon Baines Johnson signed a historic civil rights and labor bill into law. The Civil Rights Act of 1964 outlawed discrimination based on race, color, religion, sex, or national identity. We will refer to the enactment of the Civil Rights Act of 1964 as 'Event CRA'. In this section, we will see how Event CRA shows up astrologically with regard to the USA inception chart (FIGURE 3.1).

THE PROFECTED ASCENDANT

By the date of Event CRA, America had lived through 45 leap days (5 leap days in the 1700s, 24 leap days in the 1800s, and 16 leap days in the 1900s). It follows that on the date of the bill's enactment, America's tropical age was about

$$\frac{[(45 \times 366) + (143 \times 365) - 2]\ days}{365.242189\ days/yr} \approx 187.993069\ yrs\ .$$

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The Profected Ascendant (PR1) the result of moving the natal Ascendant forward at a rate of 30° per year of life. For $A \approx 187.993069$, we get

$$\text{profection addition term} = (30 \times A)\ deg \approx 5639.79207\ deg = 5639°\ 47'\ 31''$$
$$= 15 \times 360° + 239°\ 47'\ 31'' \equiv 239°\ 47'\ 31''\ .$$

The natal Ascendant is at Virgo 22° 19′ 59″, and so its ecliptic longitude is 172° 19′ 59″. We find that the ecliptic longitude of PR1 is

$$172°\ 19'\ 59'' + 239°\ 47'\ 31'' = 412°\ 07'\ 30'' = 360° + 52°\ 07'\ 30''$$
$$\equiv 52°\ 07'\ 30' = 30° + 22°\ 07'\ 30'\ ,$$

and so the Profected Ascendant (PR1) is at Taurus 22° 07′ 30″.

FIGURE 3.2a: PR1, SP1, and SR1 for Event MCA

Ra 06:35 D (PC12) 21:57 WS12 LE	Ve 02:45 Ju 05:52 Su 13:03 Me 24:19 R WS11 CN	(PC10) 21:11 Ma 21:11 WS10 GE	(PC9) 21:34 <PR1> 22:07 WS9 TA	(PC8) 21:57 WS8 AR
(PC1) 22:19 WS1 VI	**United States of America** Inception Chart (Tropical Zodiac) Thursday, 04 JUL 1776 at 10:28:51 LMT Philadelphia, PA (39° 57′ N; 75° 10′ W)			<SP1> 18:25 (PC7) 22:19 WS7 PI
Sa 14:47 (PC2) 21:57 WS2 LI	<SR1> 12:22 (PC3) 21:34 WS3 SC	(PC4) 21:11 WS4 SA	(PC5) 21:34 WS5 CP	Ke 06:35 D (PC6) 21:57 Mo 23:08 WS6 AQ

Firstly, let's consider PR1 and major aspects to it. PR1 refers to the nation's situation at the time of interest. In FIGURE 3.2a, PR1 lies in the intersection of PH9 and Taurus WS9, both houses referring to spiritual or professional know-how. At her best, feminine Taurus is doggedly determined to make tangible progress in achieving a better quality of life. In the context of Event CRA, PR1 refers to the American government as exercising its legal might to dismantle legal Jim Crow segregation, thereby helping to create a level playing field for African Americans.

Planets that make major aspects to PR1 indicate factors that further describe the nation's situation at the time of interest. Moon is making a sinister square to PR1. For Moon, we find the following:

Moon in PH6: Moon is the lord of PH11 (comrades and shared interests), and it is the natural representative of nurturers. Moon lies in the intersection of PH6 and Aquarius WS6, both houses referring to being of service to others. At his best, masculine Aquarius is unselfish and

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makes improvements for the common good. In light of the foregoing, Moon refers to a coalition of people who work at furthering the common good.

In the context of Event CRA, Moon refers to the coalition of civil-rights activists, labor organizers, and political leaders who worked to eliminate unfair treatment of people.

Mercury is making a dexter sextile to PR1. For Mercury, we find the following:

Mercury in PH11: Mercury is the lord of PH1 (the nation's well-being) and PH10 (achieving something significant; gaining prestige), and it is the natural representative of things of mixed composition. Mercury lies in the intersection of PH11 and Cancer WS11, both houses referring to comrades and shared interests and to fulfilling one's hopes. At her best, feminine Cancer safeguards those who are near and dear. In light of the foregoing, Mercury refers to America as exemplifying its traditional Latin motto *E pluribus unum* ('out of many, one'), by which people from diverse backgrounds blend into a single unit.

