

# One Day to a Cubit (Facsimile 2, Figure 1)

One of the more puzzling comments in the Book of Abraham comes from the explanation given in figure 1 of Facsimile 2, which speaks of “the measurement according to celestial time [of Kolob], which celestial time signifies one day to a cubit.” Latter-day Saint commentators on this passage have largely been at a loss to explain what this might mean.<sup>1</sup> (A cubit, after all, is a unit for measuring length, not time.<sup>2</sup>) Others have attempted to make sense of this by suggesting that “as one of Kolob’s days is a unit of celestial time, so the cubit is the unit of celestial measurement, by which the size of the worlds are measured when the foundations thereof are laid”;<sup>3</sup> or that this describes the phenomenon of space-time;<sup>4</sup> or that the text is “employing a symbolic multiplier of length parallel to the multiplier of time, whereby a day is a thousand years.”<sup>5</sup>

More recently, Latter-day Saint scientist Hollis R. Johnson proposed “a straightforward scientific explanation for the rather curious phrase.” According to Johnson, “It is quite possible that the phrase describes

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1. See, for instance, Richard D. Draper, S. Kent Brown, and Michael D. Rhodes, *The Pearl of Great Price: A Verse-by-Verse Commentary* (Salt Lake City: Deseret Book, 2005), 290, who simply admit that they “do not know how to interpret this.”

2. The cubit was used, in both standardized and nonstandardized forms, throughout the ancient Mediterranean world, including Egypt and Canaan. See, generally, Antoine Pierre Hirsch, “Ancient Egyptian Cubits—Origin and Evolution” (PhD diss., University of Toronto, 2013); and Marvin A. Powell, “Weights and Measures,” in *The Anchor Bible Dictionary*, ed. David Noel Freedman, 6 vols. (New York: Doubleday, 1992), 6:897–901.

3. George Reynolds, “The Book of Abraham—Its Genuineness Established,” *The Latter-day Saints’ Millennial Star* 41, no. 11 (March 17, 1879): 162.

4. Melvin Alonzo Cook and Melvin Garfield Cook, *Science and Mormonism: Correlations, Conflicts, and Conciliations* (Salt Lake City: Deseret Book, 1967), 57–61.

5. Samuel Brown, “The Early Mormon Chain of Belonging,” *Dialogue: A Journal of Mormon Thought* 44, no. 1 (Spring 2011): 13.

exactly the movement of the brightest celestial object, the sun, as it moves among the stars during the course of a year, a reflection of the earth's orbital motion."<sup>6</sup> As Johnson noted, while the cubit was widely used in the ancient world to measure length, it was also used by some ancient astronomers to measure angles. Johnson cites a Mesopotamian text from the fourth century BC, for example, that recorded "daily positions of the moon and the planets visible above the local horizon." One translation of the text reads: "Night of the 20th, last part of the night, the moon was [nn cubi]ts below  $\beta$  Geminorum, the moon being  $\frac{2}{3}$  cubit back to the west. The 21st, equinox; I did not watch. Ni[ght of the 22nd, last part of the night,] [the moon was] 6 cubits [below]  $\epsilon$  Leonis, the moon having passed  $\frac{1}{2}$  cubit behind  $\alpha$  Leonis. Night of the 24th, clouds were in the sky."<sup>7</sup>

This text records the angular position of the moon relative to various stars in the constellations Gemini and Leo and records those angles in cubits. Other Mesopotamian astronomical texts calculated the position of planets the same way.<sup>8</sup> "Shorter apparent distances were sometimes designated by the cubit, subdivided into 30 fingers. The cubit had an astronomical application for measuring distances in the heavens between fixed stars and the meridian, for example, or between planets and ecliptical stars, as well as for measuring eclipse magnitude."<sup>9</sup> The ancient Egyptians likewise measured angles in cubits.<sup>10</sup> So, Johnson

6. Hollis R. Johnson, "One Day to a Cubit," *Interpreter: A Journal of Latter-day Saint Faith and Scholarship* 3 (2013): 224–25.

7. Francesca Rochberg, "Natural Knowledge in Ancient Mesopotamia," in *Wrestling with Nature: From Omens to Science*, ed. Peter Harrison, Ronald L. Numbers, and Michael H. Shank (Chicago: University of Chicago Press, 2011), 18, brackets in source.

8. See the examples in Hermann Hunger and David Pingree, *Astral Sciences in Mesopotamia* (Leiden, Neth.: Brill, 1999), 160, 177, 179; compare Francesca Rochberg, *The Heavenly Writing: Divination, Horoscopy, and Astronomy in Mesopotamian Culture* (Cambridge: Cambridge University Press, 2004), 106, 125, 238.

9. Francesca Rochberg, "The Expression of Terrestrial and Celestial Order in Ancient Mesopotamia," in *Ancient Perspectives: Maps and Their Place in Mesopotamia, Egypt, Greece and Rome*, ed. Richard J. A. Talbert (Chicago: University of Chicago Press, 2012), 37. Compare also Wayne Horowitz, "The 360 and 364 Day Year in Ancient Mesopotamia," *Journal of the Ancient Near Eastern Society* 24 (1996): 40, who notes that the "ideal 360 day astronomical year [attested as early as the fourth millennium BC] corresponded to an ancient Mesopotamian astronomical theory known from first millennium B.C.E. astronomical texts which held that the stars, sun, and moon moved along 360° circuits. According to this model, each day of the ideal astronomical year of 360 days corresponded to 1° of stellar or solar movement."

10. Dieter Arnold, *Building in Egypt: Pharaonic Stone Masonry* (New York: Oxford University Press, 1991), 11–13.

argues, “the phrase *one day to a cubit* in the Book of Abraham seems to refer to *angular velocity* rather than *linear velocity*. With this changed perspective, we can readily interpret the otherwise opaque passage *one day to a cubit* as an excellent description of the motion of the sun as it passes among the stars and constellations during the course of a year.”<sup>11</sup> Using the cubit to measure this angular velocity would have been relatively easy or simple for Abraham and other ancients. “An observer, even with crude instruments, or even with the hand itself, can make simple measurements to yield angular information about objects close together in the sky—measurements in which the pointer finger at arm’s length subtends an angle of about a degree, called a ‘cubit’ by the ancients.”<sup>12</sup>

Of course, since the measurement of Kolob, rather than the sun, is said to be “one day to a cubit,” Johnson’s argument needs to be slightly tweaked: “With the extended perspective that a *cubit* is an angle of a degree, the curious phrase *one day to a cubit* from the Book of Abraham describes precisely the movement of [Kolob].”<sup>13</sup> Overall, this rings plausible, especially since the placement of Kolob in the cosmology of Abraham 3 is relative to other observable celestial bodies (Abr. 3:9, 12–13). And if Kolob is to be identified with the dog star Sirius, as some have argued,<sup>14</sup> this would provide a bright visible object in the night sky by which to calculate angular velocity as described by Johnson. So, while the precise meaning of “one day to a cubit” remains elusive, a reasonable interpretation of the phrase that finds precedent in the ancient world can be and indeed has been made.

### Further Reading

Johnson, Hollis R. “One Day to a Cubit.” *Interpreter: A Journal of Latter-day Saint Faith and Scholarship* 3 (2013): 223–30.

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11. Johnson, “One Day to a Cubit,” 227, emphasis in original.

12. Johnson, “One Day to a Cubit,” 228.

13. Johnson, “One Day to a Cubit,” 228, emphasis in original.

14. See “Kolob, the Governing One,” 142–49 herein.