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On the Consistency of the Wandering Year as Backbone of Egyptian Chronology

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1.3 Sothic Rising

Without entering into the technicalities of this astronomical phenomenon, the Sothic rising is the heliacal rising of the star Sirius, *Spdt* in Egyptian, hence Sothis in Greek. In short, this is the first time Sirius is again visible after a period of invisibility of about 70 days.[7] Since Sirius is the brightest star in the sky, its heliacal rising in a land of mostly clear skies, without observation being hampered by artificial light, must have been a striking event.

1.4 Sothic Date

Sothic dates are instances in which the heliacal rising of Sirius, that is or *prt Spdt*, "the coming forth of Sothis,"[8] is dated according to the Egyptian calendar in Egyptian texts.

The Coming Forth of *Spdt* is mentioned occasionally in texts, but in only a few instances is it dated according to the Egyptian calendar. Each such instance is a Sothic date. The usefulness of each Sothic date for the purpose of establishing an absolute chronology depends on many factors. One thing is certain: any Sothic dates before about 700 B.C.E. are nearly worthless for absolute chronology if it cannot be assumed that the wandering year was consistent.

1.5 Sothic Cycle

The Sothic cycle is also referred to as "Sothic period."[9] The two terms relate to one another as follows. The Sothic period is called so because it is a unit of time or has an extension in time. Like any period, the Sothic period is defined by a beginning point and an end point. But in the case of the Sothic period, beginning point and end point are the same. The period is therefore cyclical, hence the designation "Sothic Cycle." It follows that the Sothic period can be defined by identifying a single point.

In identifying and defining this point, a distinction needs to be made between the historical Sothic cycle and the astronomical Sothic cycle.

[7] For the heliacal rising of Sirius as an astronomical phenomenon, see, for example, the brief description in Parker 1950: 7.

[8] For these two spellings, taken from the Illahun Temple Archive, see Luft 1992: 55 with Plate 7a (Papyrus Berlin 10012 A recto II 19) and 58 with plate 7b (Papyrus Berlin 10012 B recto 2).

[9] Luft 1984 conveniently gathers most relevant information pertaining to the Sothic cycle or period and closely related concepts, but no explicit definition is provided. For the cycle, see also Parker 1976. Among earlier works, Ideler (1825–26, 1:124–25 n. 3) recommends Bainbridge and Greaves's (1648) as the best.

The historical Sothic cycle is what the ancients imagined the cycle to be. The beginning and end point of the cycle is a very specific historical event perceived and reported by human beings. The observation of this event could have persisted until today but, for complex historical reasons, it ceased some time in Late Antiquity.

The astronomical Sothic cycle is more abstract. It is independent of any historical circumstances and purely pertains to the movements of stars and mathematical calculations thereof. Moreover, any point in time can be used as the beginning point of the astronomical cycle and its length can then be calculated up to the time when the beginning point returns. There are therefore an infinite number of astronomical Sothic cycles, whereas there is only a single historical Sothic cycle.

The astronomical cycle provides the precise scientific explanation of the historical cycle and also allows one to calculate the exact length of the historical cycle. But this scientific explanation was obviously never a prerequisite for the historical cycle to be functional in its social and cultural context.

As regards the historical Sothic cycle, then, the defining event serving both as beginning and as end point is the first observation of the heliacal rising of Sirius on the Egyptian New Year's Day after a long period in which this had not been the case but in which the rising had gradually approached New Year's Day in time.

This movement of the heliacal rising of Sirius through the Egyptian year is a result of the fact that the rising always fell on July 17–19 (julian) in Egyptian dynastic history, whereas the wandering year moved in relation to the solar year, as noted above.

The ancient records report the conscious, contemporaneous, observation of only a single Sothic rising on New Year's Day. The relevant classical sources have been compiled in the publications listed in n. 9. The best known testimony is that of the Roman writer Censorinus, who recounts in Chapter 21 of his work *De die natali* that the heliacal rising of Sirius fell on the first day of the Egyptian wandering year, that is, 1 Thoth or I *ꜣḫt* 1, in 139 C.E., the year being identified by its consuls.[10]

If the solar year were exactly, and not approximately, 365 and a quarter days long, and if the heliacal Sirius rose exactly, and not approximately, at the same point in time in the solar year, and if the observer's view was totally unobstructed by any condition of the earth's atmosphere,[11] then the historical Sothic cycle would last precisely 1460 years, that is 365 x 4 years. This is the number mentioned in the ancient sources (see n. 9).

It may be concluded that there must have been a perception in Greek and Roman antiquity that at some point in history 1460 years before 139 B.C.E., that is, around 1320 B.C.E., the Egyptians may well have observed, and perhaps even celebrated, a coincidence between New Year's Day and the heliacal rising of Sirius. But unlike that of 139 B.C.E., this second rising of Sirius on New Year's Day is not attested in any contemporaneous sources.

[10] See already Ideler 1825–26, 1: 127–28. For the text, see now Sallmann 1983.

[11] From this third condition and others like it not mentioned here, it appears that, as beginning and end of the historical Sothic cycle, the heliacal rising of Sirius on New Year's Day is not quite an astronomical phenomenon, but rather an astronomical phenomenon observed by human beings.

[12] For further discussion, see, for example, Wente and Van Siclen 1976: 233–34.

[13] On Theon, father of the mathematician and philosopher Hypatia, who was murdered by a Christian mob in Alexandria in 415, see Toomer 1976.