Let's move on!

Secondly, let's consider planets in the house location of PR1, which further describe the native's situation at the time of interest. There is nothing in this regard.

Thirdly, let's consider the PR1 ruler. It represents the nation at the time of interest, and its house location indicates where the nation gives great attention and great effort. For Venus (the PR1 ruler), we find the following:

Venus in PH10: Venus is the lord of PH2 (supportive persons or things) and PH9 (spiritual or professional know-how), and it is the natural representative of friendly action and intimate relationships. Venus lies in the intersection of PH10 (achieving something significant; gaining prestige) and Cancer WS11 (comrades and shared interests). At her best, feminine Cancer safeguards those who are near and dear. In light of the foregoing, Venus refers to America as applying its know-how in ways that have its people's best interest at heart.

In the context of Event CRA, Venus refers to America as genuinely caring about its people being happy, healthy, and prosperous and as applying its efforts accordingly.

THE SP ASCENDANT

According to the method of secondary progressions (SP), the native's life at A tropical years of age is revealed by what is happening astrologically when they are A days old. On the date of Event CRA, America's tropical age was about $187.993069\ yrs$. For $A \approx 187.993069$, we get

$$A\ days \approx 187.993069\ days \approx 187\ days + 23\ hr + 50\ min + 1\ sec$$

as the chart-addition term. On adding this term to America's time of birth (Thursday, 04 July 1776 at 10:28:51 am, LMT), we get Wednesday, 08 January 1777 at 10:18:52 am, LMT as the SP time. On casting a chart for the SP time, we find that the SP Ascendant (SP1) is at Pisces 18° 25′ 04″.

Firstly, let's consider SP1 and major aspects to it. SP1 refers to the nation's situation at the time of interest. In FIGURE 3.2a, SP1 lies in the intersection of PH6 (being of service to others) and

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Pisces WS7 (partnerships). At her best, feminine Pisces is resilient and shows kindly concern for others. In the context of the Civil Rights Act of 1964 (and the subsequent Voting Rights Act of 1965), SP1 refers to the coalition of civil-rights activists, labor organizers, and political leaders who worked to eliminate unfair treatment of people.

Planets that make major aspects to SP1 indicate factors that further describe the nation's situation at the time of interest. Sun is making a dexter trine to SP1. For Sun, we find the following:

> **Sun in PH10:** Sun is the lord of PH12 (trying situations), and it is the natural representative of leaders and bosses. Sun lies in the intersection of PH10 (achieving something significant; head persons) and Cancer WS11 (comrades and shared interests). At her best, feminine Cancer safeguards those who are near and dear. In light of the foregoing, Sun refers to America's leadership as working together with others in order to safeguard the people.

In the context of Event CRA, Sun refers to the coalition of civil-rights activists, labor organizers, and political leaders who worked to eliminate unfair treatment of people.

Mercury is making a dexter trine to SP1. As previously found, Mercury refers to America as exemplifying its traditional Latin motto *E pluribus unum* ('out of many, one'), by which people from diverse backgrounds blend into a single unit. Mars is making a dexter square to SP1. For Mars, we find the following:

> **Mars in PH10:** Mars is the lord of PH3 (community) and PH8 (an ending that facilitates transformation), and it is the natural representative of energetic assertive action. Mars lies in the intersection of PH10 and Gemini WS10, both houses referring to achieving something significant. At his best, masculine Gemini seeks to learn and communicate in order to further wholesome social development. But on a negative note, Gemini's twinness may refer to two-facedness in the sense of hypocrisy (that is, professing standards that are contrary to one's actual behavior). In light of the foregoing, Mars refers to America's ongoing effort to "form a more perfect union" by fixing its flaws over time and by strengthening social bonds.

Let's move on!

Secondly, let's consider planets in the house location of SP1, which further describe the native's situation at the time of interest. There is nothing in this regard.

Thirdly, let's consider the SP1 ruler. It represents the nation at the time of interest, and its house location indicates where the nation gives great attention and great effort. For Jupiter (the SP1 ruler), we find the following:

> **Jupiter in PH10:** Jupiter is the lord of PH4 (comfort and security) and PH7 (social contracts), and it is the natural representative of noble-minded action. Sun lies in the intersection of PH10 (achieving something significant) and Cancer WS11 (comrades and shared interests). At her best, feminine Cancer safeguards those who are near and dear. In light of the foregoing, Jupiter refers to America as entering into social contracts that give its people a secure footing in life.

In the context of Event CRA, Jupiter refers to America as working at creating a level playing field for all its people.

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THE SR ASCENDANT

A native's **solar return** (SR) is Sun's annual return to its natal location. 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. 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.

Event CRA occurred near the end of the USA 1963 solar-return year. On Thursday, 04 July 1963, America reached age 187. In the USA inception chart, Sun lies at Cancer 13° 03′ 26″, and so Sun's natal ecliptic longitude is 103° 03′ 26″. We find that Sun achieves this natal value on Friday, 05 July 1963 at 03:42:00 pm, EDT. FIGURE 3.2b presents the USA 1963 SR chart. The SR Ascendant (SR1) is at Scorpio 12° 22′ 32″.

FIGURE 3.2b: The USA 1963 SR chart

(PC12) 15:15 WS12 LI	Ma 17:28 (PC11) 18:08 WS11 VI	(PC10) 21:01 WS10 LE	Me 03:28 Su 13:03 (PC9) 18:08 WS9 CN	(PC8) 15:15 Ve 27:59 WS8 GE
(SR1) 12:22 WS1 SC	**United States of America** Solar-Return Chart for Age 187 (Tropical) Friday, 05 JUL 1963 at 15:42:00 EDT Philadelphia, PA (39° 57′ N; 75° 10′ W)			(PC7) 12:22 WS7 TA
(PC2) 15:15 WS2 SA	Mo 00:20 (PC3) 18:08 WS3 CP	(PC4) 21:01 Sa 22:17 R WS4 AQ	(PC5) 18:08 WS5 PI	(PC6) 15:15 Ju 17:34 WS6 AR

Firstly, let's consider SR1 and major aspects to it. SR1 refers to the nation's situation in the solar-return year of interest. In FIGURE 3.2a, SR1 lies in the intersection of PH2 (supportive persons or things) and Scorpio WS3 (relatives). At her best, feminine Scorpio is driven by a deep sense of purpose, and she is not easily deterred by obstacles or setbacks. In the context of Event CRA, SR1 refers to American citizens as being supportive to one another like members of a family.

Planets that make major aspects to SR1 indicate factors that further describe the nation's situation in the solar-return year of interest. Sun is making a sinister trine to SR1. As previously found, Sun refers to America's leadership as working together with others in order to safeguard the people. Jupiter is making a sinister trine to SR1. As previously found, Jupiter refers to America as entering into social contracts that give its people a secure footing in life. In the context of Event CRA, Sun and Jupiter refer to the coalition of civil-rights activists, labor organizers, and political leaders who worked to eliminate unfair treatment of people in America.

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Secondly, let's consider planets in the house location of SR1, which further describe the nation's situation in the solar-return year of interest. There is nothing in this regard.

Thirdly, let's consider the SR1 ruler. The SR1 ruler represents the nation in the solar-return year of interest, and its house location indicates where the nation gives great attention and great effort. Mars is the SR1 ruler. As previously found, Mars refers to America's ongoing effort to "form a more perfect union" by fixing its flaws over time and by strengthening social bonds.

3.3 SR primary directions

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On the date of Event CRA (the enactment of the Civil Rights Act of 1964), America's tropical age was about $187.993069\ yrs$. This age is well beyond the limit for which the notion of primary directions makes sense. Although there are no primary directions to consider here with regard to the USA inception chart (FIGURE 3.1), there are primary directions to consider here with regard to the USA 1963 SR chart (FIGURE 3.2b).

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

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

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

$$\frac{360\ deg}{365.242189\ days} \approx \frac{1\ deg}{1.01456164\ days}.$$

Note that a mean tropical year is the time taken by Earth to complete its annual cycle of seasons, which is about 365.242189 mean solar days.

The **SR time-key** is the notion that one degree of Earth's axial rotation corresponds to one degree of Earth's orbital motion. Therefore, according to the SR time-key, one degree of the arc of direction corresponds to about 1.01456164 mean solar days of age. Moreover, every addition of about 3.98907826 minutes to the SR time symbolically advances the SR chart by 1.01456164 mean solar days of age. It follows that every addition of about 3.93182445 minutes to the SR time symbolically advances the SR chart by one mean solar day of age.

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

> **Technique #PD2:** In order to examine the native's life around D mean solar days after the SR date, cast symbolic charts for about $(3.93182445 \times D)$ 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 correspond to 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*.

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Let's use Technique #PD2 together with hindsight to examine Event CRA. From Friday, 05 July 1963 (the SR date) to Thursday, 02 July 1964 (the event date), there are 363 mean solar days. On applying Technique #PD2 for $D = 363$, we get

$$(3.93182445 \times D)\ min \approx 1427.25228\ min \approx 23\ hr + 47\ min + 15\ sec$$

as the chart-change term with respect to the SR chart (FIGURE 3.2b).

THE PRE-SR CHART

For the pre-SR symbolic chart (FIGURE 3.3), we subtract the chart-change term (23 hours, 47 minutes, and 15 seconds) from the SR time of 03:42:00 pm, EDT (on Friday, 05 July 1963), thereby getting 03:54:45 pm, EDT (on Thursday, 04 July 1963). In this symbolic chart, we are looking for neo-converse primary directions that are associated with America around age 187. In this regard, we find a Saturn-PC4 conjunction.

FIGURE 3.3: Pre-SR symbolic chart

(PC12) 17:10 WS12 LI	Ma 16:54 (PC11) 20:13 WS11 VI	(PC10) 23:17 WS10 LE	Me 01:26 Su 12:06 (PC9) 20:13 WS9 CN	(PC8) 17:10 Ve 26:46 WS8 GE
(SR1) 14:06 WS1 SC	**United States of America** Pre-SR Symbolic Chart for Event CRA Thursday, 04 JUL 1963 at 15:54:45 EDT Philadelphia, PA (39° 57′ N; 75° 10′ W)			(PC7) 14:06 WS7 TA
(PC2) 17:10 Mo 18:04 WS2 SA	(PC3) 20:13 WS3 CP	Sa 22:20 R (PC4) 23:17 WS4 AQ	(PC5) 20:13 WS5 PI	(PC6) 17:10 Ju 17:27 WS6 AR

In the pre-SR symbolic chart, the Saturn-PC4 conjunction corresponds to a neo-converse primary direction that may refer to Event CRA. For SR Saturn (in FIGURE 3.2b), we find the following:

> **[SR] Saturn in PH4:** Saturn is the lord of PH3 (community) and PH4 (comfort and security), and it is the natural representative of sober-minded action. Saturn lies in the intersection of PH4 and Aquarius WS4, both houses referring to comfort and security. At his best, masculine Aquarius is unselfish and makes improvements for the common good. In light of the foregoing, Saturn refers to America as helping all its people to have a secure footing.

For pre-SR Saturn (in FIGURE 3.3), we find the following:

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[Pre-SR] Saturn in PH4: Saturn is the lord of PH3 (community) and PH4 (comfort and security), and it is the natural representative of sober-minded action. Saturn lies in the intersection of PH3 (community) and Aquarius WS4 (comfort and security). At his best, masculine Aquarius is unselfish and makes improvements for the common good. In light of the foregoing, Saturn refers to America as helping all its people to have a secure footing.

The Saturn-PC4 conjunction refers to Saturn as being helpful to PC4 (comfort and security).

By trial and error, we find that the Saturn-PC4 conjunction becomes exact at about 03:51:03 pm, EDT on Thursday, 04 July 1963. From 03:51:03 pm, EDT (on Thursday) to 03:42:00 pm, EDT (on Friday at the SR time), the time difference is

$$\text{elapsed time} = 23\ hr + 50\ min + 57\ sec = 1430.95\ min\ .$$

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

$$\text{elapsed age} \approx \frac{1\ day\ of\ age}{3.93182445\ min} \times 1430.95\ min \approx 363.940460\ days\ ,$$

and so the neo-converse Saturn-PC4 conjunction predicts an event to occur about 364 days after Friday, 05 July 1963 (the SR date), which is on Friday, 03 July 1964 (Day 185 of 1964). This prediction date is 1 day after the date of Event CRA (Thursday, 02 July 1964).

THE POST-SR CHART

For the post-SR symbolic chart, we add the chart-change term (23 hours, 47 minutes, and 15 seconds) to the SR time of 03:42:00 pm, EDT (on Friday, 05 July 1963), thereby getting 03:29:15 pm, EDT (on Saturday, 06 July 1963). In this symbolic chart, we are looking for direct primary directions that are associated with America around age 187. In this regard, we find nothing. That is, there are no major planet-to-angle aspects having a margin of inexactness of about 01°.

3.4 Event PCA: The Saturn-PC4 conjunction

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In Section 3.3, we examined a Saturn-PC4 conjunction that is associated with Event PCA (the enactment of the Civil Rights Act of 1964). With regard to the USA 1963 SR chart (FIGURE 3.4), this Saturn-PC4 conjunction corresponds to a converse primary direction in which Saturn is the promissor and PC4 (the Imum Coeli) is the significator. Both Saturn and PC4 lie in the lower western sky.

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

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

where $(SA)_{IC} = 90° - (AD)_{IC}$ and

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

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It follows that

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

Note that the subscript P refers to the promissor.

FIGURE 3.4: The USA 1963 SR chart again

(PC12) 15:15 WS12 LI	Ma 17:28 (PC11) 18:08 WS11 VI	(PC10) 21:01 WS10 LE	Me 03:28 Su 13:03 (PC9) 18:08 WS9 CN	(PC8) 15:15 Ve 27:59 WS8 GE
(PC1) 12:22 WS1 SC	**United States of America** Solar-Return Chart for Age 187 (Tropical) Friday, 05 JUL 1963 at 15:42:00 EDT Philadelphia, PA (39° 57′ N; 75° 10′ W)			(PC7) 12:22 WS7 TA
(PC2) 15:15 WS2 SA	Mo 00:20 (PC3) 18:08 WS3 CP	(PC4) 21:01 Sa 22:17 R WS4 AQ	(PC5) 18:08 WS5 PI	(PC6) 15:15 Ju 17:34 WS6 AR

If we take the Saturn-PC4 conjunction to be neo-converse, then we look at the what-if situation of reversed primary motion directing an active promissor (Saturn) toward a fixed significator (the Imum Coeli). 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 $(SA)_P = 90° + (AD)_P$. 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. Between America's birth time (Thursday, 04 July 1776 at 10:28:51 LMT, or 15:29:51 UTC) and the epoch J2000.0 (Saturday, 01 January 2000 at approximately 12:00 UTC), the elapsed time in Julian years is approximately

$$\frac{\left[\left(\frac{8.5}{24} + 180\right) + (2000 - 1777) \times 365.242189\right] days}{365.25\ days/yr} \approx 223.489014\ yrs\,,$$

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

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$$T \approx -\frac{223.489014\ yrs}{100\ yrs} = -2.23489014\,.$$

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

$$\varepsilon \approx 23^\circ\,26'\,21.406'' - 46.836769'' \times (-2.23489014)$$
$$\approx 23^\circ\,26'\,21.406'' + 104.675033'' = 23^\circ\,28'\,06.08103300''$$
$$\approx 23.4683558^\circ \approx 23.46836^\circ\,.$$

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 Saturn. In the SR chart (FIGURE 3.4), Saturn is at Aquarius 22° 17′ 21″ with an ecliptic latitude of −01° 09′ 14″. Therefore, we have

$$\lambda_P = 322^\circ\,17'\,21'' \approx 322.28917^\circ\,, \qquad \beta_P = -01^\circ\,09'\,14'' \approx -1.15389^\circ\,.$$

We find that Saturn's declination is

$$\delta_P = \arcsin(\sin\varepsilon \times \cos\beta_P \times \sin\lambda_P + \cos\varepsilon \times \sin\beta_P)$$
$$\approx \arcsin[\sin 23.46836^\circ \times \cos(-1.15389^\circ) \times \sin 322.28917^\circ$$
$$+ \cos 23.46836^\circ \times \sin(-1.15389^\circ)]$$
$$\approx -15.18985^\circ\,.$$

The equinoctial distance here is

$$(ED)_P = \arccos\left(\frac{\cos\beta_P \times \cos\lambda_P}{\cos\delta_P}\right) \approx \arccos\left[\frac{\cos(-1.15389^\circ) \times \cos 322.28917^\circ}{\cos(-15.18985^\circ)}\right]$$
$$\approx 34.95710^\circ\,.$$

Because $\lambda_P > 180^\circ$, we get $(RA)_P = 360^\circ - (ED)_P \approx 325.04290^\circ$ as Saturn's right ascension. America's geographic latitude of birth is $\Phi = 39^\circ\,57'\,N = +39.95^\circ$. We find that

$$(AD)_P = \arcsin(\tan\delta_P \times \tan\Phi) \approx \arcsin[\tan(-15.18985^\circ) \times \tan(+39.95^\circ)]$$
$$\approx -13.14495^\circ$$

is Saturn's ascensional difference.

Thirdly, let's deal with PC4 (the Imum Coeli). In the SR chart (FIGURE 3.4), the Imum Coeli is at Aquarius 21° 01′ 22″ with an ecliptic latitude of 0° exactly. Therefore, we have

$$\lambda_{IC} = 321^\circ\,01'\,22'' \approx 321.02278^\circ\,, \qquad \beta_{IC} = 0^\circ\,.$$

We find that the Imum Coeli's declination is

$$\delta_{IC} = \arcsin(\sin\varepsilon \times \cos\beta_{IC} \times \sin\lambda_{IC} + \cos\varepsilon \times \sin\beta_{IC})$$
$$\approx \arcsin(\sin 23.46836^\circ \times \cos 0^\circ \times \sin 321.02278^\circ + \cos 23.46836^\circ \times \sin 0^\circ)$$
$$\approx -14.50705^\circ\,.$$

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The equinoctial distance here is

$$(ED)_{IC} = \arccos\left(\frac{\cos\beta_{IC} \times \cos\lambda_{IC}}{\cos\delta_{IC}}\right) \approx \arccos\left[\frac{\cos 0° \times \cos 321.02278°}{\cos(-14.50705°)}\right]$$
$$\approx 36.58263° .$$

Because $\lambda_{IC} > 180°$, we get $(RA)_{IC} = 360° - (ED)_{IC} \approx 323.41737°$ as the Imum Coeli's right ascension. America's geographic latitude of birth is $\Phi = 39°\ 57'\ N = +39.95°$. We find that

$$(AD)_{IC} = \arcsin(\tan\delta_{IC} \times \tan\Phi) \approx \arcsin[\tan(-14.50705°) \times \tan(+39.95°)]$$
$$\approx -12.51714°$$

is the Imum Coeli's ascensional difference.

Now we are ready to deal with the arc of direction for the converse Saturn-PC4 conjunction. This arc (whether traditionally converse or neo-converse) involves the term $(RA)_{IC} - (RA)_P$, which must be positive here. We find that

$$(RA)_{IC} - (RA)_P \approx 323.41737° - 325.04290° = -1.62553°$$
$$\equiv -1.62553° + 360° = 358.37447° .$$

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

If we take the Saturn-PC4 conjunction to be traditionally converse, then

$$\text{arc of direction} = [(RA)_{IC} - (RA)_P] \times \frac{90° - (AD)_{IC}}{90° - (AD)_P}$$
$$\approx 358.37447° \times \frac{90° - (-12.51714°)}{90° - (-13.14495°)} \approx 356.19316° .$$

According to the SR time-key, one degree of the arc of direction corresponds to about 1.01456164 mean solar days of age. For our arc here, we have

$$356.19316\ deg \times \frac{1.01456164\ days\ of\ age}{1\ deg} \approx 361.37992\ days\ of\ age .$$

Therefore, the traditionally converse Saturn-PC4 conjunction predicts an event to occur about 361 days after Friday, 05 July 1963 (the SR date), which is on Tuesday, 30 June 1964 (Day 182 of 1964). This prediction date is 2 days before the date of Event CRA (Thursday, 02 July 1964).

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

$$\text{arc of direction} = (RA)_{IC} - (RA)_P \equiv 358.37447° .$$

Using the SR time-key yields

$$358.37447\ deg \times \frac{1.01456164\ days\ of\ age}{1\ deg} \approx 363.59299\ days\ of\ age .$$

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Therefore, the neo-converse Saturn-PC4 conjunction predicts an event to occur about 364 days after Friday, 05 July 1963 (the SR date), which is on Friday, 03 July 1964 (Day 185 of 1964). This prediction date is 1 day after the date of Event CRA (Thursday, 02 July 1964).

In Section 3.3, the neo-converse Saturn-PC4 conjunction predicts an event to occur about 364 days after Friday, 05 July 1963 (the SR date), which is on Friday, 03 July 1964 (Day 185 of 1964). This prediction date is 1 day after the date of Event CRA (Thursday, 02 July 1964).

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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 $+90°$ as we go perpendicularly northward and going from 0° to $-90°$ as we go perpendicularly southward.

If you are using the sidereal zodiac, then 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 *ayanāṃśa* 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

$$\cos\delta \times \cos(RA) = \cos\beta \times \cos\lambda\,,$$

$$\cos\delta \times \sin(RA) = \cos\varepsilon \times \cos\beta \times \sin\lambda - \sin\varepsilon \times \sin\beta\,,$$

$$\sin\delta = \sin\varepsilon \times \cos\beta \times \sin\lambda + \cos\varepsilon \times \sin\beta\,,$$

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

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

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

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

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On defining the **equinoctial distance**

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

we get

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

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**

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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 lie 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 follows 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**

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

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If the point lies in a quadrant of the chart's diurnal hemisphere, then it is part of a **diurnal semi-arc**. If the point lies in a quadrant of the chart's nocturnal hemisphere, then it is part of a **nocturnal semi-arc**. The angular length of a semi-arc is given by

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

Because AD is an arcsine value, its range is from $-90°$ to $+90°$. 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 **horizonal 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 horizonal 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**.

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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 lie 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 the its meridian distance MD from the Imum Coeli. The positive ratios

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

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

$$1 = r_{Asc} = \frac{(RA)_{IC} - (RA)_{Asc}}{90° - (AD)_{Asc}} \;\Rightarrow\; (RA)_{IC} - (RA)_{Asc} = 90° - (AD)_{Asc}$$

$$\Rightarrow\; (RA)_{IC} = (OA)_{Asc} + 90°\,.$$

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

$$\text{arc of direction} = (r_{Asc} - r_A) \times (SA)_A = \left[1 - \frac{(RA)_{IC} - (RA)_A}{90° - (AD)_A}\right] \times [90° - (AD)_A]$$

$$= \left\{\frac{[90° - (AD)_A] - [(OA)_{Asc} + 90°] + (RA)_A}{90° - (AD)_A}\right\} \times [90° - (AD)_A]$$

$$= 90° - (AD)_A - (OA)_{Asc} - 90° + (RA)_A = [(RA)_A - (AD)_A] - (OA)_{Asc}\,,$$

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 lie 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

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

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

$$1 = r_{Dsc} = \frac{(RA)_{MC} - (RA)_{Dsc}}{90° + (AD)_{Dsc}} \;\Rightarrow\; (RA)_{MC} - (RA)_{Dsc} = 90° + (AD)_{Dsc}$$

$$\Rightarrow\; (RA)_{MC} = (OD)_{Dsc} + 90°\,.$$

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

$$\text{arc of direction} = (r_{Dsc} - r_A) \times (SA)_A = \left[1 - \frac{(RA)_{MC} - (RA)_A}{90° + (AD)_A}\right] \times [90° + (AD)_A]$$

$$= \left\{\frac{[90° + (AD)_A] - [(OD)_{Dsc} + 90°] + (RA)_A}{90° + (AD)_A}\right\} \times [90° + (AD)_A]$$

$$= 90° + (AD)_A - (OD)_{Dsc} - 90° + (RA)_A = [(RA)_A + (AD)_A] - (OD)_{Dsc}\,,$$

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 lie 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 horizonal distance HD from the Ascendant. The positive ratios

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

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

$$1 = r_{MC} = -\frac{(OA)_{MC} - (OA)_{Asc}}{90° + (AD)_{MC}} \;\Rightarrow\; (OA)_{MC} - (OA)_{Asc} = -(AD)_{MC} - 90°$$

$$\Rightarrow\; (OA)_{Asc} = (RA)_{MC} + 90°\,.$$

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

$$\text{arc of direction} = (r_{MC} - r_A) \times (SA)_A = \left[1 - \frac{(OA)_{Asc} - (OA)_A}{90° + (AD)_A}\right] \times [90° + (AD)_A]$$

$$= \left\{\frac{[90° + (AD)_A] - [(RA)_{MC} + 90°] + (OA)_A}{90° + (AD)_A}\right\} \times [90° + (AD)_A]$$

$$= 90° - (RA)_{MC} - 90° + (AD)_A + (OA)_A = [(OA)_A + (AD)_A] - (RA)_{MC}\,,$$

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 lie 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 horizonal distance HD from the Descendant. The positive ratios

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

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

$$1 = r_{IC} = -\frac{(OD)_{IC} - (OD)_{Dsc}}{90° - (AD)_{IC}} \;\Rightarrow\; (OD)_{IC} - (OD)_{Dsc} = (AD)_{IC} - 90°$$

$$\Rightarrow\; (OD)_{Dsc} = (RA)_{IC} + 90°\,.$$

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

$$\text{arc of direction} = (r_{IC} - r_A) \times (SA)_A = \left[1 - \frac{(OD)_{Dsc} - (OD)_A}{90° - (AD)_A}\right] \times [90° - (AD)_A]$$

$$= \left\{\frac{[90° - (AD)_A] - [(RA)_{IC} + 90°] + (OD)_A}{90° - (AD)_A}\right\} \times [90° - (AD)_A]$$

$$= 90° - (AD)_A - (RA)_{IC} - 90° + (OD)_A = [(OD)_A - (AD)_A] - (RA)_{IC}\,,$$

and so

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

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

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 corresponding to 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

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

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

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

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

$$\varepsilon \approx 23^\circ\, 26'\, 21.406'' - 46.836769'' \times (-0.448303388)$$
$$\approx 23^\circ\, 26'\, 21.406'' + 20.9970822'' = 23^\circ\, 26'\, 42.4030822''$$
$$\approx 23.4451120^\circ \approx 23.44511^\circ\,.$$

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° 59′ 17″ with an ecliptic latitude of $+00^\circ\, 28'\, 59''$. JDSC is at Aries 19° 59′ 17″ with a Bianchini ecliptic latitude of $(+00^\circ\, 28'\, 59'') \times \cos 90^\circ = 0^\circ$. Therefore, we have

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

We find that JDSC's declination is

$$\delta_P = \arcsin(\sin\varepsilon \times \cos\beta_P \times \sin\lambda_P + \cos\varepsilon \times \sin\beta_P)$$
$$\approx \arcsin(\sin 23.44511^\circ \times \cos 0^\circ \times \sin 19.98806^\circ + \cos 23.44511^\circ \times \sin 0^\circ)$$
$$\approx +7.81655^\circ\,.$$

The equinoctial distance here is

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

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° 53′ 20″ with an ecliptic latitude of 0° exactly. Therefore, we have

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

We find that the Midheaven's declination is

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

The equinoctial distance here is

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

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Because $\lambda_{MC} > 180°$, we get $(RA)_{MC} = 360° - (ED)_{MC} \approx 336.73336°$ 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

$$\text{arc of direction} = (RA)_P - (RA)_{MC} \approx 18.45411° - 336.73336° = -318.27925°$$
$$\equiv -318.27925° + 360° = 41.72075° .$$

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

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

$$41.72075\ deg \times \frac{1\ yr\ of\ age}{1\ deg} \approx 41.72075\ yrs\ of\ age$$
$$= 41\ yrs + \left(0.72075\ yr \times \frac{365.242189\ days}{1\ yr}\right) \approx 41\ yrs + 263.24831\ days .$$

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).

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APPENDIX B
More mathematics of primary directions

B1 The primary-direction formula
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In Section A3, 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

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

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

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

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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 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

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

On making use of the expression

$$(OA)_{Asc} = (RA)_{MC} + 90° ,$$

we get

$$\frac{(RA)_{MC} - (RA)_{Asc}}{90° + (AD)_{Asc}} = \frac{[(OA)_{Asc} - 90°] - (RA)_{Asc}}{90° + (AD)_{Asc}} = \frac{-90° + [(OA)_{Asc} - (RA)_{Asc}]}{90° + (AD)_{Asc}}$$

$$= \frac{-90° - (AD)_{Asc}}{90° + (AD)_{Asc}} = \frac{-[90° + (AD)_{Asc}]}{90° + (AD)_{Asc}} = -1 .$$

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

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

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

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

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

Note that the mathematical symbol '≡' 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

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

and so

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

$$= \frac{[(OA)_{Asc} - 90°] + 180° - (RA)_{Asc}}{90° - (AD)_{Asc}} = \frac{90° + [(OA)_{Asc} - (RA)_{Asc}]}{90° - (AD)_{Asc}}$$

$$= \frac{90° - (AD)_{Asc}}{90° - (AD)_{Asc}} = 1 .$$

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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

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

On making use of the expression

$$(OD)_{Dsc} = (RA)_{MC} - 90°\,,$$

we get

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

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 $R_{Dsc} = 1$.

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

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

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

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

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

We find that

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

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

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

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

$$(RA)_Q = (RA)_A - 180° \equiv (RA)_A + 180° , \qquad (AD)_Q = -(AD)_A ,$$

and so

$$\text{arc of direction} = [(RA)_A + (AD)_A] - [(RA)_{Dsc} + (AD)_{Dsc}]$$
$$= \left[(RA)_Q + 180° - (AD)_Q\right] - [(RA)_{Asc} + 180° - (AD)_{Asc}]$$
$$= \left[(RA)_Q - (AD)_Q\right] - [(RA)_{Asc} - (AD)_{Asc}] .$$

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.

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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

$$R_{MC} = \left| \frac{(RA)_{MC} - (RA)_{MC}}{90° + (AD)_{MC}} \right| = 0 \,,$$

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

$$R_{IC} = \left| \frac{(RA)_{IC} - (RA)_{IC}}{90° - (AD)_{IC}} \right| = 0 \,,$$

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

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

and so

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

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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